GARMIN

Embraer Prodigy® Touch Flight Deck 300

Cockpit Reference Guide

Embraer Phenom 300

This manual reflects the operation of System Software version 1633.A4 or later for the Prodigy® Touch Flight Deck 300. 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: *Navigation and terrain separation must NOT be predicated upon the use of the terrain avoidance feature. The terrain avoidance feature is NOT intended to be used as a primary reference for terrain avoidance and does not relieve the pilot from the responsibility of being aware of surroundings during flight. The terrain avoidance feature is only to be used as an aid for terrain avoidance. Terrain data is obtained from third party sources. Garmin is not able to independently verify the accuracy of the terrain data.*

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

WARNING: *Do not use outdated database information. Databases used in the system must be updated regularly in order to ensure that the information remains current. Pilots using any outdated database do so entirely at their own risk.*

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

WARNING: *Traffic information shown on system displays is provided as an aid in visually acquiring traffic. Pilots must maneuver the aircraft based only upon ATC guidance or positive visual acquisition of conflicting traffic.*

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

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

WARNING: *The Prodigy® Touch Integrated Flight Deck, as installed in the Embraer Phenom 300 aircraft, has a very high degree of functional integrity. However, the pilot must recognize that providing monitoring and/or self-test capability for all conceivable system failures is not practical. Although unlikely, it may be possible for erroneous operation to occur without a fault indication shown by the system. It is thus the responsibility of the pilot to detect such an occurrence by means of cross-checking with all redundant or correlated information available in the cockpit.*

WARNING: *For safety reasons, system operational procedures must be learned on the ground.*

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

WARNING: *To reduce the risk of unsafe operation, carefully review and understand all aspects of the Prodigy® Touch Pilot's Guide documentation and the Embraer Phenom 300 Airplane Flight Manual. Thoroughly practice basic operation prior to actual use. During flight operations, carefully compare indications from the system to all available navigation sources, including the information from other NAVAIDs, visual sightings, charts, etc. For safety purposes, always resolve any discrepancies before continuing navigation.*

WARNING: *The illustrations in this guide are only examples. Never use the system to attempt to penetrate a thunderstorm. Both the FAA Advisory Circular, Subject: Thunderstorms, and the Aeronautical Information Manual (AIM) recommend avoiding "by at least 20 miles any thunderstorm identified as severe or giving an intense radar echo."*

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

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

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

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

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

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

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

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

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

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

NOTE: *Operating the system in the vicinity of metal buildings, metal structures, or electro magnetic fields can cause sensor differences that may result in nuisance miscompare annunciations during start up, shut down, or while taxiing. If one or both of the sensed values are unavailable, it will be annunciated as a 'NO COMP' (no compare).*

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

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 Prodigy® Touch system more easily. It is not intended to be a comprehensive operating guide. Complete operating procedures for the system are found in the Prodigy® Touch Flight Deck 300 Pilot's Guide.*

Part Number	Change Summary
190-01536-00	Initial release

Revision	Date of Revision	Affected Pages	Description
A	March, 2013	All	Production release

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FLIGHT INSTRUMENTS

SELECTING THE ALTIMETER BAROMETRIC PRESSURE SETTING

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

SELECTING STANDARD BAROMETRIC PRESSURE

Press the **BARO** Knob to select standard pressure; STD BARO is displayed in the Barometric Setting box.

CHANGING ALTIMETER BAROMETRIC PRESSURE SETTING UNITS

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

   Or, press the **HPA** Softkey to display the barometric pressure setting in hectopascals (hPa).
4) Press the **Back** Softkey to return to the previous level softkeys.

SETTING THE SELECTED ALTITUDE

Turn the **ALT** Knob on the AFCS Controller to set the Selected Altitude in 100-ft increments. When meters are displayed, Selected Altitude is adjusted in 50 meter increments..

If set, the Minimum Descent Altitude/Decision Height (MDA/DH) value is also available for the Selected Altitude.

If desired, press the **ALT SEL** Knob to synchronize the Selected Altitude with the displayed altitude to the nearest 10 ft.

DISPLAYING SELECTED ALTITUDE IN METERS

1) Press the **PFD Settings** Softkey on the PFD to display the second-level softkeys.
2) Press the **Altitude Units** Softkey.
3) Press the **Meters** Softkey to turn on metric altitude readouts.
4) Press the **Back** Softkey to return to the previous level softkeys.

SETTING THE MINIMUM DESCENT ALTITUDE/DECISION HEIGHT

1) From the **Home** Screen, touch **Utilities** > **Minimums**.
2) Touch the **Minimums** Button.
3) Touch **Baro, Temp Comp** (use the keypad to enter the desired temperature for temperature compensated VNAV)**, or Radio Alt,** (**OFF** is selected by default). To remove the window from the PFD display, touch **OFF**.
4) Use the keypad to enter the desired altitude (from zero to 16,000 feet for Baro and zero to 2,500 feet for Radio Alt), and touch **Enter**.

CHANGE NAVIGATION SOURCES

1) Press the **Active NAV** Softkey on the PFD to change from FMS to VOR1 or LOC1.
2) Press the **Active NAV** Softkey again to change from VOR1 or LOC1 to VOR2 or LOC2.
3) Press the **Active NAV** Softkey a third time to return to FMS.

CHANGING THE SELECTED GPS CDI SETTING

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Setup** > **Avionics Settings**.
2) Touch the **System** Tab.
3) Touch the **GPS CDI** Data Field.
4) Touch the desired setting (**2.00 NM**, **1.00 NM**, **0.30 NM**, or **AUTO**).

CHANGING NAVIGATION ANGLE SETTING

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Setup** > **Avionics Settings**.
2) Touch the **Units** Tab.
3) Touch the **Nav Angle** Data Field.
4) Touch the desired setting (**Magnetic** or **True**).

ENABLE/DISABLE OBS MODE WHILE NAVIGATING WITH FMS

1) Press the **OBS** Softkey on the PFD to select OBS Mode.
2) Turn the **CRS** Knob on the AFCS Controller to select the desired course to/from the waypoint. Press 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.

ADJUSTING SELECTED HEADING

1) Turn the **HDG** Knob on the AFCS Controller to set the Selected Heading.
2) Press the **HDG** Knob to synchronize the bug to the current heading.

ADJUSTING SELECTED COURSE

1) Turn the **CRS** Knob on the AFCS Controller to set the Selected Course.
2) Press 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).

SELECTING BEARING DISPLAY AND CHANGING NAVIGATION SOURCES

1) Press the **PFD Settings** Softkey on the PFD.
2) Press a bearing softkey (**Bearing 1** or **Bearing 2**) 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 GPS.
4) To remove the bearing pointer and information window, select the bearing softkey again.

SET MINIMUM DESCENT ALTITUDE

1) From the **Home** Screen on the Touchscreen Controller**,** touch **Utilities**.
2) Touch the Minimums Button.
3) Touch **BARO** (**OFF** is selected by default) to set a barometric minimum. Touch **RAD ALT** to set MDA using the radar altimeter.
4) Use the keypad to enter the desired altitude (zero to 16,000 feet for Baro minimum, zero to 2,500 feet for Radar Altimeter minimum).
5) Touch **Enter.**

DISPLAYING THE DME INFORMATION WINDOW

1) Press the **PFD Settings** Softkey on the PFD.
2) Press the **DME 1** or **DME 2** Softkey to display the DME Information Window.
3) To remove the DME Information Window, press the **DME 1** or **DME 2** Softkey again.

DISPLAYING WIND DATA

1) Press the **PFD Settings** Softkey on the PFD.
2) Press the **Other PDF Settings** Softkey.
2) Press the **Wind** Softkey to display wind data display options.
3) Press one of the option Softkeys (**Option 1**, **Option 2**, or **Option 3**) to change how wind data is displayed:
4) To remove the window, press the **Off** Softkey.

CHANGING COMMAND BAR AND AIRCRAFT SYMBOL FORMAT

1) From the **Home** Screen, touch **Utilities** > **Setup** > **Avionics Settings**.
2) Touch the **System** Tab.
3) Touch the **Flight Director Active Format** Data Field.
4) Touch desired setting (**Single Cue** or **Dual Cue**).

CHANGING VSPEEDS AND TURNING VSPEED FLAGS ON/OFF

1) From the **Home** Screen on the Touchscreen **Speed Bugs**.
2) To turn the Vspeed on or off, touch the **On** Button . The illuminated green line below "On" indicates that the Vspeed flag is on.
3) To set or change a Vspeed value, touch the Data Field for the Vspeed, enter a value in the keypad, and touch **Enter.** The pencil icon next to the Vspeed value indicates that the Vspeed is a pilot-entered value.

TURNING ALL VSPEED FLAGS ON/OFF

1) From the **Home** Screen on the Touchscreen Controller**,** touch **Speed Bugs**.
2) To enable all Vspeed flags, touch the **All Bugs On** Button.
3) To remove all Vspeed flags, touch the **All Bugs Off** Button.

RESTORING ALL VSPEED DEFAULTS

1) From the **Home** Screen on the Touchscreen Controller**,** touch **Speed Bugs**.
2) Touch the **Restore All Defaults** Button.

SETTING THE BARO TRANSITION ALERT

1) From the **Home** Screen**,** touch **Utilities** > **Setup** > **Avionics Settings**.
2) Touch the **Alerts** Tab.

   • To turn the alert on or off, touch the **Baro Transition Alert Enable** Button. An illuminated green line below "Enable" indicates that the alert is on.

   • To set or change the Baro Transition Alert Altitude, touch the **Baro Transition Alert** Data Field. Enter the desired altitude on the keypad, and touch **Enter**.

SYNTHETIC VISION SYSTEM

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.*

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.*

Garmin SVT™ (Synthetic Vision Technology) functionality is offered as an enhancement to the system.

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

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

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

Activating and deactivating SVT:

1) Press the **PFD Settings** Softkey.

2) Press the **Synthetic Vision** 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 **Synthetic Vision** Softkey.

3) Press the **Pathways** Softkey. The Pathways feature will cycle on or off with each press of the **Pathways** Softkey.

Activating and deactivating Horizon Headings:

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

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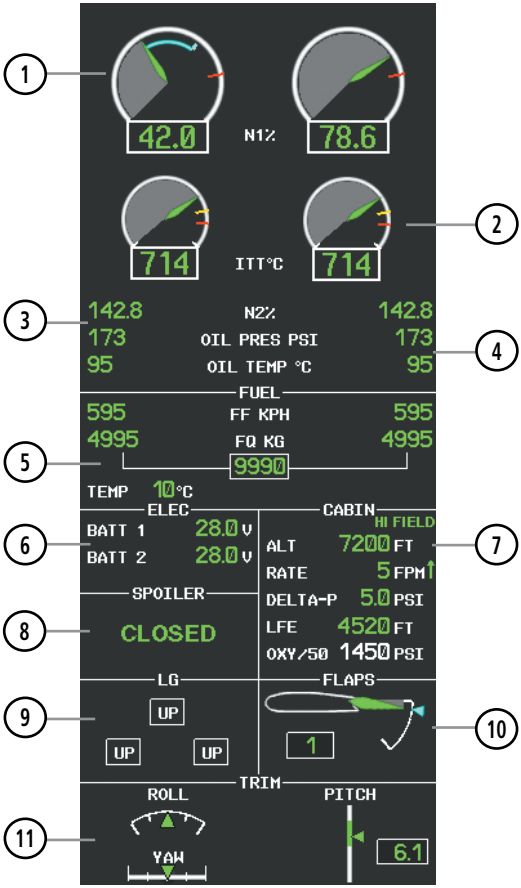
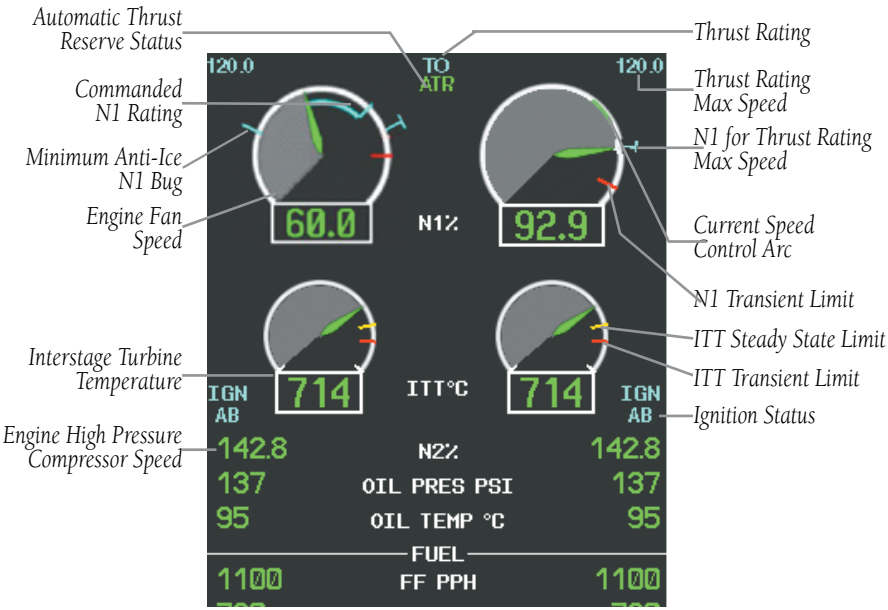
ENGINE & AIRFRAME SYSTEM

EIS DISPLAY (NORMAL MODE)



EIS Display (Normal)

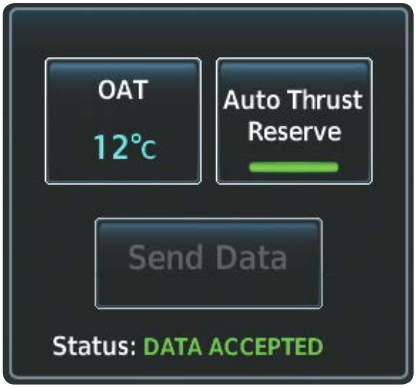
1. *Engine Fan Rotation Speed*
2. *Interstage Turbine Temperature (ITT)*
3. *Engine High Pressure Compressor Rotation Speed*
4. *Oil Pressure and Temperature*
5. *Fuel Display*
6. *Battery Voltmeter*
7. *Pressurization Display*
8. *Spoiler Status*
9. *Landing Gear Status*
10. *Flap Indicator*
11. *Trim Indicator*



Engine Indications

Takeoff Data Set Window

When the aircraft is parked or is taxiing, the Outside Air Temperature (OAT) for the departure airport can be set and Automatic Thrust Reserve (ATR) enabled/disabled in the Takeoff Data Set Window.



Takeoff Data Set Window

Setting the Outside Air Temperature (OAT):

1) From **Home**, touch **Aircraft Systems > Engine Settings**
2) Touch **Set Data,** then touch **OAT.**
3) Use the keypad to enter the OAT and touch the **Enter** button to confirm the new OAT.
4) To confirm the selected takeoff settings, touch the **Send Data** Button.

   Or:

   To cancel the operation, touch **BACK** or **Home**.

On aircraft electrical power-up, Automatic Thrust Reserve (ATR) is enabled by default. ATR status is shown at the top of the EIS Display.

Indication*	Description
ATR	ATR enabled in both engines
ATR	ATR armed in both engines, but inactive
TO - RSV	ATR activated in at least one engine
GA - RSV	ATR activated in at least one engine in Go-Around Mode

** When no indication is shown, ATR has not been enabled or armed in both engines.*

Automatic Thrust Reserve (ATR) Status

Disabling/enabling Automatic Thrust Reserve (ATR):

1) From **Home**, touch **Aircraft Systems > Engine Settings**
2) Touch **Set Data**.
3) Touch the Auto Thrust Reserve Button to enable/disable (green indicates enabled).
4) If desired, change the OAT while the Takeoff Data Set Window is displayed.
5) To confirm the selected takeoff settings touch the **Send Data** Button,

   Or:

   To cancel the operation, touch **BACK**. or **Home**

The thrust rating for the engines is shown at the center top of the EIS Display, above and between the N1 gauges. The maximum value of the speed range (in kt) for the displayed thrust rating is shown above each N1 gauge. While the aircraft is in the air, the rating can be changed to suit the conditions for maximum climb or continuous thrust.

Indication	Thrust Rating
CRZ	Cruise
CLB	Max Climb
CON	Continuous
TO	Takeoff
GA	Go Around

Thrust Rating Indications

Selecting a thrust rating:

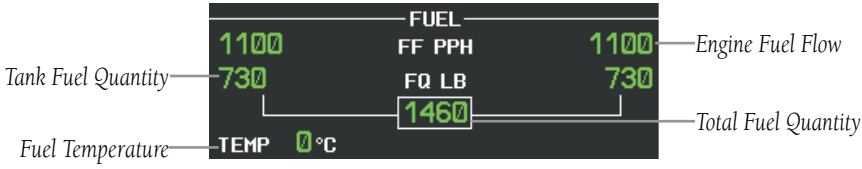
1) From **Home**, touch **Aircraft Systems > Engine Settings**
2) To choose the continuous thrust rating, select the **Continuous** Button,

   Or:

   To choose the Maximum Climb thrust rating, select the **Maximum Climb** Button.
3) Touch **BACK** or **Home** to exit.

Fuel and Electrical Indications

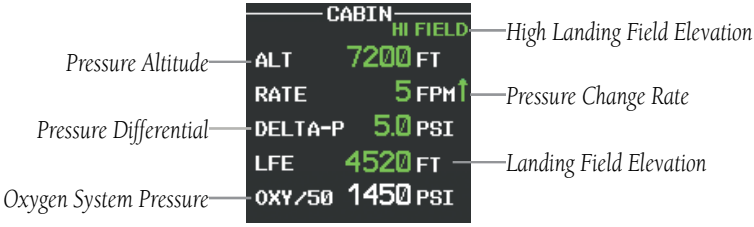
The fuel display is located beneath the oil indicators and shows the fuel flow in pounds per hour (pph) and the tank fuel quantity in pounds (lb) for each engine, the total fuel quantity, and the fuel tank temperature in °C. The factory can also configure the Fuel Display for metric units.



Fuel Display

Electrical Display

Cabin Pressurization



Cabin Pressure Display

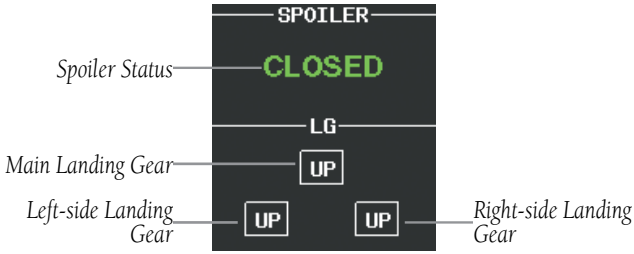
Setting the displayed landing field elevation:

1) From **Home**, touch **Aircraft Systems > Landing Field Elevation.**
2) Touch the **FMS** Button to set the Landing Field Elevation to the value for the destination airport in the current flight plan.

   Or:

   Use the **Manual** button to set the desired elevation using the keypad.
3) To confirm the new Landing Field Elevation value, select the **Enter** Button.

Spoiler and Landing Gear



Spoiler and Landing Gear Indications

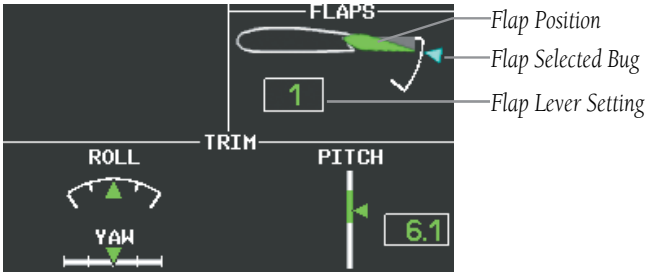
Indication	Description
DN	Landing Gear Down
UP	Landing Gear Up
	Landing Gear Transitioning (Normal)
DN	Landing Gear Locked Down
UP	Landing Gear Locked Up
	Landing Gear Transitioning (Abnormal)

Landing Gear Position Indications

Indication	Description
	Invalid information
SPDBRK	Spoilers out of takeoff configuration
FAIL	Spoilers failed
CLOSED	Spoilers retracted
GND SPLR	Ground spoilers deployed
SPDBRK	Speedbrakes deployed
STEEP	Steep Mode enabled (optional)

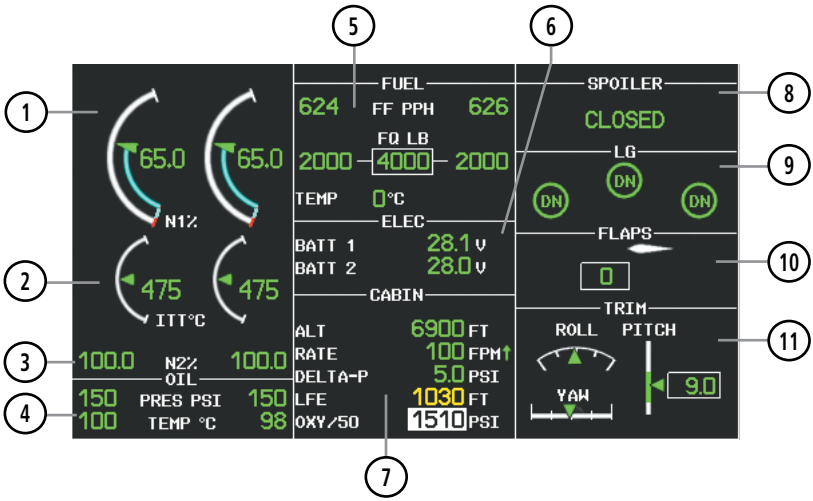
Spoiler Indications

Flaps and Trim



Flap and Trim Indications

EIS DISPLAY (REVERSIONARY MODE)



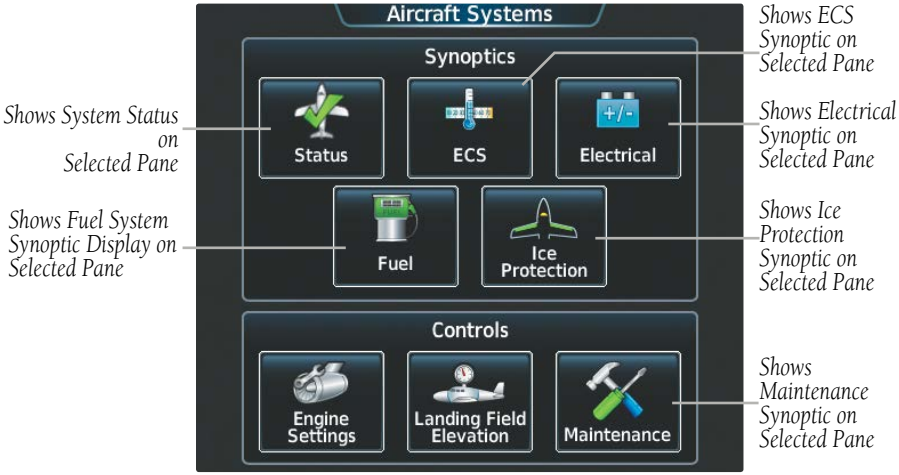
EIS Display (Reversionary)

1. *Engine Fan Rotation Speed*
2. *Interstage Turbine Temperature (ITT)*
3. *Engine High Pressure Compressor Rotation Speed*
4. *Oil Pressure and Temperature*
5. *Fuel Display*
6. *Battery Voltmeter*
7. *Pressurization Display*
8. *Spoiler Status*
9. *Landing Gear Status*
10. *Flap Indicator*
11. *Trim Indicator*

SYNOPTICS

Accessing Synoptic Pages:

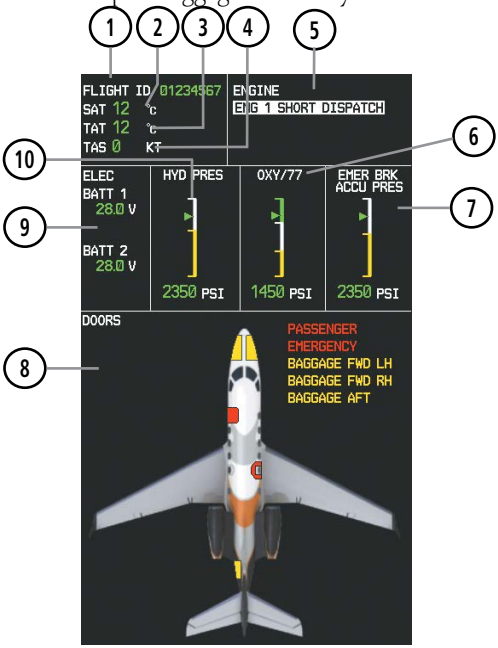
From **Home**, touch **Aircraft Systems**.



Aircraft Systems Screen

System Status

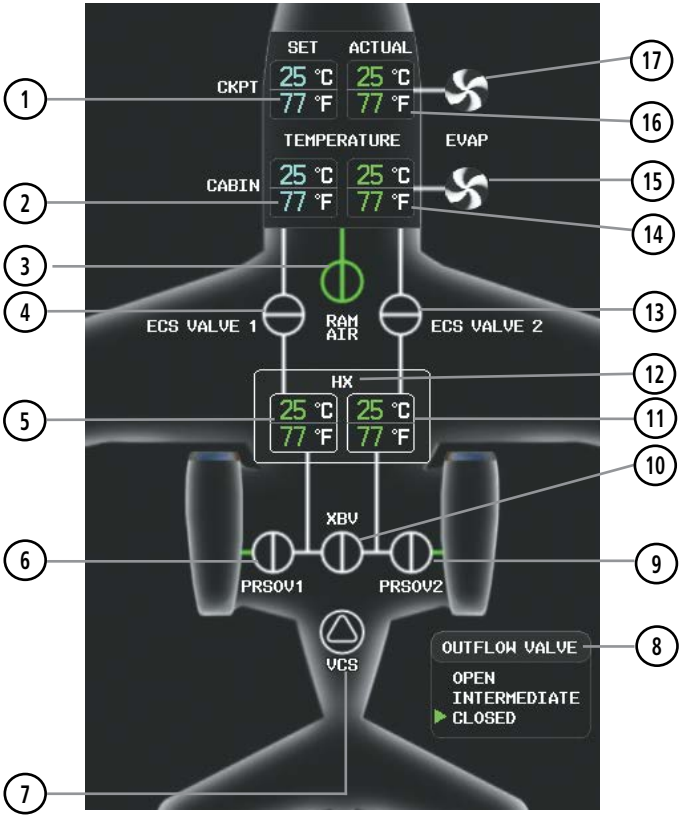
The Status Synoptics Page is displayed after the power-up splash screen is acknowledged on the MFD. The aircraft diagram displays open passenger and emergency doors in red and open baggage doors in yellow.



1. *Flight ID*
2. *Static Air Temperature (SAT)*
3. *Total Air Temperature (TAT)*
4. *True Airspeed (TAS)*
5. *Engine Dispatch Message Box*
6. *Oxygen*
7. *Emergency Brake Accumulator Pressure*
8. *Door Status*
9. *Electrical Status*
10. *Hydraulic Pressure*

System Status Synoptics Page

Environmental Control System (ECS)



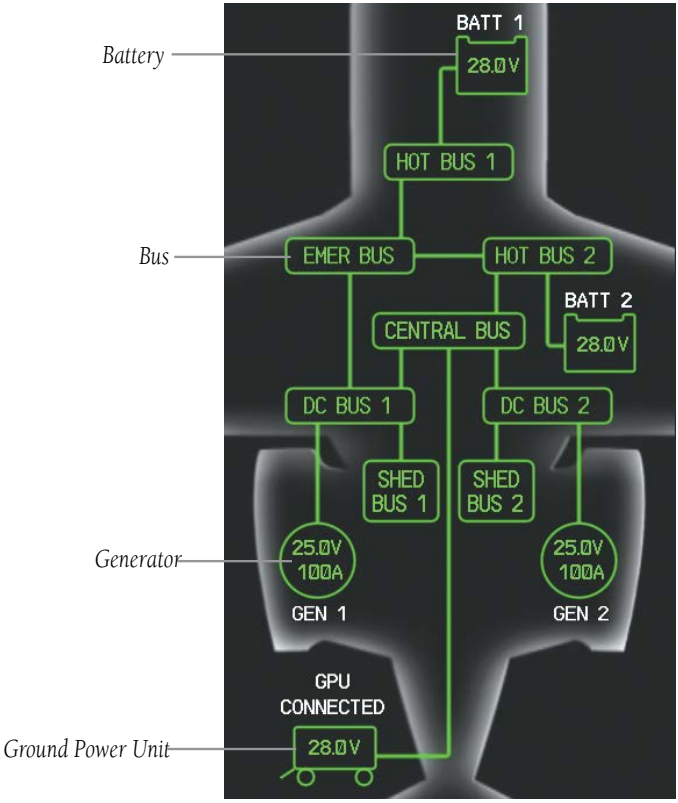
1. *Cockpit Temperature Setting*
2. *Cabin Temperature Setting*
3. *Ram Air Valve (RAV)*
4. *Environmental Control System Valve (ECS) 1*
5. *Cockpit Duct Temperature Setting*
6. *Pressure Regulating Shutoff Valve (PRSOV) 1*
7. *Vapor Cycle System (VCS)*
8. *Outflow Valve (OFV) Status**
9. *Pressure Regulating Shutoff Valve (PRSOV) 2*
10. *Crossbleed Valve Status (XBV)*
11. *Cabin Duct Temperature Setting*
12. *Heat Exchanger Cooling Pack Circuit*
13. *Environmental Control System Valve (ECS) 2*
14. *Actual Cabin Temperature*
15. *Cabin Evaporator Fan*
16. *Actual Cockpit Temperature*
17. *Cockpit Evaporator Fan*

Environmental Control System Synoptics Page

Unit	Icons and Descriptions		
Fan	On	Off	
Heat Exchanger	On	Off	
Vapor Cycle System	On	Off	
ECS Valve Ram Air Valve	Open with flow	Open, no flow	Closed
Pressure Regulating Shutoff Valve (PRSOV) Crossbleed Valve (XBV)	Open with flow	Open, no flow	Closed

Environmental Control System Unit Status Indications

Electrical

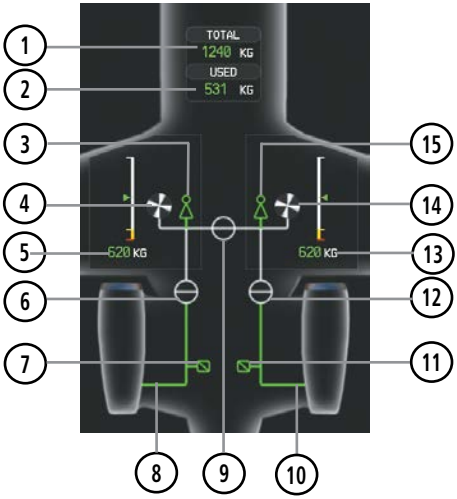


Electrical Synoptics Page

Unit	Icons and Descriptions		
Generator	N2>52%	Bus off	N2<52%
Bus	DC BUS 1 On	DC BUS 1 Bus off	
Hot Bus	HOT BUS 1 Normal	HOT BUS 1 Abnormal	
Battery	Normal	Abnormal	

Electrical System Unit Status Indications

Fuel



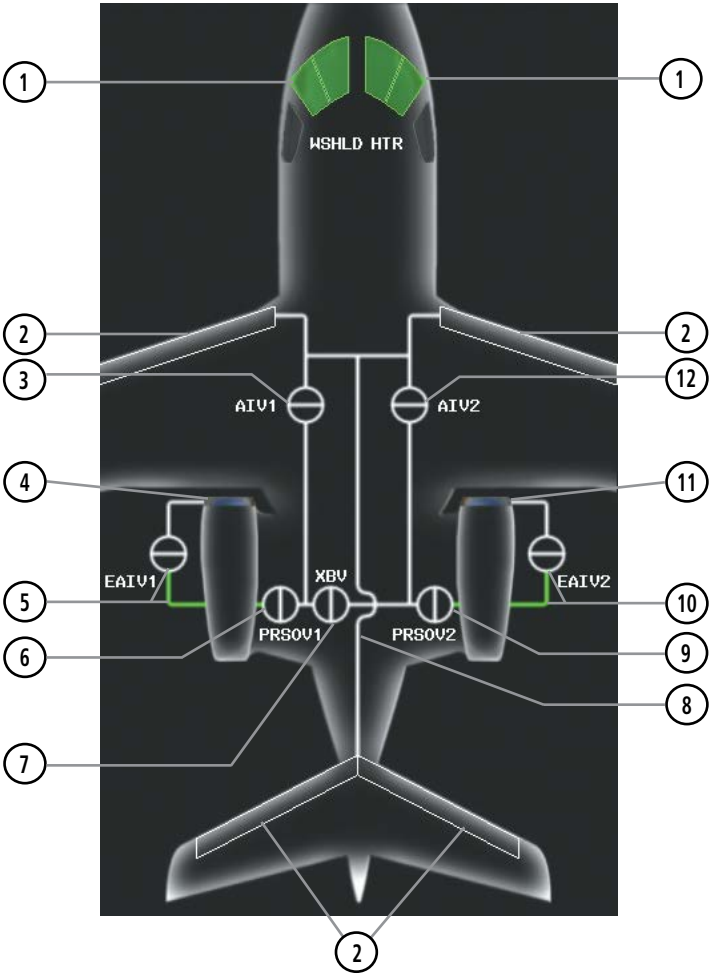
1. *Total Fuel*
2. *Fuel Used*
3. *Left Feed Ejector*
4. *Left DC Pump*
5. *Left Tank Fuel Quantity*
6. *Fuel 1 SOV*
7. *LH Pressure Switch*
8. *Left Engine Feed Line*
9. *Fuel Transfer SOV*
10. *Right Engine Feed Line*
11. *RH Pressure Switch*
12. *Fuel 2 SOV*
13. *Right Tank Fuel Quantity*
14. *Right DC Pump*
15. *Right Feed Ejector*

Fuel Synoptics Page

Unit	Icons and Descriptions			
Fuel Line	Operating	Not operating		
Feed Ejector	Operating	Not operating		
Fuel Pressure Switch	Operating	Not operating		
Valve	Open with flow	Open, no flow	In transit	Closed
DC Pump	Operating	Not operating		
Fuel Transfer Valve	Open with flow	Open, no flow	In transit	Closed

Fuel System Unit Status Indications

Ice Protection System



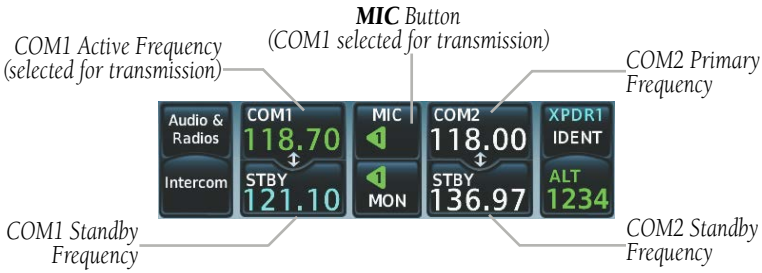
1. *Windshield Heaters*
2. *Boot Lines and Valves*
3. *Anti Ice Valve (AIV) 1*
4. *Bleed Duct and Skin 1*
5. *Engine Anti Ice Valve (EAIV) 1 Valve and Bleed Line*
6. *Pressure Regulating Shut-Off Valve 1 (PRSOV 1)*
7. *Crossbleed Valve*
8. *Ice Protection Bleed Duct*
9. *Pressure Regulating Shut-Off Valve 2 (PRSOV 2)*
10. *Engine Anti Ice Valve (EAIV) 2 Valve and Bleed Line*
11. *Bleed Duct and Skin 2*
12. *Anti Ice Valve (AIV) 2*

Ice Protection Synoptics Page

Unit	Icons and Descriptions		
Anti Ice Line	Operating		Not operating
Crossbleed Valve (XBV) Pressure Regulating Shutoff Valve (PRSOV)	Open with flow	Open, no flow	Closed
Anti Ice Valve (AIV) Engine Anti Ice Valve (EAIV)	Open with flow	Open, no flow	Closed

Ice Protection System Unit Status Indications

NAV/COM/TRANSPONDER/AUDIO PANEL



CNS Bar

Audio & Radios Screen

SELECTING A COM RADIO

Selecting a COM Radio for transmission:

Touch the **MIC** Button in the CNS Bar on the Touchscreen Controller to switch between COM radios until the desired COM is selected.

Or:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen on the Touchscreen Controller.
2) Touch the desired **MIC** Button on the Audio & Radios Screen to select the COM radio for transmission.

Selecting a COM Radio for monitoring:

Touch the **MON** Button in the CNS Bar on the Touchscreen Controller to monitor the COM not selected for transmission.

Or:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) Touch the **COM1** Button or **COM2** Button to select the COM1/COM2 radio for monitoring.

CNS Bar Symbol	Meaning of Symbol
1	COM1 selected for transmission/monitoring
2	COM2 selected for transmission/monitoring
HF	HF COM selected for transmission/monitoring
COM3	COM3 selected for transmission/monitoring
MULTI	An additional audio source is manually selected for monitoring
PA	Passenger Address is selected for transmission

CNS Bar MIC/MON Button Symbols

Enabling COM3 voice communication:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) If necessary, scroll to find COM3.
3) Touch the **Datalink** Button.
4) Touch the **OK** Button in response to "Disable Datalink Mode?". To cancel the request, touch the **Cancel** Button.

Disabling COM3 voice communication:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) If necessary, scroll to find COM3.
3) Touch the COM3 Frequency Button.
4) Touch the **Datalink** Button to disable COM3 voice communication.

Or:

1) From **Home**, touch the **CPDLC** Button to display the CPDLC Screen.
2) Touch the **OK** Button in response to "Switch Radio to Data Mode?". To cancel the request, touch the **Cancel** Button.

COM FREQUENCY TUNING

Selecting a COM1/2 frequency:

1) Touch the COM1 **STBY** Button or COM2 **STBY** Button in the CNS Bar to display the COM1/COM2 Standby Screen.
2) Use the keypad to select the frequency.
3) Touch the **Enter** Button to accept the new frequency as the COM1/COM2 standby frequency; or touch the **XFER** Button to accept the new frequency as the COM1/COM2 active frequency and transfer the previously active frequency to the standby frequency.

Or:

1) Press the small right knob to select the COM desired for tuning (selected standby frequency is light blue).
2) Turn the large and small right knobs to tune the frequency (Large knob increases/decreases MHz; Small knob increases/decreases kHz).
3) Press the small right knob to enter the new frequency as the standby frequency; or press and hold the small right knob to transfer the new standby frequency to the active frequency.

Or:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) Touch the COM1/COM2 volume slider, or press the small right knob, to select COM1/COM2 for tuning.
3) Turn the large and small right knobs to select the frequency (Large knob increases/decreases MHz; Small knob increases/decreases kHz).

4) Press the small right knob to accept the new frequency as the standby frequency; or press and hold the small right knob to accept the new frequency as the COM1/COM2 active frequency and transfer the previously active frequency to the standby frequency

Or:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) Touch the COM1/COM2 frequency button to display the COM1/COM2 Standby Screen.
3) Use the keypad to select the desired frequency.
4) Touch the **Enter** Button to accept the new frequency as the COM1/COM2 standby frequency; or touch the **XFER** Button to accept the new frequency as the COM1/COM2 active frequency and transfer the previously active frequency to the standby frequency.

Selecting a COM3 frequency:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) Touch the COM3 volume slider to select COM3 for tuning.
3) Turn the large and small right knobs to select the frequency (Large knob increases/decreases MHz; Small knob increases/decreases kHz).
4) Press the small right knob to accept the new frequency as the standby frequency; or press and hold the small right knob to accept the new frequency as the COM1/COM2 active frequency and transfer the previously active frequency to the standby frequency

Or:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) Touch the COM3 frequency button to display the COM3 Standby Screen.
3) Use the keypad to select the desired frequency.
4) Touch the **Enter** Button to accept the new frequency as the COM3 standby frequency; or touch the **XFER** Button to accept the new frequency as the COM3 active frequency and transfer the previously active frequency to the standby frequency.

CHANGING COM FREQUENCY CHANNEL SPACING

1) From the **Home** Screen on the Touchscreen Controller , 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 choice of **25.0 kHz** or **8.33 kHz**.
4) Touch the desired channel spacing button.

SIMULTANEOUS COM OPERATION

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Touch the **Copilot** Tab.
3) Touch the **Sync to Pilot** Button to disable/enable synchronizing the copilot COM selections to the pilot.
4) Touch the COM1/COM2 MIC Button to select COM1/COM2 for copilot transmissions.

HF COM TRANSCEIVER SELECTION AND ACTIVATION

Selecting the HF COM Radio for transmission:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) Touch the HF **MIC** Button on the Audio & Radios Screen to select the HF COM radio for transmission.

Selecting the HF COM Radio for monitoring:

1) Touch the **Audio & Radios** Button to display the Audio & Radios Screen.
2) Touch the **HF** Button to select the HF COM radio for monitoring.

SELECTING A NAV RADIO

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) If necessary, touch the **Copilot** Tab.
3) Touch the **NAV1** or **NAV2** Button on the Audio & Radios Screen to select/deselect the radio for monitoring.

NAV RADIO TUNING

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Touch the NAV1/NAV2 frequency button to select NAV1/NAV2 for tuning, and display the NAV1/NAV2 frequency tuning screen.
3) Use the keypad to input the desired frequency.
4) Touch the **Enter** Button to enter the new frequency as the NAV1/NAV2 standby frequency; or touch the **XFER** Button to enter the new frequency as the NAV1/NAV2 standby frequency and transfer it to the active frequency.

ADF TUNING (OPTIONAL)

Selecting an ADF frequency:

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find the ADF enable/disable button.
3) Touch the ADF control button to display the ADF Mode/Tuning Screen.
4) Use the keypad to input the desired frequency.
5) Touch the **Enter** Button to enter the new frequency as the ADF standby frequency; or touch the **XFER** Button to enter the new frequency as the ADF standby frequency and transfer it to the active frequency.

Finding and selecting an ADF frequency:

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find the ADF.
3) Touch the ADF control button to display the ADF Mode/Tuning Screen.
4) Touch the **Find** Button.
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 enter the new frequency as the ADF standby frequency.

Selecting an ADF receiver mode:

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find the ADF.
3) Touch the ADF control button to display the ADF Mode/Tuning Screen.
4) Touch the **ANT**, **ADF**, **ADF/BFO**, or **ANT/BFO** Button to select the ADF mode.

Transferring the active and standby ADF frequencies:

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find the ADF.
3) Touch the ADF Control Button.
4) Touch the **XFER** Button.

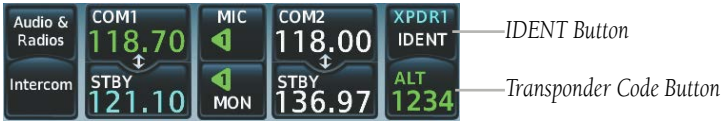
Or

1) Touch the **Audio & Radios** Button on the Touchscreen Controller 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) Press and hold the small right knob to transfer the frequencies.

DME TUNING (OPTIONAL)

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find **DME1** and/or **DME2**.
3) Touch the DME mode control button for the desired DME to display the DME Mode Window.
4) Touch the **NAV1 Mode**, **NAV2 Mode**, or **HOLD Mode** Button to select the DME mode.

ENTER A TRANSPONDER CODE



Transponder Display and Controls

1) Touch the Transponder Code Button on the Touchscreen Controller to display the Transponder Screen.
2) Use the keypad to input the desired code.
3) Touch the **Enter** Button to activate the new code.

TRANSPONDER IDENT

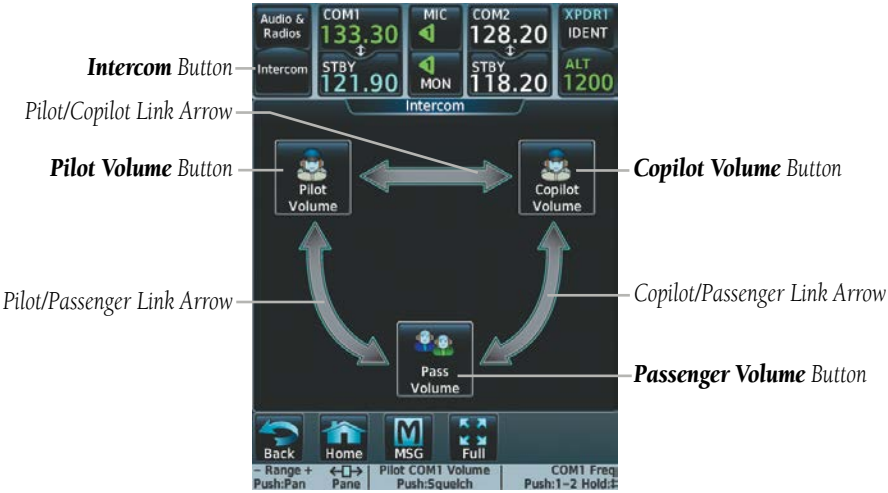
Touch the **XPDR1 IDENT** or **XPDR2 IDENT** Button. When touched, **IDENT** pulsates and is displayed as green text for approximately 20 seconds, indicating identification is active. After 20 seconds, **IDENT** returns to a steady state and is again displayed as white text.

FLIGHT ID REPORTING

1) Touch the Transponder Mode Button to display the Transponder Screen.
2) Touch the **Flight ID** Button to display the keypad.
3) Use the keypad to select the desired flight ID.
4) Touch the **Enter** Button to enter the new flight ID.

INTERCOM

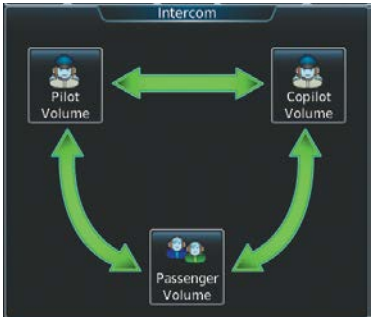
1) Touch the **Intercom** Button in the CNS Bar on the Touchscreen Controller to display the Intercom Screen. Link Arrow to enable (green) or disable (gray) a link.
2) Touch the Link Arrow to enable (green) or disable (gray) the intercom link.



Intercom Controls

All Intercom Mode

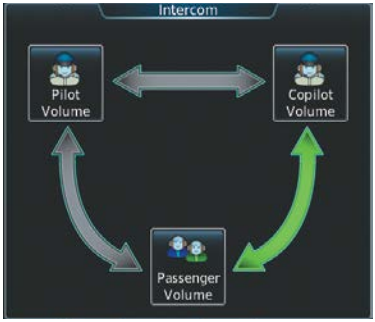
In 'All Intercom' mode the Pilot, Copilot, and Passengers hear each other.



All Intercom Mode

Copilot-Passenger Intercom Mode

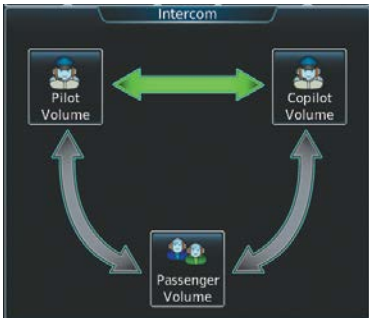
In 'Copilot-Passenger' mode the Pilot and Copilot hear each other. The Copilot and Passengers also hear each other.



Copilot-Passenger Intercom Mode

Pilot-Copilot Intercom Mode

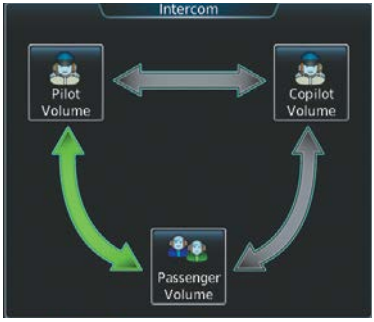
In 'Pilot-Copilot' mode the Pilot and Copilot hear each other. The Passengers hear each other.



Pilot-Copilot Intercom Mode

Pilot-Passenger Intercom Mode

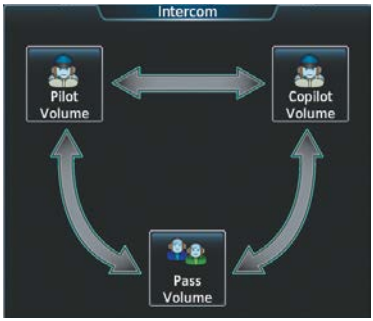
In 'Pilot-Passenger' mode the Pilot and Copilot hear each other. The Pilot and Passengers also hear each other.



Pilot-Passenger Intercom Mode

All Isolate Mode

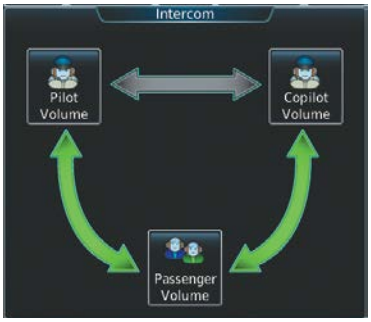
In 'All Isolate' mode the Pilot and Copilot hear the aircraft audio. The Passengers hear each other.



All Isolate Mode

Pilot-Passenger/Copilot-Passenger Intercom Mode

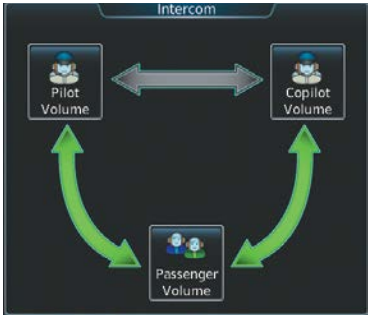
In 'Pilot-Passenger/Copilot-Passenger' mode the Passengers hear the pilot, copilot, and each other.



Pilot-Passenger/Copilot-Passenger Intercom Mode

Pilot-Passenger/Pilot-Copilot Intercom Mode

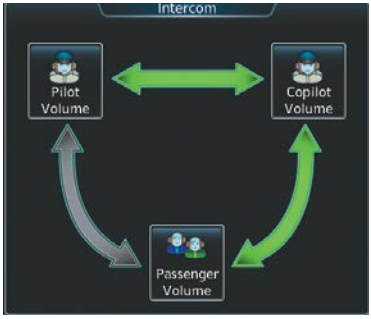
In 'Pilot-Passenger/Pilot-Copilot' mode the Pilot and Copilot hear each other. The Passengers hear the Pilot and each other.



Pilot-Passenger/Pilot-Copilot Intercom Mode

Copilot-Passenger/Pilot-Copilot Intercom Mode

In 'Copilot-Passenger/Pilot-Copilot' mode the Pilot and Copilot hear each other. The Passengers hear the Copilot and each other.



Copilot-Passenger/Pilot-Copilot Intercom Mode

Adjusting intercom volume:

1) Touch the **Intercom** Button in the CNS Bar on the Touchscreen Controller to display the Intercom Screen.
2) Touch the **Pilot Volume**, **Copilot Volume** button to display the Pilot or Copilot Intercom Settings Screen.
3) Adjust the volume by using the middle knob or by sliding your finger on the volume slider.

Adjusting intercom squelch:

1) Touch the **Intercom** Button in the CNS Bar on the Touchscreen Controller to display the Intercom Screen.
2) Touch the **Pilot Volume**, **Copilot Volume**, or **Passenger Volume** button to display the Pilot, Copilot, or Passenger Intercom Settings Screen.
3) Touch the Squelch Mode Button to turn off Auto Squelch.
4) Adjust the squelch by using the middle knob or by sliding your finger on the squelch slider.

PASSENGER ADDRESS SYSTEM

1) Touch the **Audio & Radios** Button on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find the PA.
3) Touch the **PA** Button on the Audio & Radios Screen to select the PA for transmission.

DIGITAL CLEARANCE RECORDER AND PLAYER

1) Touch the **Audio & Radios** Button in the CNS Bar on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find **Recorder**.
3) Touch the **Recorder** Play Button ( )to play the latest recorded memory block. The **Recorder** Stop Button ( )is displayed while the audio is playing. Touch the **Recorder** Stop Button during play of a memory block to stop play. When the present memory block has finished playing the **Recorder** Play Button is displayed again.
4) Touch the Previous Button ( )to play the previously recorded memory block. Each subsequent press of the Previous Button selects the previously recorded memory block, if any exist.
5) Touch the Next Button ( )to play the next recorded memory block. Each subsequent press of the Next Button selects the next recorded memory block, if any more exist.

ENTERTAINMENT INPUTS

Selecting/deselecting Music input:

1) Touch the **Audio & Radios** Button in the CNS Bar on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find Music.
3) Touch the **Music** Button to enable/disable (green indicates enabled) the Music input for the selected position (pilot, copilot, or passengers).

Configuring Music Mute Settings:

1) Touch the **Audio & Radios** Button in the CNS Bar on the Touchscreen Controller to display the Audio & Radios Screen.
2) Scroll the list to find Music.
3) Touch the **Mute Settings** Button to display the Mute Settings Window.
4) Touch any of the **Intercom**, **Radio Inputs**, or **Aural Alerts** Buttons to select which items will mute Music.

CONTROLLER PILOT DATA LINK COMMUNICATION (CPDLC)

Connecting to the CPDLC System

A flight plan must be filed prior to logging on to the CPDLC system. After entering flight plan information in the required fields and successfully logging on to the system, messages may be sent and received.

Log-on Setup:

1) From the **Home** Screen, touch **CPDLC**.
2) If necessary, touch the **Status** Tab to display the Logon Setup buttons.
3) Touch the **Facility** Button. A list of available ATC facilities is displayed.
4) Touch the appropriate ATC facility to which the CPDLC connection will be established. The selected facility is now displayed in the Facility field.
5) Touch the **Flight ID** Button. The Flight ID entry screen is displayed. Enter the Flight ID or aircraft registration number, whichever is appropriate for the filed flight plan.
6) Touch **Enter**. The Flight ID number is displayed in the Flight ID field.
7) Touch the **Destination Airport** Button. The Destination Airport entry screen is displayed. Enter the airport identifier for the destination airport used in the filed flight plan.
8) Touch **Enter**. The airport identifier is displayed in the Destination Airport field.
9) The Filed Departure Airport field is prefilled with the airport identifier corresponding to the current aircraft location. If the flight plan was filed using a different airport identifier, touch the **Filed Dep Airport** Button and enter the appropriate airport identifier. Touch **Enter**.
10) Touch the **Filed Dep Time** Button. The entry screen is displayed. Enter the departure time used in filing the flight plan.
11) Touch **Enter**. The confirmation screen is displayed.
12) Touch **OK**. The departure time is displayed in the Filed Dep Time field.

Performing the system log-on:

1) After performing the previous Logon Setup procedure, verify the Link Status display indicates a link with a ground station is available. An available link is indicated by a green line between the aircraft symbol and the ground station antenna symbol.
2) Touch the **Logon** Button. The Link Status display indicates 'Connecting' with an animated dashed green line between the ground station antenna symbol and the ATC facility symbol. Touching the **Cancel** Button will terminate the log-on process. When connection is complete, the display indicates 'Connected' with an solid green line between the ground station antenna symbol and the ATC facility symbol.

Creating a Message

Creating a message consists of choosing from a pre-determined list of requests, entering the required information, and sending the request.

1) From the **Home** Screen, touch **CPDLC**.
2) Touch the **Create Message** Button. A list of requests is presented for selection.
3) Select one of the Message Types from the list. For this example, **Request Level** is chosen. A window is displayed for entering further information.
4) Touch the **Request Level** Button on the New CPDLC Message Screen. The Altitude Entry display is shown.
5) Select the desired altitude mode by touching the **Flight Level** or **FT** (feet) Button. A green annunciator indicates the selected mode.
6) Using the number keys, enter the altitude to be requested.
7) Touch the **Enter** Button. The requested altitude is displayed.
8) Touch the **Reason** Button. A list of pertinent reasons is presented.
9) Touch the desired reason.
10) Touch the **Send** Button.

Viewing CPDLC Message Dialogs

1) From the **Home** Screen, touch **CPDLC**.
2) If necessary, touch the **CPDLC Messages** Tab. A list of message dialogs is displayed.
3) Touch a message dialog box to display the message thread.

Or:

1) Touch the flashing **CPDLC** Button on the Button Bar.
2) If necessary, touch the **CPDLC Messages** Tab. A list of message dialogs is displayed.

Deleting Message Dialogs

1) From the **Home** Screen, touch **CPDLC**.
2) If necessary, touch the **CPDLC Messages** Tab.
3) Touch the message dialog to be deleted.
4) Touch the **Delete** Button. A confirmation window is displayed.
5) Touch the **OK** Button to delete the message dialog.

To delete all closed message dialogs:

1) From the **Home** Screen, touch **CPDLC**.
2) Touch the Delete Messages Button. A confirmation window is displayed.
3) Touch the **OK** Button. All closed message dialogs are deleted.

Disconnecting from the CPDLC System

1) From the **Home** Screen, touch **CPDLC**.
2) If necessary, touch the **Status** Tab.
3) Touch the **Logoff** Button to disconnect the system.

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AUTOMATIC FLIGHT CONTROL SYSTEM

***NOTE:** If sensor information (other than attitude) required for a flight director mode becomes invalid or unavailable, the flight director automatically reverts to the default mode for that axis.*

***NOTE:** If the attitude information required for the default flight director modes becomes invalid or unavailable, the autopilot automatically disengages.*

FLIGHT DIRECTOR ACTIVATION

An initial press of an AFCS Controller key listed in the following table (when the flight director is not active) activates the pilot-side flight director in the listed modes.

Control Pressed	Modes Selected			
	Lateral		Vertical	
FD Key (pilot-side)*	Roll Hold (default)	ROL	Pitch Hold (default)	PIT
FD Key (copilot-side)*	Roll Hold (default)	ROL	Pitch Hold (default)	PIT
AP Key	Roll Hold (default)	ROL	Pitch Hold (default)	PIT
CWS Button	Roll Hold (default)	ROL	Pitch Hold (default)	PIT
GA Switch	Roll Hold (default) Roll Hold (default)	ROL ROL	Takeoff (on ground) Go Around (in air)	TO GA
ALT Key	Roll Hold (default)	ROL	Altitude Hold	ALT
VS Key	Roll Hold (default)	ROL	Vertical Speed	VS
VNV Key	Roll Hold (default)	ROL	Vertical Path Tracking**	VPTH
NAV Key	Navigation***	FMS VOR LOC BC	Pitch Hold (default)	PIT
APR Key	Approach***	FMS VOR LOC	Pitch Hold (default)	PIT
HDG Key	Heading Select	HDG	Pitch Hold (default)	PIT

Subsequent presses of the **FD Key will toggle the flight director on/off on its respective side. However, pressing the **FD** Key for the inactive flight director only removes the Command Bars from the corresponding display. The **FD** Keys are disabled when the autopilot is engaged.*

*** Valid VNAV flight plan must be entered before **VNV** Key press activates flight director.*

****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.*

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	**ALT** Key	ALT
Vertical Speed	Holds aircraft vertical speed; may be used to climb/descend to the Selected Altitude	**VS** Key	VS
Flight Level Change	Holds aircraft airspeed while aircraft is climbing/descending to the Selected Altitude	**FLC** Key	FLC
Vertical Path Tracking	Captures and tracks descent legs of an active vertical profile	**VNV** Key	VPTH
VNAV Target Altitude Capture	Captures the Vertical Navigation (VNAV) Target Altitude	**	ALTV
Glidepath	Captures and tracks the SBAS glidepath on approach	**APR** Key	GP
Glideslope	Captures and tracks the ILS glideslope on approach		GS
Takeoff	Commands a constant pitch angle and wings level on the ground in preparation for takeoff	**GA** Switch	TO
Go Around	Commands a constant pitch angle and wings level		GA

* *ALTS is armed automatically when PIT, VS, FLC, TO, or GA is active, and under VPTH when the Selected Altitude is to be captured instead of the VNAV Target Altitude.*

** *ALTV is armed automatically under VPTH when the VNAV Target Altitude is to be captured instead of the Selected Altitude.*

Selecting Glidepath Mode:

1) Ensure an FMS approach with vertical guidance (LPV, LNAV/VNAV, LNAV+V) is loaded into the active flight plan. The active waypoint must be part of the flight plan (cannot be a direct-to waypoint not in the flight plan).
2) Ensure FMS is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources).
3) Press the **APR** 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).
3) Press the **APR** Key.

Or:

1) Ensure LOC is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources).
2) Ensure a LOC/ILS approach is loaded into the active flight plan.
3) Ensure the corresponding LOC frequency is tuned.
4) Press the **APR** Key.

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
Heading Select**	Captures and tracks the Selected Heading	**HDG** Key	HDG
Navigation, FMS**	Captures and tracks the selected navigation source (FMS, VOR, LOC) BC captures and tracks a localizer signal for backcourse approaches	**NAV** Key	FMS
Navigation, VOR Enroute Capture/Track**			VOR
Navigation, LOC Capture/Track (No Glideslope)			LOC
Backcourse			BC
Approach, FMS	Captures and tracks the selected navigation source (FMS, VOR, LOC)	**APR** Key	FMS
Approach, VOR Capture/Track			VAPP
Approach, LOC Capture/Track (Glideslope Mode automatically armed)			LOC
Low Bank*	Limits the maximum commanded roll angle	**BANK** Key	
Go Around	Commands a constant pitch angle and wings level	**GA** Button	GA

**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.*

The GFC 700 limits turn rate to three degrees per second (standard rate turn).

Selecting VOR Approach Mode:

1) Ensure a valid VOR frequency is tuned.
2) Ensure that VOR is the selected navigation source (use the **Active NAV** Softkey to cycle through navigation sources if necessary).
3) Press the **APR** Key.

When FMS Approach Mode is armed, Glidepath Mode is also armed.

Selecting FMS Approach Mode:

1) Ensure a FMS 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 **APR** Key.

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 **APR** Key.

Or:

1) Ensure that FMS is the selected navigation source (use the **CDI** Softkey to cycle through navigation sources if necessary).
2) Ensure a LOC/ILS approach is loaded into the active flight plan.
3) Ensure the corresponding LOC frequency is tuned.
4) Press the **APR** Key.

When LOC Approach Mode is armed, Glideslope Mode is also armed automatically. LOC captures are inhibited if the difference between aircraft heading and localizer course exceeds 105°.

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GPS NAVIGATION

DIRECT-TO NAVIGATION

1) From the **Home** Screen on the Touchscreen Controller, touch **Direct To** ⊕▸.
2) Touch the **Select Waypoint** button to display the keypad.
3) Enter the waypoint identifier.
4) Touch the **Enter** Button to accept the identifier, and return to the Direct To Screen.
5) Touch the **VNAV Altitude** Button to display the keypad.
6) Enter the desired VNAV altitude.
7) Touch the **Enter** Button to accept the altitude, and return to the Direct To Screen.
8) Touch the **VNAV Offset** Button to display the keypad.
9) Touch the **(Before) -** Button.
10) Enter the offset distance.
11) Touch the **Enter** Button to accept the offset distance, and return to the Direct To Screen.
12) Touch the **Activate** ⊕▸ Button to activate the direct-to.

Cancelling a Direct To:

1) From the **Home** Screen on the Touchscreen Controller, touch **Direct To**.
2) Touch the **Cancel** ⊕▸ Button.
3) Touch the **YES** Button in response to the question "Cancel ⊕▸ XXXXXX".

ACTIVATE A STORED FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **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.

ACTIVATE A FLIGHT PLAN LEG

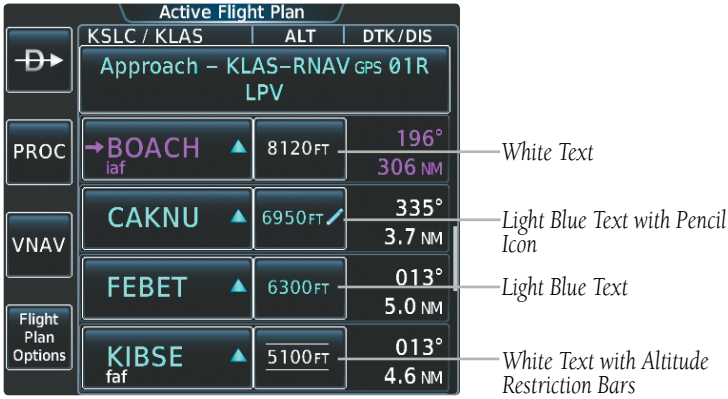
1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list, if necessary, and touch the waypoint selection button to select the destination waypoint for the desired leg. The Waypoint Options Window is displayed.
3) Touch the **Activate Leg to Waypoint** Button.
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.

STOP NAVIGATING A FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **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 active flight plan is deleted. To cancel the request, touch the **Cancel** Button.

VERTICAL NAVIGATION (VNAV)

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



Cross AT 11,000 ft

Cross AT or ABOVE 13,000 ft

Cross AT or BELOW 23,000 ft

Temperature Compensated Altitude

Unusable/Invalid Altitude

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

Altitudes associated with arrival procedures are "manually-designated". This means the system does not use the altitudes loaded with the arrival for giving vertical flight path guidance until designated to do so by the pilot. Note that these altitudes are initially displayed as white text. These altitudes may be "designated" by pressing the desired altitude on the Touchscreen Controller, and pressing the **Enter** Button. After designation, the text changes to light blue and displays the pencil icon.

Altitudes that have been designated for use in vertical navigation may also be made "non-designated". When non-designated, the altitude is displayed only as a reference. It will not be used to give vertical flight path guidance. Other displayed altitudes may change due to re-calculations or rendered invalid as a result of manually changing an altitude to a non-designated altitude.

White Text	Light Blue Text	Crossed-Out Text
Altitude calculated by the system estimating the altitude of the aircraft as it passes over the navigation point, or altitude retrieved from the navigation database. The altitude is provided as a reference and is not designated to be used in determining vertical speed and deviation guidance.	Altitude is designated for use in giving vertical speed and deviation guidance. Altitude does not match the published altitude in navigation database or no published altitude exists. The pencil icon indicates manual designation or manual data entry.	The system cannot use this altitude in determining vertical speed and deviation guidance because of an invalid constraint condition.

Deleting an altitude constraint provided by the navigation database:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list, if necessary, and touch a VNAV ALT button to display the VNAV Altitude Window.
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, indicating it is not used for vertical guidance. To cancel the request, touch the **Cancel** Button.

Designating the current waypoint altitude to be used for vertical guidance:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list, if necessary, and touch a VNAV ALT button to display the VNAV Altitude Window.
3) Touch the **Enter** Button to designate the current altitude to be used for vertical guidance. The altitude is now shown in blue, indicating it is usable for vertical guidance.

Selecting and designating a new waypoint altitude to be used for vertical guidance:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**
2) Scroll the list, if necessary, and touch a VNAV ALT button to display the VNAV Altitude Window.
3) If necessary, touch the **Flight Level** Button or the **MSL** Button to choose the altitude entry type.
4) Use the keypad to enter a new VNAV altitude and touch the **Enter** Button to designate the new altitude to be used for vertical guidance. The altitude is now shown in blue and displays the pencil icon, indicating it has been manually entered, and is usable for vertical guidance.

Deleting an altitude constraint that has been manually entered:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**
2) Scroll the list, if necessary, and touch a VNAV ALT button to display the VNAV Altitude Window.
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, 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) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**
2) Scroll the list, if necessary, and touch a VNAV ALT button to display the VNAV Altitude Window.
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 light blue, indicating it is usable for vertical guidance.

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FLIGHT PLANNING

WEIGHT AND FUEL PLANNING

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities > Weight and Fuel.**
2) If necessary, touch the **Operating Weight** Tab.
3) Touch the **Set Empty Weight** Button.
4) Use the keypad to input the Empty Weight.
5) Touch **Enter**
6) Touch the **Pilot(s) & Stores** weight input button.
7) Use the keypad to input the weights for the **Pilot(s) & Stores**.
8) **Press Enter**
9) Touch the **Payload** Tab
10) Touch the **Passengers** input button
11) Use the keypad to input the number of passengers for the flight.
12) Touch **Enter.**
13) Touch the Passenger Weight input button.
14) Use the keypad to input the average weight per passenger.
15) Touch **Enter.**
16) Touch the **Cargo** Weight input button.
17) Use the keypad to input the total cargo weight for the flight
19) Touch **Enter.**
20) Touch the **Fuel** Tab.
21) Touch the **Fuel on Board** input button to enter fuel manually, or touch the **FOB SYNC** Button to enter the weight computed by the fuel tank sensors.
22) Use the keypad to input the total **Fuel on Board**.
23) Touch **Enter.**
24) Touch the **Takeoff** Tab.
25) Touch the **Taxi Fuel** input button.
26) Use the keypad to input the amount of fuel that will be used during taxi.
27) Press **Enter.**

28) Touch the **Landing** Tab.

29) Touch the **Fuel Reserves** input button.

30) Use the keypad to input the **Fuel Reserves**.

31) Touch **Enter**.

TRIP PLANNING

The trip statistics are calculated based on the trip route selected and the trip planning inputs.

Trip Route Mode	Trip Route Button	Description
Stored Flight Plan - Cumulative Mode	Trip Route Stored Flight Plan – Cumulative KMKC → KCOS	Waypoints are the starting and ending waypoints of the selected flight plan.
Stored Flight Plan - Leg Mode	Trip Route Stored Flight Plan – Leg MCI → TIFTO	Waypoints are the endpoints of the selected leg.
Active Flight Plan - Remaining Mode	Trip Route Active Flight Plan – Remaining P.POS → KCOS	The 'from' waypoint is the present position of the aircraft or a selected waypoint, and the 'to' waypoint is the endpoint of the active flight plan.
Active Flight Plan - Leg Mode	Trip Route Active Flight Plan – Leg P.POS → TOP	The 'from' waypoint is the present position of the aircraft or a selected waypoint, and the 'to' waypoint is the endpoint of the selected leg.
Waypoint Mode	Trip Route MCI → TOP	Manually selected waypoints (if there is an active flight plan, these default to the endpoints of the active leg).

Selecting the Stored Flight Plan - Cumulative trip route mode:

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Trip Planning**.
2) Touch the **Trip Route** Button to display the Input Selection Window.
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 to display the Select Flight Plan Leg Screen.
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 the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Trip Planning**.
2) Touch the **Trip Route** Button to display the Input Selection Window.
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 to display the Select Flight Plan Leg Screen.
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 the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Trip Planning**.
2) Touch the **Trip Route** Button to display the Input Selection Window.
3) Touch the **Select from Flight Plan** Button to display the Select Flight Plan Screen.
4) Scroll the list, if necessary, and touch the active flight plan button to display the Select Flight Plan Leg Screen.
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 the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Trip Planning**.
2) Touch the **Trip Route** Button to display the Input Selection Window.
3) Touch the **Select from Flight Plan** Button to display the Select Flight Plan Screen.
4) Scroll the list, if necessary, and touch the active flight plan button to display the Select Flight Plan Leg Screen.
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 waypoints trip route mode:

1) From the **Home** Screen on the Touchscreen Controller, 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 to display the Select Starting and Ending Locations Window.
4) Touch the starting waypoint button to display the Select Starting Location Window.
5) 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 the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Trip Planning**.
2) Touch the **Manual Entry** Button to enable the manual entry data field buttons. Note, when the manual entry mode is selected, the other eight trip

input data fields must be entered by the pilot, in addition to flight plan and leg selection.

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.
5) Repeat steps 3 and 4 for each of the data fields.

CREATE A USER WAYPOINT

1) From the **Home** Screen on the Touchscreen Controller, 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 type and location of the waypoint in one of the following ways:
   - **a)** Touch the **Type** Button to display the User Waypoint Type Window.
   - **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 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 User Waypoint Type Window.
   - **b)** Touch the **RAD/RAD** Button to select the bearings from two waypoints type.
   - **c)** Touch a **REF** Button to display the keypad.
   - **d)** Use the keypad and the **Enter** Button, or the Find function, to select the waypoint.

e) Touch the corresponding **RAD** Button to display the keypad.

f) Use the keypad and the **Enter** Button to select the radial.

g) Repeat steps c – f for the other reference waypoint and radial.

Or:

a) Touch the **Type** Button to display the User Waypoint Type Window.

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.

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 gray, the waypoint is stored until manually erased.

7) Touch the **Create** Button to accept the new user waypoint.

CREATE A FLIGHT PLAN

Creating an active flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.

2) Touch the **Add Waypoint** Button to display the keypad.

3) Enter the identifier of the departure waypoint. The active flight plan is modified as each waypoint is entered.

Use the keypad and the **Enter** Button to select a waypoint Identifier.

Or:

a) Touch the **Find** Button to display the Find Waypoint Screen.

b) Touch the **Nearest**, **Recent**, **Flight Plan**, or **Favorites** Tab and select the waypoint from the list of waypoints.

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 necessary, 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) Type in the Facility or City Name using the keypad and then touch the **Enter** Button to accept the entry and display the search results.

f) Touch a waypoint selection button to choose the waypoint.

4) Repeat step numbers 2 and 3 to enter each additional flight plan waypoint.

Creating a stored flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan > Flight Plan Options**.

2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.

3) Touch the **Create New Catalog Flight Plan** Button to display the Edit Stored Flight Plan Screen.

4) Touch the **Add Waypoint** Button to display the keypad.

5) Select the identifier of the departure waypoint. The stored flight plan is modified as each waypoint is entered.

Use the keypad and the **Enter** Button to select a waypoint Identifier.

Or:

a) Touch the Find Button to display the Find Waypoint Screen.

b) Touch the **Nearest**, **Recent**, **Flight Plan**, or **Favorites** Tab and select the waypoint from the list of waypoints.

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 necessary, 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 and the **Enter** Button to accept the entry and display the search results.

f) Touch a waypoint selection button to choose the waypoint.

6) Repeat step numbers 4 and 5 to enter each additional flight plan waypoint.

IMPORT A FLIGHT PLAN FROM AN SD CARD

NOTE: *If the imported flight plan contains a waypoint with a name that duplicates the name of a waypoint already stored on the system, the system compares the coordinates of the imported waypoint with those of the existing waypoint. If the coordinates are different, the imported waypoint is automatically renamed by adding characters to the end of the name.*

1) Insert the SD card containing the flight plan in the top card slot on the MFD.
2) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
3) Touch the **Import Flight Plan** Button to display the Flight Plan Import Screen.
4) Touch a flight plan selection button to display the flight plan information and display the **Import** Button and the **Rename** Button.
5) Touch the **Rename** Button to rename the flight plan to be imported using the keypad or right knob, if necessary.
6) Touch the **Import** Button.
7) Touch the **Yes** Button in response to the "Overwrite active flight plan?" prompt. If overwriting the active flight plan is not desired, touch the **No** Button to return to the Flight Plan Import Screen.
8) Touch the **OK** Button to return to the Flight Plan Options Screen.

INSERT A WAYPOINT IN THE ACTIVE FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Touch on a waypoint to display the Waypoint Options Window.
3) 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.
4) Use the keypad, right knob, or the Find function to select the new waypoint.
5) Touch the **Enter** Button to accept the waypoint and place it in the flight plan.

ENTER AN AIRWAY IN AN ACTIVE FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list if necessary and touch a waypoint selection button to display the Waypoint Options Window.
3) Touch the **Load Airway** Button to display the Airway Selection Screen.
4) Scroll the list if necessary and touch an airway selection button to select the airway and display the Select Exit Window.
5) Scroll the list if necessary and touch an airway exit point selection button to select the airway exit point and display the Airway Waypoint Sequence.
6) Touch the **Load Airway** Button to insert the airway into the active flight plan.

ACTIVATING PARALLEL TRACK

1) From the **Home** Screen on the Touchscreen Controller, 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 offset 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.

USER-DEFINED HOLDING PATTERNS

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

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list, if necessary, touch the waypoint at which to define the holding pattern. The Waypoint Options Window is displayed.
3) Touch the **Hold at Waypoint** Button. The Hold at Waypoint Window is displayed.
4) Touch the **Turn** Button, choose between **Right** or **Left** turn direction.
5) Touch the Course Direction Button, and touch the **Inbound** Button or the **Outbound** Button to select the course direction.
6) Touch the Hold Entry Course Button to display the keypad. Use the keypad and the **Enter** Button to select the entry angle.

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.

10) Touch the **Create** Button to add the hold into the flight plan.

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

1) From **Home**, touch **Flight Plan > Flight Plan Options**

2) Touch the **Hold at P.POS** Button. The Hold at Waypoint Window is displayed.

3) Touch the Turn Direction Button, and touch the **Right** Button or the **Left** Button to select the turn direction.

4) Touch the Course Direction Button, and touch the **Inbound** Button or the **Outbound** Button to select the course direction.

5) Touch the Hold Entry Course Button to display the keypad. Use the keypad and the **Enter** Button to select the entry angle.

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.

9) Touch the **Create** Button to add the hold into the flight plan.

Removing a user-defined hold:

1) From **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 **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.

INVERT AN ACTIVE FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **Invert** Button
3) Touch the **Yes** Button in response to "Invert active flight plan?" The active flight plan is inverted. To cancel the request, touch the **No** Button.

STORE A FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **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?".

INSERT A WAYPOINT IN A STORED FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.
3) Touch a flight plan to display the Catalog Options Window.
4) Touch the **Edit** Button to display the Edit Stored Flight Plan Screen.
5) Touch a waypoint options button to display the Waypoint Options Window.
6) 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.
7) Use the keypad, right knob, or the Find function to select the new waypoint.
8) Touch the **Enter** Button to accept the waypoint and place it in the flight plan.

Or:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.
3) Touch a flight plan to display the Catalog Options Window.
4) Touch the **Edit** Button to display the Edit Stored Flight Plan Screen.

5) Scroll to the end of the list, if necessary to show the **Add Waypoint** Button.
6) Touch the **Add Waypoint** Button to display the keypad is displayed.
7) Use the keypad, right knob, or the Find function to select the new waypoint.
8) Touch the **Enter** Button to accept the waypoint and place it in the flight plan.

ENTER AN AIRWAY IN A STORED FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan > Flight Plan Options**.
2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.
3) Touch a flight plan selection button to display the Catalog Options Window.
4) Touch the **Edit** Button to display the Edit Stored Flight Plan Screen.
5) Scroll the list if necessary and touch on a waypoint to display the Waypoint Options Window.
6) Touch the **Load Airway** Button to display the Airway Selection Screen.
7) Scroll the list if necessary and touch an airway selection button to select the airway and display the Select Exit Window.
8) Scroll the list if necessary and touch an airway exit point selection button to select the airway exit point and display the Airway Waypoint Sequence.
9) Touch the **Load Airway** Button to insert the airway into the stored flight plan.

REMOVING FLIGHT PLAN ITEMS

Some waypoints in the final approach segment (such as the FAF or MAP) can not be removed individually. Attempting to remove a waypoint that is not allowed results in a window displaying 'Invalid flight plan modification.'

Removing a waypoint from the active flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list if necessary and touch on a waypoint to display the Waypoint Options Window.
3) Touch the **Remove Waypoint** Button.
4) Touch the **Yes** Button in response to "Remove <waypoint name>?" The waypoint is removed. To cancel the request, touch the **No** Button.

Removing an airway from the active flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list if necessary and touch on the desired airway to display the Airway Options Window.
3) Touch the **Remove Airway** Button.
4) Touch the **Yes** Button in response to "Remove Airway -<airway name> from flight plan?" The airway is removed. To cancel the request, touch the **No** Button.

Removing a procedure from the active flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan**.
2) Scroll the list if necessary and touch a departure, arrival, or approach selection button to display the Departure, Arrival, or Approach Options Window.
3) Touch the **Remove Departure** Button, the **Remove Arrival** Button, or the **Remove Approach** Button.
4) Touch the **Yes** Button in response to "Remove <procedure> -<procedure name> from flight plan?" The procedure is removed (the departure airport remains when removing a departure). To cancel, touch the **No** Button.

Removing a waypoint from a stored flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.
3) Scroll the list if necessary and touch on a flight plan to display the Catalog Options Window.
4) Touch the **Edit** Button.
5) Scroll the list if necessary and touch on a waypoint to display the Waypoint Options Window.
6) Touch the **Remove Waypoint** Button.
7) Touch the **Yes** Button in response to "Remove <waypoint name>?" The waypoint is removed. To cancel the request, touch the **No** Button.

Removing an airway from a stored flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.
3) Scroll the list if necessary and touch on a flight plan to display the Catalog Options Window.
4) Touch the **Edit** Button.
5) Scroll the list if necessary and touch on an airway to display the Airway Options Window.
6) Touch the **Remove Airway** Button.
7) Touch the **Yes** Button in response to "Remove <airway name>?" The airway is removed, but the starting and ending waypoints remain in the flight plan. To cancel the request, touch the **No** Button.

Removing a procedure from a stored flight plan:

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.
3) Scroll the list if necessary and touch on a flight plan to display the Catalog Options Window.
4) Touch the **Edit** Button.
5) Scroll the list if necessary and touch a departure, arrival, or approach selection button to display the Departure, Arrival, or Approach Options Window.
6) Touch the **Remove Departure** Button, the **Remove Arrival** Button, or the **Remove Approach** Button.
7) Touch the **Yes** Button in response to "Remove <procedure> -<procedure name> from flight plan?" The procedure is removed (the departure airport remains when removing a departure). To cancel the request, touch the **No** Button.

INVERT AND ACTIVATE A STORED FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **Catalog** Button to display the Flight Plan Catalog Screen.
3) Scroll the list if necessary and touch on a flight plan 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 and becomes the active flight plan. The stored flight plan is not modified. To cancel the request, touch the **Cancel** Button.

COPY A STORED FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **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.

DELETE A STORED FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch **Flight Plan** > **Flight Plan Options**.
2) Touch the **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.

EXPORT A FLIGHT PLAN TO AN SD CARD

NOTE: The exported flight plan will not contain any procedures or airways.

Exporting the Active 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 the **Home** Screen on the Touchscreen Controller, touch **Flight Plan > Flight Plan Options**.
3) Touch the **Export Flight Plan** Button to display the Flight Plan Export Screen.
4) Touch the **File Name:** Button to rename the exported flight plan using the keypad or right knob, if necessary.
5) Touch the **Export** Button.
6) Touch the **OK** Button in response to the "Flight Plan Successfully Exported." prompt to return to the Flight Plan Options 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 **Home**, touch **Flight Plan > Flight Plan Options**
3) Touch the **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 knob, 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 Screen.

PROCEDURES

LOAD AND ACTIVATE A DEPARTURE PROCEDURE

1) From the **Home** Screen on the Touchscreen Controller, touch the **PROC** Button.
2) Touch the **Departure** Button to display the Departure Selection Screen.
3) If necessary, touch the **Airport** Button to display the keypad and use it to select the departure airport.
4) Touch the **Enter** Button to accept the departure airport.
5) If necessary, touch the **Departure** Button to display the Select Departure Screen with a list of available departures.
6) Scroll the list if necessary and touch a departure selection button to select the departure.
7) If necessary, touch the **Transition** Button to display the Select Transition Screen with a list of available transitions.
8) Scroll the list if necessary and touch a transition selection button to select the transition.
9) If necessary, touch the **Runway** Button to display the Select Runway Screen with a list of available runways.
10) Scroll the list if necessary and touch a runway selection button to select the runway and return to the Departure Selection Screen.
11) Touch the **Load** Button to insert the departure into the active flight plan.

LOAD AN ARRIVAL PROCEDURE

1) From the **Home** Screen on the Touchscreen Controller, touch the **PROC** Button.
2) Touch the **Arrival** Button to display the Arrival Selection Screen.
3) If necessary, touch the **Airport** Button to display the keypad and use it to input the arrival airport.
4) Touch the **Enter** Button to accept the arrival airport.
5) If necessary, touch the **Arrival** Button to display the Select Arrival Screen with a list of available arrivals.
6) Scroll the list if necessary and touch an arrival selection button to select the arrival.

7) If necessary, touch the **Transition** Button to display the Select Transition Screen with a list of available transitions.

8) Scroll the list if necessary and touch a transition selection button to select the transition.

9) If necessary, touch the **Runway** Button to display the Select Runway Screen with a list of available runways.

10) Scroll the list if necessary and touch a runway selection button to select the runway and return to the Arrival Selection Screen.

11) Touch the **Load** Button to insert the arrival into the active flight plan.

LOAD AND/OR ACTIVATE AN APPROACH PROCEDURE

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

1) From the **Home** Screen on the Touchscreen Controller, touch the **PROC** Button.

2) Touch the **Approach** Button to display the Approach Selection Screen.

3) If necessary, touch the **Airport** Button to display the keypad and use it to select the approach airport.

4) Touch the **Enter** Button to accept the approach airport.

5) If necessary, touch the **Approach** Button to display the Select Approach Screen with a list of available approaches.

6) Scroll the list if necessary and touch an arrival selection button to select the arrival.

7) If necessary, touch the **Transition** Button to display the Select Transition Screen with a list of available transitions.

8) Scroll the list if necessary and touch a transition selection button to select the transition.

9) If necessary, touch the **Minimums** Button to display the Minimums Screen.

10) Touch the Minimums Button to display the Minimums Source Screen. Touch **BARO, Temp Comp** or **Radio Alt** (**OFF** is selected by default).

11) Use the keypad to enter the desired altitude from zero to 16,000. If **Temp Comp** is selected, use the keypad to input the landing airport temperature.
12) Touch the **Load** Button to insert the approach into the active flight plan.

NOTE: *When GPS is not approved for the selected final approach course, the message 'NOT APPROVED FOR GPS' is displayed. GPS provides guidance to the approach, but the HSI must to be switched to a NAV receiver to fly the final course of the approach.*

ACTIVATE AN APPROACH IN THE ACTIVE FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch the **PROC** Button.
2) Touch the **Activate Approach** Button to activate the approach.

ACTIVATE A VECTOR TO FINAL APPROACH FIX

1) From the **Home** Screen on the Touchscreen Controller, touch the **PROC** Button.
2) Touch the **Activate Vectors To Final** Button to activate vectors to final.

ACTIVATE A MISSED APPROACH IN THE ACTIVE FLIGHT PLAN

1) From the **Home** Screen on the Touchscreen Controller, touch the **PROC** Button.
2) Touch the **Activate Missed Approach** Button. The approach automatically sequences to the MAHP.

   Or:

   Press the Go-Around Button.

TEMPERATURE COMPENSATED ALTITUDE

A temperature compensated altitude can be computed and used at the FAF of a loaded approach. A temperature compensated altitude is displayed with an icon.

Enabling temperature compensated altitude:

1) From **Home**, touch **Flight Plan > Flight Plan Options.**
2) Touch the **Temp Compensation** Button to display the Temp Compensation Screen.
3) Touch the **Temp Compensation** Annunciator Button to enable/disable temperature compensation.
4) Touch the **<airport> Temp** Button to display the numeric keypad. Use the keypad and the **Enter** Button to select the temperature at the <airport>. The compensated altitude is computed and shown in the flight plan.

HAZARD AVOIDANCE

CUSTOMIZING THE HAZARD DISPLAYS ON THE NAVIGATION MAP

Setting up and customizing the Weather Products on Map Displays:

1) From the **Home** Screen on the Touchscreen Controller, touch **Map > 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.

Selecting a terrain display range on the navigation map:

1) From the **Home** Screen on the Touchscreen Controller, touch **Map** > **Map Settings**.
2) If necessary, touch the **Sensor** Tab.
3) Touch the **Relative Terrain** Button to enable/disable the Relative Terrain. Relative Terrain is enabled when the button annunciator is green, disabled when gray.
4) Touch the **Settings** Button to display the Relative Terrain Settings. Then touch the **Map Settings** button to display the Map Terrain Range Setting.
5) Touch on the **Terrain** Button, scroll though the list and touch a range button to select the maximum map range at which the system shows terrain data.

Selecting an obstacle display range on the navigation map:

1) From the **Home** Screen on the Touchscreen Controller, touch **Map > Map Settings.**
2) If necessary, touch the **Land** Tab.
3) Touch the **Obstacle Data** Button to enable/disable the Obstacle Data. Obstable Data is enabled when the button annunciator is green, disabled when gray.
4) Touch the current range button (10 NM is selected by default) to display the Map Obstacle Range.
5) Scroll through the list and touch a range button to select the maximum map range at which the system shows obstacle data.

Customizing the traffic display on the navigation map:

1) From the **Home** Screen on the Touchscreen Controller, touch **Map > Map Settings.**
2) If necessary, touch the **Sensor** Tab.
3) Touch the **Traffic** Button to enable/disable the display of traffic. Traffic is enabled when the button annunciator is green, disabled when gray.
4) Touch the Traffic Settings Button to select which traffic symbols are to be shown:
   - **TA/RA** Button - Displays Traffic Advisories and Resolution Advisories
   - **TA Only** Button - Displays only Traffic Advisories.
   - **Standby** Button **-** No traffic is displayed on the navigation map.
4) Touch the **Map Settings** Button to display the **Symbols** range button and scroll to select the maximum map range at which traffic symbols are shown.
5) Touch the **Traffic Labels** Button to enable/disable the display of traffic labels. Traffic labels are enabled when the button annunciator is green, disabled when gray.
6) Touch the Traffic Label range button and scroll to select the maximum map range at which traffic labels are shown.

SIRIUSXM WEATHER (OPTIONAL)

WARNING: *Use of SiriusXM Weather for hazardous weather penetration is not recommended. Weather information provided by SiriusXM Satellite Radio is approved only for weather avoidance, not penetration.*

Displaying SiriusXM Weather on the navigation map:

1) From the **Home** Screen on the Touchscreen Controller, touch **Map > Map Settings**.
2) If necessary, touch the **Sensor** Tab.
3) Touch the desired weather product button to enable or disable weather product data.
4) Touch the weather product Data Range Button to display the map range window.
5) Scroll though the list and touch a range button to select the maximum map range at which the system shows data for the selected weather product.

Displaying SiriusXM Weather data on the Weather Data Link Display:

1) From the **Home** Screen on the Touchscreen Controller, touch **Weather** > **Weather Selection > SiriusXM Settings.**
2) Touch the appropriate Background or Overlay Button. The button annunciator is green when the weather product is enabled, gray when disabled.
3) Display ranges can be set for weather products that are overlays. Touch the weather product Data Range Button to display the map range window.
4) Scroll though the list and touch a range button to select the maximum map range at which the system shows data for the selected weather product.

SiriusXM Weather Products and Symbols

Weather Product	Symbol	Expiration Time (Minutes)	Broadcast Interval (Minutes)
Next-generation Radar (NEXRAD)		30	5 (U.S.) 10 (Canada)
Cloud Top		60	15
Echo Top		30	7.5
XM Lightning		30	5
Cell Movement		30	12
AIRMETs	AIRMET	60	12
SIGMETs	SIGMET	60	12
Meteorological Aerodrome Report (METARS)		90	12
City Forecast		60	12
Surface Analysis		60	12
Freezing Levels		60	12
Winds Aloft		60	12
County Warnings		60	5
Cyclone Warnings		60	12
Icing Potential (CIP and SLD)		90	22

Weather Product	Symbol	Expiration Time (Minutes)	Broadcast Interval (Minutes)
Pilot Weather Report (PIREPs)		90	12
Air Report (AIREPs)		90	12
Turbulence		180	12
Radar Coverage	no product image	30	5
Temporary Flight Restrictions	no product image	60	12
Terminal Aerodrome Reports	no product image	60	12

GARMIN CONNEXT WEATHER (OPTIONAL)

NOTE: *Worldwide Weather from Garmin Flight Data Services (GFDS) provides information for avoiding hazardous weather. Do not use Worldwide Weather information to penetrate hazardous weather.*

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

Registering the system to receive Connext Weather:

1) Ensure the aircraft is outside and has a clear view of the sky.
2) From Home, touch **Utilities** > **Setup** > **GFDS Registration**. If the Registration Information window indicates 'NOT REGISTERED', continue with this procedure.
3) Touch the **Register** Button.

4) Using the Touchscreen Controller Screen or Large and Small Right Knobs, enter the access code provided by Garmin Flight Data Services.

5) Touch the **Enter** button or press the Right Knob. The system will contact Garmin Flight Data Services. 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.

Viewing the Connext Weather Pane:

1) From Home, touch the **Weather** Button. The button is highlighted and becomes the **Weather Selection** Button. The MFD shows a weather display. If a weather display other than 'Connext Weather' is shown (such as SiriusXM or Weather Radar), continue with the procedure to change the selected weather data source.

2) Touch the **Weather Selection** Button.

3) Touch the **Connext Weather** Button. Button is highlighted and becomes **Connext Settings** Button. MFD shows Connext Weather Display.

Defining Weather Data Request Coverage Area:

1) From Home, touch **Weather > Weather Selection > Connext Weather > Connext 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 popup window.

4) To include/remove the present position in the weather data request, touch the **P. POS** Button to enable/disable.

5) To include/remove any portion of the flight plan route in the weather data request, touch the **Flight Plan** Button.

6) To change distance of the flight plan to be used in the weather 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.)

7) 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) Using the Touchscreen Controller buttons or knobs, enter the desired waypoint to include in the weather data request. Note the waypoint may be off-route.

Issuing/Cancelling an Immediate Weather Data Request:.

1) From Home, touch **Weather** > **Weather Selection** > **Connext Weather** > **Connext Settings**.
2) Touch the **Send Immediate Request** Button. The system contacts Garmin Flight Data Services and displays the status in the Data Request Window. System displays 'Completed' when finished.
3) If desired, touch the **Cancel Immediate Reques**t Button while a request is occurring. Data Request window will display 'Cancelled'.

Enabling/disabling automatic GFDS Data Requests:

1) From Home, touch **Weather** > **Weather Selection** > **Connext Weather** > **Connext Settings**.
2) Touch the **Auto Request** Button.
3) From the pop-up window, touch an Auto Update Request Rate Button to select the desired weather request update interval (5 Min, 10 Min, 15 Min, 20 Min, 25 Min, 30 Min, 45 Min, or 60 Min) or touch the **Off** Button to disable automatic weather data requests..

Displaying Connext information (navigation map displays)

1) From Home, Touch **Map** > **Map Settings**.
2) If necessary touch the **Sensor** Tab
3) Scroll as needed and touch the desired weather product button in the Overlays window. The weather product is enabled when annunciator on the button is green, disabled when annunciator is gray.

Displaying Connext information (Connext Weather Display)

1) From Home, touch **Weather > Weather Selection > Connext Weather > Connext Settings.**
2) Find the desired weather product button in the Overlays window. The weather product is enabled when annunciator on the button is green, disabled when annunciator is gray.

GFDS Connext Weather Status Messages

If the system cannot complete a weather data request, one or more messages will appear in the request status window.

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

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

AIRBORNE COLOR WEATHER RADAR

When evaluating various target returns on the weather radar display, the colors denote precipitation intensity and rates shown in the table.

Weather Mode Color	Intensity (in dBz)	Approximate Precipitation Rate (in/hr.)
Black	< 23 dBZ	< .01.
Green	23 dBZ to < 33 dBZ	.01 - 0.1.
Yellow	33 dBZ to < 41 dBZ	0.1 - 0.5
Red	41 dBZ and greater	greater than 0.5

Showing Weather Radar Data on the Weather Radar Display:

1) From 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 Mode** Button.
4) Touch the **Weathe**r Button. If the aircraft is airborne, the radar begins transmitting.
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.
6) Turn the **Joystick** 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:

NOTE: *Vertical scanning of a storm cell should be done with the aircraft wings level to avoid constant adjustment of the Bearing Line.*

1) From 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 Display.

3) Press the **Joystick**. This enables the **Joystick** to set the Bearing Line position and displays a bearing and tilt **Joystick** legend.
4) Push the **Joystick** left or right to place the Bearing Line on the desired storm cell or other area to be vertically scanned. When finished, press the **Joystick** again to disable the bearing line adjustment **Joystick** function.
5) Touch the **Scan** Button.
6) Touch the **Vertical** Button. The Weather Radar display shows a vertical scan.
7) Push the **Joystick** left or right as needed to move the bearing line a few degrees left or right.
8) Turn the **Joystick** to adjust the range as needed.
9) To select a new area to be vertically scanned, return to the Horizontal scan mode.
    a) Touch the **Scan** Button.
    b) Touch the **Horizontal** Button.
    c) Return to Step 2 of this procedure.

Adjusting antenna tilt on the Weather Radar Display in Horizontal Scan Mode:

1) Push the **Joystick** to activate the tilt adjustment function of the **Joystick**. The Weather Radar displays a bearing and tilt **Joystick** legend.
2) Use the Joystick to adjust the antenna tilt angle.
3) Press the **Joystick** again to disable the tilt adjustment function of the **Joystick** and remove the legend.

Enabling/Disabling Altitude Compensated Tilt (ACT):

1) From Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings.**
2) Touch the **Altitude Comp Tilt** Button. Feature is enabled when button annunciator is green, disabled when gray.

Adjusting antenna tilt on the Weather Radar Display in Vertical Scan Mode:

1) While in Vertical Scan Mode, press the **Joystick** to enable the tilt adjustment function of the **Joystick** and display the Tilt Line on the Weather Radar Display.
2) Use the **Joystick** to adjust the tilt angle.
3) Press the **Joystick** to disable the tilt adjustment function of the **Joystick**.

The selected tilt angle will apply when Horizontal Scan Mode is enabled again.

Adjusting gain:

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

1) From 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.

Selecting Sector Scan:

1) From 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 display/.
3) Press the **Joystick** to enable bearing pointer adjustment.

4) Move the **Joystick** left or right to place the Bearing Line in the desired position. The location of the Bearing Line becomes 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˚ degree scan.

7) If desired, readjust the Bearing Line as discussed previously to change the center of the Sector Scan.

8) Press the **Joystick** again to remove the bearing selection function of the Joystick. The bearing reference is reset to 0º.

Enabling/Disabling antenna stabilization:

1) From Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.

2) To enable or disable the antenna stabilization, touch the **Stabilizer** Button. Antenna stabilization is enabled when button annunciator is green; stabilization is disabled when button annunciator is gray. The system indicates the current stabilization condition in the upper right of the Weather Radar Display.

Enabling/Disabling Turbulence Detection (optional) during a Horizontal Scan:

1) From Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.

2) To enable or disable 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 condition in the upper right of the Weather Radar Display.

Enabling/Disabling WATCH display feature:

1) From Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.

2) To enable or disable the WATCH feature, touch the **WX Watch** Button. WATCH is enabled when button annunciator is green; WATCH is disabled when button annunciator is gray.

Enabling/Disabling Weather Alert:

1) From Home, touch **Weather > Weather Selection > WX RADAR > WX RADAR Settings**.
2) To enable or disable the Weather Alert feature, touch the **WX Alert Button**. Alert is enabled when button annunciator is green; alert is disabled when annunciator is gray.

Enabling/Disabling Ground Clutter Suppression (optional):

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

Ground Mapping

When the weather radar system is in either the Weather or Ground Map mode, the system automatically switches to Standby mode upon landing.

Ground Map Mode Color	Intensity
Black	0 dB
Light blue	> 0 dB to < 13 dB
Yellow	at least 13 dB to less than 21 dB
Magenta	at least 21 dB to less than 29 dB
Blue	29 dB and greater

Operation in Ground Map Mode:

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

TERRAIN AWARENESS & WARNING SYSTEM (TAWS-A) DISPLAY

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

Displaying terrain on the TAWS-A Pane:

From the **Home** Screen on the Touchscreen Controller, touch **TAWS-A**.

Color	Terrain/Obstacle Location
Red	Terrain/Obstacle above or within 100′ below current aircraft altitude.
Yellow	Terrain/Obstacle between 100′ and 1000′ below current aircraft altitude.
Black	Terrain/Obstacle is more than 1000′ below aircraft altitude.

Manually testing the TAWS-A System:

1) From Home, touch **TAWS-A** > **TAWS-A Settings**.
2) Touch the **Test TAWS** Button.

Or:

1) From Home, touch **Aircraft Systems** > **System Selection** > **System Tests**.
2) Touch the TAWS Test **Active** Button.

Inhibiting/Enabling FLTA and PDA Alerting:

1) From Home, touch **TAWS-A** > **TAWS-A Settings**.
2) Touch the **TAWS Inhibit** Button. When the annunciator on the button is green, alerting is inhibited. When the button annunciator is gray, alerting is enabled.

Or:

1) From Home, touch **Map** > **Map Settings**.
2) If necessary, touch the **Sensor** Tab.
3) Scroll as needed to view the Relative Terrain Data **Settings** Button.
4) Touch the Terrain Data **Settings** Button to display the TAWS-A Settings pop-up window.

5) Touch the **TAWS Inhibit** Button. When the annunciator on the button is green, alerting is inhibited. When the annunciator is gray, alerting is enabled.

Inhibiting/Enabling GPWS Alerting:

1) From Home, touch **TAWS-A** > **TAWS-A Settings**.
2) Touch the **GPWS Inhibit** Button. When the annunciator on the button is green, alerting is inhibited. When the button annunciator is gray, alerting is enabled.

Or:

1) From Home, touch **Map > Map Settings**.
2) If necessary, touch the **Sensor** Tab.
2) Scroll as needed to view the Relative Terrain Data **Settings** Button.
3) Touch the Relative Terrain Data **Settings** Button to display the TAWS-A Settings pop-up window.
4) Touch the **GPWS Inhibit** Button. When the annunciator on the button is green, alerting is inhibited. When the annunciator is gray, alerting is enabled.

Enable/Disable Aviation Data:

1) From Home, touch **TAWS-A** > **TAWS-A Settings**.
2) Touch the **Show Aviation Data** Button. When the annunciator on the button is green, aviation data is displayed on the TAWS-A Display. When the button annunciator is gray, aviation data is not displayed.

Overriding Flaps-based FIT Alerting:

1) From Home, touch **TAWS-A** > **TAWS-A Settings**.
2) Touch the **Flap Override** Button. When the annunciator on the button is green, flap override is enabled. When the button annunciator is gray, flap override is disabled.

Or:

1) From Home, touch **Map** > **Map Settings**.
2) If necessary touch the **Sensor** Tab. Scroll as needed to view the Relative Terrain **Settings** Button.
3) Touch the Terrain Data **Settings** Button to display the TAWS-A Settings pop-up window.
4) Touch the **Flap Override** Button. When the annunciator on the button is green, flap override is enabled. When the button annunciator is gray, flap override is disabled.

Inhibiting/Enabling GSD Alerting

NOTE: *GSD alerting may only be inhibited while a GSD alert is occurring*

On the PFD, press the **GS INH** or **GP INH** Softkey (only displayed during a GSD alert) to inhibit or enable GSD alerts (softkey choice dependent on present GSD alert type).

TCAS II TRAFFIC

The Garmin GTS 8000 is a Traffic Alert and Collision Avoidance System II (TCAS II) device. It monitors the airspace and detects the presence of other aircraft equipped with operating Mode A, C, and S transponders. It also provides traffic advisory (TA) and resolution advisory (RA) alerts to the flight crew. The system displays traffic information using the symbology shown below.

Traffic Symbol	Traffic Threat	Description
	Non-Threat Traffic	Indicates the intruder aircraft is beyond 5 nm and greater than ±1200 ft. relative altitude.
	Proximity Advisory (PA)	Indicates the intruder aircraft is within a 6 nm range and within ±1200 ft., but is still not a threat.
	Traffic Advisory (TA):	Indicates the intruding aircraft is a potential collision hazard.
	Traffic Advisory Off Scale	Indicates the intruding aircraft meets the TA criteria, but is out of the selected traffic map display range.
	Resolution Advisory (RA)	Alerts the crew that an intruding aircraft is a collision hazard. RA's include vertical guidance maneuvers
	Resolution Advisory Off Scale	Indicates an RA that is beyond the selected traffic map display range.

TCAS II Traffic Symbol Description

Testing the Traffic System

1) From Home, touch **Map > Map Settings.**
2) If necessary, touch the **Sensor** tab.
3) Touch the Traffic **Settings** Button.
4) Touch the **Test** Button. If system test is successful, the system provides the aural announcement "TCAS System Passed", and the traffic system returns to the previously selected mode.

Selecting an Operating Mode

1) From Home, touch **Traffic > Traffic Settings**
2) In the Operating Mode window, touch one of the following buttons
   - **TA/RA:** Display traffic information and issues RA vertical guidance when applicable to resolve traffic conflicts.
   - **TA Only:** Displays traffic information without Resolution Advisory vertical guidance. RA traffic will be classified and displayed as TA traffic in this mode.
   - **Standby:** Traffic system enters Standby Mode and does not interrogate or display traffic

Changing the altitude range

1) From Home, touch **Traffic > Traffic Settings.**
2) Touch one of the following Altitude Range Buttons
   - **Unrestricted:** All traffic is displayed from 9900 feet above and 9900 feet below the aircraft.
   - **Above:** Displays non-threat and proximity traffic from 9000 feet above the aircraft to 2700 feet below the aircraft. Typically used during climb phase of flight.
   - **Normal:** Displays non-threat and proximity traffic from 2700 feet above the aircraft to 2700 feet below the aircraft. Typically used during enroute phase of flight
   - **Below**: Displays non-threat and proximity traffic from 2700 feet above the aircraft to 9000 feet below the aircraft. Typically used during descent phase of flight.

Changing the display of Intruding Traffic Altitude

1) From Home, touch **Traffic > Traffic Settings**
2) Touch the **Relative** Button to display the altitude of intruding aircraft relative to own aircraft altitude, or touch the Absolute Button to display the absolute altitude of intruding aircraft.

Enabling/disabling display of traffic information on the Navigation Map Pane:

1) From Home, touch **Map > Map Settings.**
2) If necessary, touch the Sensor Tab.
3) Touch the **Traffic** Button to enable/disable overlay of traffic information.

Displaying the Traffic Inset Map on the PFD

Press the **Traffic Inset** Softkey to show or hide the PFD Traffic Inset Map.

Enabling/disabling display of traffic information on the PFD Inset Navigation Map

1) Press the **Inset Map Settings** Softkey.
2) Press the Traffic Softkey to enable/disable the display of traffic information.

Customizing the display of traffic on the Navigation Map Panes

1) From Home, touch **Map > Map Settings**.
2) If necessary, touch the Sensor Tab.
3) Touch the Traffic **Settings** Button.
4) Touch the **Map Settings** Button.
5) 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 at w
6) Touch the **Labels** Annunciator Button to enable/disable the display of labels on traffic (such as altitude).
7) To change the map range at which the system removes traffic labels from the display, 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** or **Home** Button.

ADDITIONAL FEATURES

TERMINAL PROCEDURE CHARTS

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

SafeTaxi®

SafeTaxi is an enhanced feature that gives greater map detail when viewing airports at close range on the Navigation Map or the Inset Map on the PFD. 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.

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.

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

Enabling/Disabling SafeTaxi:

1) From the **Home** Screen, 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 the **Home** Screen, 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 is displayed.
5) Touch the desired range. With this setting, SafeTaxi will be displayed on the Navigation Map for range settings up to, and including 5 nm.

ChartView (Optional)

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

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

Selecting Charts using the Charts Screen:

1) From the **Home** Screen on the Touchscreen Controller, touch **Charts**.
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.
   - **Departure** Tab to display a list of possible departures for the selected airport.
   - **Arrival** Tab to display a list of possible arrivals for the selected airport.
   - **Approach** Tab to display a list of possible approaches for the selected airport.
4) Touch the desired information/procedure name button in any of these lists to display the applicable chart on the MFD.
5) Touch the **Charts Options** Button to select the desired display option for the selected chart.
6) Touch **All** to display the complete chart. The ChartView option also offers **Plan, Minimums, Profile,** and **Header** display options**.** Only appropriate views are available for the selected chart.

   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 heading.

7) Touch **Back** to return to the Charts Screen.

FliteCharts®

FliteCharts® resemble the paper version of AeroNav Services terminal procedures charts. The charts are displayed with high-resolution and in color for applicable charts. Current aircraft position is not displayed on FliteCharts.

The FliteCharts database contains procedure charts for the United States only. This database is updated on a 28-day cycle. If not updated within 180 days of the expiration date, FliteCharts will no longer function.

Selecting Charts using the Charts Screen:

1) From the **Home** Screen on the Touchscreen Controller, touch **Charts**.
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.
   - **Departure** Tab to display a list of possible departures for the selected airport.
   - **Arrival** Tab to display a list of possible arrivals for the selected airport.
   - **Approach** Tab to display a list of possible approaches for the selected airport.
4) Touch the desired information/procedure name button in any of these lists to display the applicable chart on the MFD.
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 **Back** to return to the Charts Screen.

Selecting Day, Night, or Auto View:

1) From the **Home** Screen on the Touchscreen Controller, touch **Charts** > **Charts Options**.
2) Touch the **Light Mode** Button.
3) Touch the **Day**, **Night**, or **Auto** button. The selection is annunciated on the **Light Mode** Button. When **Auto** is selected, the display will change to the appropriate day or night setting, dependent on ambient lighting and threshold setting.

AIRPORT DIRECTORY

The Aircraft Owners and Pilots Association (AOPA) and AC-U-KWIK Airport Directory databases offer detailed information regarding services, hours of operation, lodging options, and more for various airports. This information is viewed on the Airport Directory Info Screen.

The Airport Directory databases are revised every 56 days. The Airport Directory is always available for use after the expiration date.

Selecting the Airport Directory Info Screen:

1) From the **Home** Screen, touch **Nearest** > **Airports**.
2) A list of the nearest airports to the aircraft present position is displayed, beginning with the closest. Touch the desired airport. The **Waypoint Options** buttons are displayed.
3) Touch the **Airport Info** Button to display the Airport Directory Info Screen.
4) Touch the **AOPA** Tab to display the Airport Directory information for the selected airport.

SATELLITE TELEPHONE AND DATALINK SERVICES

Contacts

Creating a new contact:

1) From the **Home** Screen, touch **Services** > **Contacts**.
2) The Contacts Screen is displayed.
3) Touch **New Contact...** at the top of the list.
4) Touch **Name**. The Contact Name entry screen is displayed.
5) Enter the name of the new contact.

6) Touch **Enter**.
7) Touch **Telephone Number**. The Telephone Number entry screen is displayed.
8) Enter the telephone number of the new contact.
9) Touch **Enter**.
10) Touch **Email Address**. The Email Address entry screen is displayed.
11) Enter the email address of the new contact.
12) Touch **Enter**.
13) Touch **Create**. The new contact is created and appears in the list of contacts.

Enable/Disable the Iridium System Connection

1) From the **Home** Screen, touch **Services** > **Telephone**.
2) Touch the **Iridium #1** Button to display the Iridium #1 Transceiver Screen.
3) Touch the **Disable Iridium Transmission** Annunciator Button to disable (green annunciator) the transceiver. Touch the button again to enable (gray annunciator) the transceiver.

Answer Incoming Calls

1) Touch the flashing **TEL** Button. The Notifications Screen is displayed.
2) Touch the **Answer** Button. The call is now connected. Touching the **Ignore** Button extinguishes the new call annunciation and the call remains disconnected. Touching **Telephone** will display the Telephone Screen.
3) When the call is finished, touch **End Call** to disconnect the call.

Outgoing Calls from the Cockpit

Calls are made from the cabin are made using the cabin handset.

1) From the **Home** Screen, touch **Services** > **Telephone**.
2) Touch the **Cockpit** Phone Button. The Cockpit Phone Screen is displayed.
3) Touch **Dial**. The phone number entry screen is displayed.
5) Using the number keys, enter the phone number. Touch **Find** 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.

Satellite System	Country Code
Inmarsat	870
ICO	8810 or 8811
Ellipso	8812 or 8813
Iridium	8816 or 8817
Globalstar	8818 or 8819

6) Touch **Enter**. The system now begins establishing a connection. The system will indicate a completed connection when the telephone to which the call is made is answered.
7) When the call is finished, touch **End Call** to disconnect the call.

Making a Call to the Cabin

1) From the **Home** Screen, touch **Services** > **Telephone**.
2) Touch the **Cockpit** Phone Button. The Cockpit Phone Screen is displayed.
3) Touch **Call Cabin**.
4) When the cabin phone is answered, the connection is indicated on the Telephone Screen.

Placing The Cockpit Phone on Hold

The cabin phone cannot be placed on hold using the Touchscreen Controller, however, the cabin handset may used to place a cabin call on hold.

1) From the **Home** Screen, touch **Services** > **Telephone**.
2) Touch the **Cockpit** Phone Button. The Cockpit Phone Screen is displayed.
3) Touch **Hold**. The Telephone Screen indicates the call is on hold.
4) Touch **Hold** again to return to the call.

Transferring a Call from the Cockpit

1) From the **Home** Screen, touch **Services** > **Telephone**.
2) Touch the **Cockpit** Phone Button. The Cockpit Phone Screen is displayed.
3) Touch the **Transfer to Cabin** or **Transfer to Iridium** Button. When the cockpit phone is connected to an external call, the **Transfer to Cabin** Button is displayed. When the cockpit phone is connected to the cabin phone, the **Transfer to Iridium** Button is displayed.
4) When the cabin or external phone is answered, the transfer is completed.

Making a Conference Call from the Cockpit

1) From the **Home** Screen, touch **Services** > **Telephone**.
2) Touch the **Cockpit** Phone Button. In this example, the cabin phone is conferenced in with an external call connected to the cockpit phone. The **Cockpit** Button is touched, displaying the Cockpit Phone Screen.
3) Touch the **Conference with Cabin** or **Conference with Iridium** Button. When the cockpit phone is connected to an external call, the **Conference with Cabin** Button is displayed. When the cockpit phone is connected to the cabin phone, the **Conference with Iridium** Button is displayed. The Telephone Screen indicates a connection is being established.
4) When the cabin or external phone is answered, the conference call is completed.

Managing Telephone Audio

NOTE: *The Push-to-Talk switch is not utilized for telephone communication. The microphone is active whenever a call is connected and telephone audio is enabled.*

When an incoming call is received, or an outgoing call is made, telephone audio (which includes headset and microphone) is automatically enabled for either the pilot or copilot, depending on which Touchscreen Controller was used to make or answer the call. If the pilot or copilot wishes to join an existing call, the telephone audio must be enabled manually on the appropriate Touchscreen Controller. When the call is ended, telephone audio is automatically disabled. A green **Pilot Audio** Annunciator Button indicates the enabled pilot audio on the pilot-side Touchscreen Controller. The copilot-side controller will, likewise, indicate a green **Copilot Audio** Annunciator Button.

To enable/disable telephone audio and adjust volume:

1) From the **Home** Screen, 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)

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

Viewing a Text Message When Received

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 **Reply** to create a reply to the message.
4) Touch **Delete** to delete the message from the list.
5) Touching **Save Contact** saves the contact information in the system contact list.

Reply to a Text Message

While viewing the text message content, touch the **REPLY** Button.

Or:

1) From the **Home** Screen, touch **Services** > **SMS Text**.
2) Touch the desired text message in the Inbox list. If necessary, scroll to the desired message. 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.
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 **Delete** to delete the message from the list.
10) Touching **Save Contact** saves the contact information in the system contact list.

Sending a Text Message

1) From the **Home** Screen, touch **Services** > **SMS Text**.
2) Touch the **Options** Button. The available options are displayed.
3) Touch the **Draft New Message** Button. The SMS Text Message Draft Screen is displayed. The Draft New Message option is also available from within the **Drafts** and **Outbox** Tabs.
4) 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 **Email**.
5) Enter the telephone number or email address. The number or address may be obtained from the Contacts by touching the **Find** Button.
6) Touch the **Enter** Button. The number or address is now displayed.
7) Touch the 'Message' Window. The alphanumeric buttons are displayed.
8) Enter the message text.
9) Touch the **Enter** Button. The message text is displayed in the 'Message' Window.
10) Touch the **Send** Button.

Text Message Boxes

View Inbox messages:

1) From the **Home** Screen, 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.

View Draft messages:

1) From the **Home** Screen, touch **Services** > **SMS Text**.
2) Touch the **Draft** 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.

View Outbox messages:

1) From the **Home** Screen, 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
	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 the **Home** Screen, touch **Services** > **SMS Text**.
2) Touch the **Options** Tab. 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 the **Home** Screen, touch **Services** > **SMS Text**.
2) Touch the **Options** Tab. 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 the **Home** Screen, touch **Services** > **SMS Text**.
2) Touch the **Options** Tab. The selection buttons are displayed.
3) Touch the **Mark All Read** Button.
4) Touch the **Back** Button to return to the Inbox. All messages in the Inbox now indicate they have been opened.

Delete all messages:

1) From the **Home** Screen, touch **Services** > **SMS Text**.
2) Touch the **Options** Tab. The selection buttons are displayed.
3) Touch the **Delete All Messages** Button. A confirmation screen is displayed.
4) Touch the **OK** Button.

WIFI CONNECTIONS (OPTIONAL)

Wi-Fi connections are used for transferring maintenance data to the aircraft manufacturer. The system can connect to a IEEE 802.11g compatible network provided the aircraft is on the ground and located within range of a network. The system is capable of WEP64, WEP128,WPA-PSK, and WPA2-PSK encryption formats. WPA-Enterprise and WPA2-Enterprise are not supported. Connections that require web proxies, captive portals, or other elements that require user credentials, including a username and password or a redemption or access code; or require action such as accepting a user agreement, are not supported.

Connecting to a Wi-Fi network:

1) From the **Home** Screen, touch **Utilities** > **Setup** > **Wi-Fi Setup**.
2) A list of available Wi-Fi networks is displayed. If necessary, scroll the displayed list of networks to find the desired network. If a specific network

is expected to be present in the list, but is not displayed, try rescanning networks by performing the following steps:\

a) Touch the **Wi-Fi Options** Button.

b) Touch **Rescan**.

3) Touch the network to be connected. A confirmation screen is displayed.

4) Touch **OK**.

5) The system now asks if it is desired to make the connected network a Favorite network.

6) Touch **OK** to place the network in the Favorites list, or touch **Cancel** to connect to the selected network without make it a Favorite network. Networks shown in the Available networks list which have been designated as a Favorite network are indicated by a star. Connected networks are indicated by a green antenna symbol.

Disconnecting a Wi-Fi network:

1) From the **Home** Screen, touch **Utilities** > **Setup** > **Wi-Fi Setup**.

2) Touch the **Wi-Fi Options** Button.

3) Touch **Disconnect**.

Making changes to a Favorite network:

1) From the **Home** Screen, touch **Utilities** > **Setup** > **Wi-Fi Setup**.

2) Touch the **Favorites** Tab to display the Favorite networks list.

3) Touch the network to which changes will be made. The Network Options are displayed.

4) Touch **Auto Connect** to enable (green annunciator) an automatic connection to this network whenever the aircraft is on the ground and in range of the network.

5) Touch **Edit** to display the edit screen.

6) Touch the desired parameter for editing and make selections accordingly.

7) When finished making desired changes, touch **Save**.

SIRIUSXM RADIO ENTERTAINMENT (OPTIONAL)

Service is activated by first establishing an account with SiriusXM Satellite Radio. For more information on specific service packages, visit www.siriusxm.com.

Selecting Channels

The Channel field on the Music Screen shows the available channels for the selected audio entertainment category. The Now Playing field shows information for the currently active channel.

Selecting a channel from the channel list:

1) From the **Home** Screen on the Touchscreen Controller, 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 the **Home** Screen on the Touchscreen Controller, 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

The Category field on the Music Screen shows the currently selected entertainment category. Categories of audio entertainment, such as jazz, rock, talk/news, sports, etc., can be selected to list the available channels for a type of music or other contents.

Selecting a category:

1) From the **Home** Screen on the Touchscreen Controller, touch **Services> Music** > **Category**. The list of categories is displayed.
2) Scroll to view the available categories.
3) 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

Channels can be saved to a list of favorites and recalled for listening later.

Save a channel to favorites list:

1) From the **Home** Screen on the Touchscreen Controller, 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 that the 'Now Playing' channel is a favorite.

Select a favorite channel for listening:

1) From the **Home** Screen on the Touchscreen Controller, touch **Services** > **Music** > **Category**. The list of categories is displayed.
2) If necessary, scroll to view the **Favorites** Button.
3) Touch the **Favorites** Button to view the favorite channel list.
4) Touch the desired channel in the list. The channel is now displayed in the Now Playing field.

Adjusting Volume

Entertainment audio volume is shown in the **Volume** field as a percentage of full volume.

Adjusting the volume:

1) From the **Home** Screen on the Touchscreen Controller, touch **Services** > **Music** > **Volume**. The volume adjustment slider is displayed.
2) Touch and drag the slider to the right or left to adjust the volume. Drag to the right increases volume. Drag to the left to decrease the volume.

Muting or unmuting the volume:

1) From the **Home** Screen on the Touchscreen Controller, 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 Volume field.

SCHEDULED MESSAGES

When a scheduled message is activated, the **MSG** Button flashes inverse video and **GTC MSG** flashes inverse video on the PFD. Touching the **MSG** Button on the Touchscreen Controller opens the Messages Screen and acknowledges the message, indicated by the removal of the message annunciation on the PFD and the **MSG** Button ceasing to flash. Touching the **MSG** Button again removes the Messages Screen from view, and the scheduled message is deleted from the message queue.

Messages can be set to display based on a specific date and time (Event), once the message timer reaches zero (One Time), or recurrently whenever the message timer reaches zero (Periodic). Message timers set to periodic alerting automatically reset to the original timer value once the message is displayed. When power is cycled, all messages are retained until deleted, and message timer countdown is resumed.

Entering a scheduled message:

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Scheduled Messages**.
2) Touch the **Add Message** Button.
3) Touch the **Message** Button.
4) The keypad is displayed. Enter the message name using the keypad. The large and small Right Knob can also be used to enter the characters.
5) Touch the **Enter** Button. The message name is displayed on the **Message** Button.
6) Touch the **Frequency** Button.
7) Touch **Event**, **One Time**, or **Periodic**. The selection is displayed on the **Frequency** Button.
8) Touch the **Time** Button.
9) The numeric keypad is displayed. Enter the time value using the keypad. If **One Time** or **Periodic** were selected in step 7, the time is entered in a HH:MM:SS format. If **Event** was selected in step 7, time is entered in a clock format (HH:MM LCL) as local time.
10) Touch the **Enter** Button. The time is displayed on the **Time** Button.
11) If **Event** was selected in step 7, touch the **Date** Button. The **Date** Button is subdued and disabled when **One Time** or **Periodic** were selected in step 7.
12) Touch the desired year, then the month followed by the day.

Edit a scheduled message:

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Scheduled Messages**.
2) Touch the name of the message to be edited. The Message Options Window is displayed.
3) Touch the **Edit Message** Button.
4) Select the desired message parameter to be edited and perform the needed steps as discussed previously for entering a scheduled message.

Deleting a scheduled message:

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities** > **Scheduled Messages**.
2) Touch the name of the message to be deleted. The Message Options Window is displayed.
3) Touch the **Delete Message** Button. Touch the **Delete All Messages** Button to delete all saved messages.

ELECTRONIC DOCUMENTS

The system allows the display of electronic documents from two sources. These sources are Installed and User documents.

Installed Documents

'Installed' Documents are typically provided by the aircraft manufacturer. These documents are stored on the Supplemental Data Cards, along with the databases, located in the bottom SD Card slot of each PFD and the MFD. Each Supplemental Data Card contains identical document files.

User Documents

'User' Documents are those loaded by the crew. User Documents must be in .pdf format and reside on an SD Card no larger than 16GB. The Maximum document file size is 1.5GB. The maximum number of pages per document is limited to 9,999. Pages with large and/or numerous images may exceed RAM memory limits, therefore, may not be displayed correctly or not displayed at all.

An SD card must be inserted into the top card slot of each display on which it is desired to view the user documents. Each display can only access electronic documents on the SD Cards that are inserted in that display.

User Documents can be unique to the display on which they are viewed.

Supported PDF Features

User Documents must be in .pdf format. The following .pdf features are not supported. If a file contains any of these features, the system will ignore the feature and display the document.

- Embedded files (attachments)
- Alternate images (using a different image for display and printing)
- Page labels (alternate page numbers; e.g. for i, ii, iii, iv for table of contents)
- Additional annotations, including file attachment annotation, sound annotation, movie annotation, widget annotation, and trap network annotation.
- Digital signatures
- Javascript
- Logical structure (structuring documents into chapters, paragraphs, headings, footnotes)
- Web capture information (annotations for search engines)
- Prepress support (annotations for newspapers, etc.)

SD Card File Structure for User Documents

User document files must reside on the SD card in a directory named "Documents". The list of available User Documents is limited to 100 documents and are shown in alphabetical order based on filename.

Viewing Electronic Documents

To select a document:

1) From the **Home** Screen, touch **Utilities** > **Documents**. The Document Viewer 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 Display Pane.

To change Document Viewer options:

1) From the **Home** Screen, touch **Utilities** > **Documents** > **Options**. Document Viewer Options is displayed.
2) Touch **Document Info** to view information pertaining to the document, such as files size and creation date.

3) Touch **Fit Page** to view the complete page in the selected pane.
4) Touch **Fit Width** 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 (depending on button touched) 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.

To browse 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. Touch the Page Select Button to jump to a specific page number. The Enter Page Number Screen is displayed.
3) Touch the **Find** Button to display the Document Viewer Find Screen.
4) If necessary, touch the **Table of Contents** Tab to display the document Table of Contents.
5) Touch **[+]** to expand a topic. Touch **[–]** to return to the collapsed view of the topic.
6) Touch the desired topic to jump to that portion of the document.

Creating bookmarks in the document:

1) While viewing the page to bookmark, touch the **Find** Button on the appropriate Touchscreen Controller.
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) Touch **Enter**. A confirmation screen is displayed.
5) Touch **OK**. 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 **OK** on the confirmation screen.
5) Again, touch **OK**.

CREW PROFILES

The Crew Profile Screen provides additional capabilities for managing crew profiles. The system can store up to 25 crew profiles. From here, crew profiles may be added, renamed, activated, copied, or deleted. In addition, crew profiles can be imported from an SD card, or exported to an SD card on the Crew Profile screen. By default, 'DEFAULT PROFILE' is the active crew profile. This profile cannot be deleted or renamed.

Adding a new crew profile:

1) From 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 right 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 another crew profile.

Activating a crew profile:

1) From **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 **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 right 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 another crew profile. The Crew Profile screen displays the name of the copied profile in the list.

Renaming an existing crew profile:

1) From **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 right 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 another 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 **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 in the MFD.
2) From **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 in the MFD.
2) From **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.

CHECKLISTS

The following colors are used for checklist items:

- Light Blue - Items not selected or checked
- White - Item is selected
- Green - Item has been checked
- Gray - General notes
- Yellow - Caution notes
- Red - Warning notes

Accessing and navigating checklists:

1) From the **Home** Screen, touch **Checklist**. The checklist structure is displayed.

2) Touch the desired checklist group tab on the left side of the screen.

3) 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. The first checklist item is selected as indicated by the white text surrounded by a white box.

4) Press the **FMS** 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. Either **FMS** Knob can be used to scroll through the checklist and select the desired checklist item.

Selecting a checked item and pressing the **FMS** Knob will return the item to the unchecked state.

5) 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 yellow text.

6) Press the **FMS** Knob 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 the **Home** Screen, touch **Checklist**.

2) Touch the desired checklist to reset.

3) Touch the **Checklist Options** Button.

4) Touch **Reset Current Checklist**.

Resetting All Checklists:

1) From the **Home** Screen, touch **Checklist**.
2) Touch the **Checklist Options** Button.
3) Touch **Reset All Checklists**.

ABNORMAL OPERATION

NOTE: The Phenom 300 Airplane Flight Manual (AFM) always takes precedence over the information found in this section.

REVERSIONARY MODES

If a GDU fails or is off-line, the system provides the capability to show a PFD, an EIS display, and a display pane on another GDU in Reversionary Mode.

The Phenom 300 employs dedicated three-position mode switches for PFD1 and PFD2. These PFD mode switches allow for placing the GDUs in automatic, manual or split-screen reversionary modes. The Split Mode selected using these switches is used for viewing the reversionary display in a split screen format, unlike the Split Mode Softkey on the PFD, which allows for viewing the normal display in a split screen format. The following discussion illustrates some of the various reversionary mode display combinations.

Auto Reversion

- **PFD1 failure, PFD1 Mode Switch set to AUTO, PFD2 Mode Switch set to AUTO** – MFD enters reversionary Full Mode and PFD2 continues to operate normally.
- **MFD failure, PFD1 Mode Switch set to AUTO, PFD2 Mode Switch set to AUTO** – PFD1 operates normally when in Full Mode. If PFD1 is operating in Split Mode, it will switch to Full Mode. PFD2 enters reversionary mode. If PFD2 is operating in Split Mode, it will switch to reversionary Full Mode.
- **PFD2 failure** – PFD1 and MFD continue to operate normally.

Manual Reversion

- **PFD1 Mode Switch set to REV, PFD2 Mode Switch set to AUTO** – PFD1 and MFD enter reversionary Full Mode. PFD2 continues to operate normally.
- **PFD2 Mode Switch set to REV, PFD1 Mode Switch set to AUTO** – PFD2 and MFD enter reversionary Full Mode. PFD1 continues to operate normally.
- **PFD1 and PFD2 Mode Switches set to REV** – PFD1, MFD, and PFD2 enter reversionary Full Mode.
- **PFD1 Mode Switch set to Split, PFD2 Mode Switch set to AUTO** – PFD1 and MFD enter reversionary Split Mode. PFD2 continues to operate normally.
- **PFD2 Mode Switch set to Split, PFD1 Mode Switch set to AUTO** – PFD2 and MFD enter reversionary Split Mode. PFD1 continues to operate normally.

- **PFD1 Mode Switch set to REV, PFD2 Mode Switch set to Split** – PFD1 and MFD enter reversionary Full Mode. PFD2 enters reversionary Split Mode.
- **PFD2 Mode Switch set to REV, PFD1 Mode Switch set to Split** – PFD2 and MFD enter reversionary Full Mode. PFD1 enters reversionary Split Mode.
- **PFD1 and PFD2 Mode Switches set to Split** – PFD1, MFD, and PFD2 enter reversionary Split Mode.

If the MFD is operating in Reversionary Mode (e.g. PFD1 or PFD2 failure), the Touchscreen Controller on the failed PFD side controls the Reversionary Mode display pane. If PFD1 or PFD2 is in Reversionary Mode, the on-side Touchscreen Controller controls the Reversionary Mode display pane.

If both PFD1 and PFD2 fail or are off-line, the #1 Touchscreen Controller controls the Reversionary Mode display pane on the MFD. The #2 Touchscreen Controller's functions (with the exception of display pane control) continue to be available in the event of PFD1 and PFD2 failure.

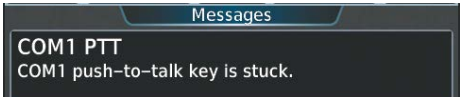
Touchscreen Controller Failure

If either Touchscreen controller fails or is off-line, the operating Touchscreen Controller controls the display panes for both PFDs and the MFD. In addition, the single Touchscreen Controller provides audio and CNS control for both the pilot and copilot.

STUCK MICROPHONE

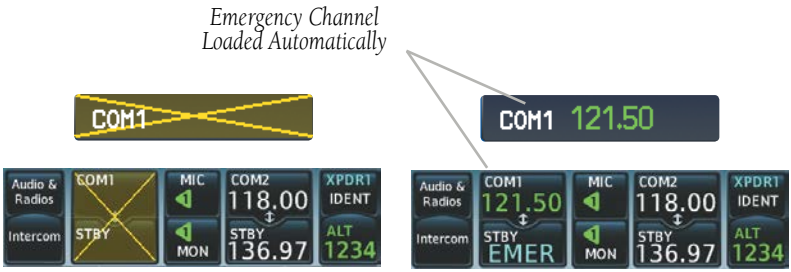
If the push-to-talk (PTT) Key becomes stuck, the COM transmitter stops transmitting after 35 seconds of continuous operation. An alert appears on the Touchscreen Controller to advise the pilot of a stuck microphone.

The **MIC** Button Annunciator flashes as long as the PTT Key remains stuck.



COM TUNING FAILURE

In case of a COM system tuning failure, the emergency frequency (121.500 MHz) is automatically tuned in the radio in which the tuning failure occurred. Depending on the failure mode, a yellow X may appear on the frequency display.



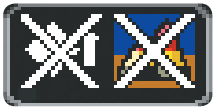
COM Tuning Failure & COM Emergency Tuning

AUDIO CONTROLLER FAIL-SAFE OPERATION

If there is a failure of the Audio Controller, a fail-safe circuit connects the pilot's and copilot's headset and microphone directly to the COM1 transceiver. Audio will not be available on the speaker.

HAZARD DISPLAYS WITH LOSS OF GPS POSITION

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



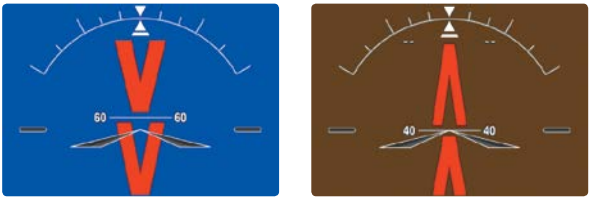
Loss of Hazard Functions with Loss of GPS Position

UNUSUAL ATTITUDES

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

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

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



Extreme Pitch Indication

DEAD RECKONING

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

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

DR Mode is indicated by the appearance of the letters 'DR' being prominently displayed, in yellow, on the HSI slightly below and to the left of the aircraft symbol on the CDI as shown in the following figure. The CDI deviation bar is displayed in yellow, but will be removed from the display after 20 minutes. Lastly, but at the same time, a 'GPS NAV LOST' alert message appears on the GTC.

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

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

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

CDI 'DR' Indication on PFD

FMS 'DR' Indication on PFD

Dead Reckoning Indications

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

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

Also, while the system is in DR Mode, the autopilot will couple to GPS for up to 20 minutes. Terrain Proximity, TERRAIN-SVT, and TAWS are also disabled. Additionally, the accuracy of all nearest information (airports, airspaces, and waypoints) is questionable. Finally, airspace alerts continue to function, but with degraded accuracy.

ANNUNCIATIONS & ALERTS

CREW ALERTING SYSTEM (CAS)

CAS messages are grouped by criticality (warning, caution, advisory) and sorted by order of appearance (most recent messages on top). The color of the message is based on its urgency and on required action, and the softkey label changes to display the appropriate annunciation when a CAS message is generated.

- **Warning** (red) – Immediate crew awareness and action required; accompanied by an aural tone (triple chime every 3 seconds) and flashing 'WARNING' softkey annunciation.
- **Caution** (yellow) – Immediate crew awareness and possible future corrective action required; accompanied by an aural tone (single chime every 5 seconds) and flashing 'CAUTION' softkey annunciation.
- **Advisory** (white) – Crew awareness required and subsequent action may be required; accompanied by a flashing 'ADVISORY' softkey.

The softkey annunciation flashes and the corresponding aural alert sounds until acknowledged by depressing the softkey.

Softkey Annunciations (MSG Softkey Labels)

CAS MESSAGES

Warning Messages

See the Airplane Flight Manual (AFM) for recommended pilot actions. Accompanied by a triple chime tone which repeats until acknowledged.

Message	Description
BAG SMK	Smoke detected in baggage compartment
CAB ALTITUDE HI	Cabin altitude pressure altitude high
DOOR EMER OPEN	Emergency door open
DOOR PAX OPEN	Passenger door open
E1 FIRE	Fire in engine 1
E2 FIRE	Fire in engine 2
E1 OIL LO PRES	Low oil pressure in engine 1
E2 OIL LO PRES	Low oil pressure in engine 2

ELEC EMERGENCY	Generators offline
ELEC XFR FAIL	Generators offline and electrical emergency transfer has failed
LG LEVER DISAG	Landing gear position and control lever disagreement
NO TO CONFIG	No takeoff configuration

Caution Messages

See the Airplane Flight Manual (AFM) for recommended pilot actions. Accompanied by a single chime tone which repeats until acknowledged.

Message	Description
ADS 1 FAIL	ADS 1 offline or failed
ADS 2 FAIL	ADS 2 offline or failed
ADS 1 HTR FAIL	Pitot heater 1 offline or heater element failed
ADS 2 HTR FAIL	Pitot heater 2 offline or heater element failed
AHRS 1 FAIL	AHRS 1 failure
AHRS 2 FAIL	AHRS 2 failure
A-I E1 FAIL	Anti-ice system failure in engine 1
A-I E2 FAIL	Anti-ice system failure in engine 2
A-I LO CAPACITY	Not enough thermal energy available for WHSAIS (Wing and Horizontal Stabilizer Anti-ice System) operation
A-I WINGSTB FAIL	Component failure (AIV, pressure transducers, AMS Controller, other)
A-I WINGSTB INHB	WHSAIS switched ON outside the icing envelope. Or, aircraft is in single bleed configuration and above the 15,000 ft. icing envelope when WHSAIS is switched on.
A-I WINGSTB LEAK	Bleed hot air leakage at WHSAIS pneumatic ducting
AMS CTRL FAIL	Pneumatic sources and icing protection are not available
ANTI-SKID FAIL	Anti-skid function lost; main brake still available
AP FAIL	Loss of AP function
AP PITCH MISTRIM	Airplane mistrimmed in pitch axis when AP is engaged
AP ROLL MISTRIM	Airplane mistrimmed in roll axis when AP is engaged
AUDIO PNL 1 FAIL	Audio panel 1 is offline
AUDIO PNL 2 FAIL	Audio panel 2 is offline
AURAL WRN FAIL	Aural warning system failure due to non-communicating LRUs
AUTO PTRIM FAIL	Auto pitch trim failure; other pitch trim functions still available
BAG SMK FAIL	Baggage compartment smoke detector has failed
BATT DISCHARGE	Battery discharging under normal operation
BATT 1 OFF BUS	Battery 1 offline
BATT 2 OFF BUS	Battery 2 offline
BATT EXCEEDANCE	Battery voltage has exceeded 29 VDC
BLEED 1 FAIL	Bleed 1 system not under control.

Message	Description
BLEED 2 FAIL	Bleed 2 system not under control.
BLEED 1 LEAK	Bleed 1 hot air leakage at some region of the ducting
BLEED 2 LEAK	Bleed 2 hot air leakage at some region of the ducting
BLEED 1 OVERPRES	Pressure in bleed ducting is higher than an acceptable value chosen to not compromise ECS and Anti-ice components integrity
BLEED 2 OVERPRES	Pressure in bleed ducting is higher than an acceptable value chosen to not compromise ECS and Anti-ice components integrity
BRK FAIL	Main brake system lost
CAB DELTA-P FAIL	Excessive cabin pressure differential
CLUTCH PIT FAIL	Slip clutch maintenance test failed
CLUTCH ROL FAIL	Slip clutch maintenance test failed
CLUTCH VNTRL FAIL	Ventral slip clutch maintenance test failed
CLUTCH YAW FAIL	Slip clutch maintenance test failed
CONFIG MDL FAIL	Master Configuration Module failed or non-communicative
DOORBAG AFT OPEN	Crew baggage door open
DOORBAG LH OPEN	Forward left-hand baggage door open
DOORBAG RH OPEN	Forward right-hand baggage door open
DUCT 1 OVERTEMP	Duct 1 temperature over specified safe value
DUCT 2 OVERTEMP	Duct 2 temperature over specified safe value
E1 CTRL FAULT	Engine 1 responds slowly or not at all to thrust commands
E2 CTRL FAULT	Engine 2 responds slowly or not at all to thrust commands
E1 FAIL	Uncommanded shutdown detected for engine 1
E2 FAIL	Uncommanded shutdown detected for engine 2
E1 FIRE DET FAIL	Fire detection system failure in engine 1
E2 FIRE DET FAIL	Fire detection system failure in engine 2
E1 FIREX FAIL	Fire extinguisher failure in engine 1
E2 FIREX FAIL	Fire extinguisher failure in engine 2
E1 FUEL IMP BYP	Fuel filter impending bypass condition for engine 1
E2 FUEL IMP BYP	Fuel filter impending bypass condition for engine 2
E1 TLA FAIL	Thrust Lever Angle failure for engine 1
E2 TLA FAIL	Thrust Lever Angle failure for engine 2
E1 TT0 HTR FAIL	Heater failure in engine 1
E2 TT0 HTR FAIL	Heater failure in engine 2
E1 TT0 PROBE ICE FAIL	Engine 1 probe frozen
E2 TT0 PROBE ICE FAIL	Engine 2 probe frozen
EBAY LEAK	Leak inside E-Bay
EBAY OVHT	Electrical bay over temperature
ECS 1 VALVE FAIL	Flow control valve monitor for ECS 1 detected improper valve operation
ECS 2 VALVE FAIL	Flow control valve monitor for ECS 2 detected improper valve operation

Message	Description
EMER BRK LO PRES	Few emergency brake functions available
EMER LT NOT ARM	Emergency lights switch not in ARMED position
ENG EXCEEDANCE	Limit exceeded in engine(s) during flight
ENG NO DISPATCH	FADEC detected no dispatch fault condition in engine(s)
ENG NO TO DATA	No takeoff data entered
FLAP FAIL	Loss of flaps deployment or retraction
FUEL 1 LO LEVEL	Low fuel level in tank 1
FUEL 2 LO LEVEL	Low fuel level in tank 2
FUEL 1 LO PRES	Fuel pressure low in engine 1 feed line
FUEL 2 LO PRES	Fuel pressure low in engine 2 feed line
FUEL 1 SOV FAIL	Fuel feed SOV 1 closed or unavailable
FUEL 2 SOV FAIL	Fuel feed SOV 2 closed or unavailable
FUEL IMBALANCE	Fuel is imbalanced between the tanks
FUEL PUMP 1 FAIL	Fuel pump 1 failure
FUEL PUMP 2 FAIL	Fuel pump 2 failure
FUEL XFEED FAIL	Disagreement between valve command and its feedback
GEN 1 OFF BUS	Generator 1 offline
GEN 2 OFF BUS	Generator 2 offline
GEN OVLD	Generator(s) overload
GEN START FAULT	Generator start fault
GIA 1 FAIL	Failure of GIA 1
GIA 2 FAIL	Failure of GIA 2
GIA 1 OVHT	GIA 1 over temperature
GIA 2 OVHT	GIA 2 over temperature
GND SPLR FAIL	Loss of ground spoilers
GTC 1 OVHT	GTC 1 over temperature
GTC 2 OVHT	GTC 2 over temperature
HYD HI TEMP	Hydraulic temperature high
HYD LO PRES	Hydraulic pressure low
HYD SOV 1 FAIL	EDP 1 Fire Shutoff valve was commanded to close, but failed to close
HYD SOV 2 FAIL	EDP 2 Fire Shutoff valve was commanded to close, but failed to close
ICE CONDITION*	Aircraft is flying in icing conditions
LG WOW SYS FAIL	Landing gear weight-on-wheels system failure
MFD CONFIG	MFD configuration error
MFD FAULT	Fault with the MFD
MFD OVHT	MFD over temperature
OXY LO PRES	Oxygen system pressure low
PARK BRK NOT REL	Parking brake not released

Message	Description
PAX OXY NO PRES	Cabin altitude high and passenger oxygen system pressure low
PFD 1 CONFIG	PFD 1 configuration error
PFD 2 CONFIG	PFD 2 configuration error
PFD 1 FAULT	Fault with PFD 1
PFD 2 FAULT	Fault with PFD 2
PFD 1 OVHT	PFD 1 over temperature
PFD 2 OVHT	PFD 2 over temperature
PRESN AUTO FAIL	Pressurization controller failure
PTRIM BKP FAIL	Loss of backup pitch trim actuator
PTRIM NML FAIL	Loss of normally-operating pitch trim actuator
PUSHER FAIL	Stall Warning & Protection System pusher has failed
PUSHER OFF	Stall Warning Pusher is off
RUD OVERBOOST	SLRB (Spring Loaded Rudder Booster) uncommanded actuation
STBY HTR FAIL	Failure of standby heater
STEEP FAIL*	Steep approach mode has failed
SWPS FAIL	Stall Warning & Protection System inoperative
SWPS FAULT	Stall Warning & Protection System activation angles anticipated to conservative settings
SWPS UNTESTED	Stall Warning & Protection System has not been tested
TCAS FAIL*	Traffic & Collision Avoidance System failure. TCASII installations only.
WSHLD 1 HTR FAIL	Windshield 1 heater failure
WSHLD 2 HTR FAIL	Windshield 2 heater failure
YD FAIL	Loss of yaw damper function
YD MISTRIM	Airplane mistrimmed in yaw axis when YD is engaged

* Optional

Advisory Messages

See the Airplane Flight Manual (AFM) for recommended pilot actions.

Message	Description
A-I E1 FAULT	Engine 1 Anti-ice system valve failed when commanded to close
A-I E2 FAULT	Engine 2 Anti-ice system valve failed when commanded to close
A-I E1 ON	Anti-ice system on in engine 1
A-I E2 ON	Anti-ice system on in engine 2
A-I WINGSTB ARM	WINGSTAB toggle switch has been armed prior to takeoff
A-I WINGSTB ON	WHSAIS is operating
ADS 1 SLIP FAIL	ADS 1 side-slip compensation is off
ADS 2 SLIP FAIL	ADS 2 side-slip compensation is off
ADS HTR SW ON	ADS Probe switch is on

Message	Description
AHRS 1 FAULT	Fault with AHRS 1
AHRS 2 FAULT	Fault with AHRS 2
AMS CTRL FAULT	One pneumatic and Anti-ice controller channel is inoperative
ATC DLK FAIL	CPDLC system failure
AUDIO PNL 1 FAULT	Fault with audio panel 1
AUDIO PNL 2 FAULT	Fault with audio panel 2
AURAL WRN FAULT	Partial loss of aural warning function
AVNX FAN FAIL	Avionics fan failure
BAG SMK FAULT	Two baggage compartment smoke detectors have failed
BLEED 1 OFF	Bleed pressure regulator 1 and shut-off valve closed
BLEED 2 OFF	Bleed pressure regulator 2 and shut-off valve closed
CLUTCH PIT PASS	Pitch slip clutch maintenance test passed
CLUTCH PIT PROG	Pitch slip clutch maintenance test in progress
CLUTCH ROLL PASS	Roll slip clutch maintenance test passed
CLUTCH ROLL PROG	Roll slip clutch maintenance test in progress
CLUTCH VNTRL PASS	Ventral slip clutch maintenance test passed
CLUTCH VNTRL PROG	Ventral slip clutch maintenance test in progress
CLUTCH YAW PASS	Yaw slip clutch maintenance test passed
CLUTCH YAW PROG	Yaw slip clutch maintenance test in progress
DC BUS 1 OFF	DC bus 1 offline
DC BUS 2 OFF	DC bus 2 offline
DOOR REFUEL OPEN	Refueling door is open
E1 CHIP DETECTED	Chip detected by engine 1 oil chip detector
E2 CHIP DETECTED	Chip detected by engine 2 oil chip detector
E1 FADEC FAULT	FADEC fault in engine 1
E2 FADEC FAULT	FADEC fault in engine 2
E1 OIL IMP BYP	Engine 1 oil filter impending bypass set
E2 OIL IMP BYP	Engine 2 oil filter impending bypass set
ECS 1 OFF	Flow control valve monitor detected improper valve operation
ECS 2 OFF	Flow control valve monitor detected improper valve operation
ELEC SYS FAULT	Electrical system fault
EMER BUS OFF	Emergency bus OFF
ENG FIREX DISCH	Engine fire extinguisher discharge
FLAP NOT AVAIL	Flaps not available
FUEL EQUAL	Fuel quantity asymmetry corrected; XFEED SOV is open
FUEL 1 FEED FAULT	DC pump on due to low fuel pressure
FUEL 2 FEED FAULT	DC pump on due to low fuel pressure
FUEL 1 PSW FAIL	Fuel pressure switch stuck in “high” position
FUEL 2 PSW FAIL	Fuel pressure switch stuck in “high” position

Message	Description
GEA 1 FAIL	Failure of GEA 1
GEA 2 FAIL	Failure of GEA 2
GEA 3 FAIL	Failure of GEA 3
GPU CONNECTED	Ground power unit connected to the aircraft
GSD 1 FAIL	GSD 1 non-communicative
GSD 2 FAIL	GSD 2 non-communicative
GTC 1 FAN FAIL	Failure of GTC 1 fan
GTC 2 FAN FAIL	Failure of GTC 2 fan
GTC 1 FAULT	Fault with GTC 1
GTC 2 FAULT	Fault with GTC 2
HSDB FAULT	An LRU has stopped communicating over an HSDB
HSDB SW REV POS	HSDB switch in reversionary position
HYD SYS FAULT	Degradation of hydraulic system available power
ICE DET FAIL*	Ice Detector failure
MFD FAN FAIL	Failure of MFD fan
NAV 1 FAIL	Failure of NAV 1
NAV 2 FAIL	Failure of NAV 2
OXY SW NOT AUTO	Oxygen system switch in manual mode
PFD 1 FAN FAIL	Failure of PFD 1 fan
PFD 2 FAN FAIL	Failure of PFD 2 fan
PTRIM LO RATE	Pitch trim is being actuated in low rate
PTRIM SW1 FAIL	Failure of pilot pitch trim switch
PTRIM SW2 FAIL	Failure of copilot pitch trim switch
RALT FAIL*	Radar altitude failure
RAM AIR FAIL	Ram air valve failure
RUD BOOST FAIL	Loss of SLRB (Spring Loaded Rudder Booster) force assistance in case of thrust asymmetry
SHED BUS OFF	Shed bus off
SPDBRK SW DISAG	Speed brake switch position is in disagreement with the spoiler surfaces position
SPOILER FAULT	Ground Spoiler arm logic failed Ground Spoiler command disagree Spoiler position disagree Ground Spoiler Control Valve failed Speed brake command failed Speed brake command inhibit failed
STEEP NOT AVAIL	Steep Approach Mode is not available
SWPS ICE SPEED	Stall Warning System activation angles anticipated due to icing conditions
VENTRAL RUD FAIL	Ventral rudder has failed

Message	Description
VHF3 FAIL	Failure of VHF3
XBLEED FAIL	Cross bleed valve has failed closed or open
XBLEED SW OFF	Cross bleed switch is in the OFF position
XPDR 1 FAIL	Failure of XPDR 1
XPDR 2 FAIL	Failure of XPDR 2

* Optional

COMPARATOR ALERTS

Annunciation	Description	Condition
ALT	Altitude Miscompare	Difference in altitude sensors is ≥ 200 ft.
IAS	Indicated Airspeed Miscompare	If both airspeed sensors detect < 35 knots, this is inhibited.
		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.
HDG	Heading Miscompare	Difference in heading sensors is > 6 degrees.
PIT	Pitch Miscompare	Difference in pitch sensors is > 5 degrees.
ROL	Roll Miscompare	Difference in roll sensors is > 6 degrees.
ALT	Altitude No Compare	No data from one or both altitude sensors.
IAS	Indicated Airspeed No Compare	No data from one or both airspeed sensors.
HDG	Heading No Compare	No data from one or both heading sensors.
PIT	Pitch No Compare	No data from one or both pitch sensors.
ROL	Roll No Compare	No data from one or both roll sensors..

REVERSIONARY SENSOR ALERTS

Reversionary Sensor Window Text	Condition
BOTH ON ADC 1	Both PFDs are displaying data from the #1 Air Data Computer.
BOTH ON ADC 2	Both PFDs are displaying data from the #2 Air Data Computer.

Reversionary Sensor Window Text	Condition
BOTH ON ADC STBY	Both PFDs are displaying data from the standby air data input.
BOTH ON AHRS 1	Both PFDs are displaying data from the #1 AHRS.
BOTH ON AHRS 2	Both PFDs are displaying data from the #2 AHRS.
BOTH ON ATT STBY	Both PFDs are displaying data from the standby attitude and heading reference input.
BOTH ON GPS 1	Both PFDs are displaying data from the #1 GPS receiver.
BOTH ON GPS 2	Both PFDs are displaying data from the #2 GPS receiver.
USING ADC 1	PFD2 is displaying data from the #1 Air Data Computer.
USING ADC 2	PFD1 is displaying data from the #2 Air Data Computer.
USING ADC STBY	PFD1 or PFD2 is displaying data from the standby air data input.
USING AHRS 1	PFD2 is displaying data from the #1 AHRS.
USING AHRS 2	PFD1 is displaying data from the #2 AHRS.
USING ATT STBY	PFD1 or PFD2 is displaying data from the standby attitude and heading reference input.
USING GPS 1	PFD2 is displaying data from the #1 GPS.
USING GPS 2	PFD1 is displaying data from the #2 GPS.

WEATHER RADAR ANNUNCIATIONS

The system displays the radar mode annunciation in the upper left corner of the Weather Radar Display. Additional information may be displayed in the center of the Weather Radar Page as a banner annunciation.

Radar Mode	Radar Mode Annunciation Box	Center Banner Annunciation
Standby	STANDBY	STANDBY
Weather	WEATHER	None
Ground Mapping	GROUND MAPPING	None
Off	OFF	OFF
Radar Failed*	FAIL	RADAR FAIL

** See Table 6-7 for additional failure annunciations*

Radar Modes on the Weather Radar Page

The system displays the status of the radar antenna stabilization feature in the upper right corner of the Weather Radar Page.

Radar Antenna Feature Status	Description
STAB ON	Antenna stabilization is selected on.
STAB OFF	Antenna stabilization is selected off.
STAB INOP	The radar is not receiving pitch and roll information. The antenna stabilization feature is inoperative.
ALTITUDE COMP TILT ON	The altitude-compensated tilt feature is selected on.
ALTITUDE COMP TILT OFF	The altitude-compensated tilt feature is selected off.
GND CLTR SUPPRESS ON	The ground clutter supersession feature is selected on.
GND CLTR SUPPRESS OFF	The ground clutter supersession feature is selected off.
GND CLTR SUPPRESS INACTIVE	The radar scan is not receiving any ground clutter data to suppress.
GND CLTR SUPPRESS UNAVAILABLE	The radar is missing data needed to suppresses ground clutter.
TURB DETECTION ON	The turbulence detection feature is selected on.
TURB DETECTION OFF	The turbulence detection feature is selected off.
TURB DETECTION INACTIVE	Turbulence detection is inactive when map range is greater than 160 nm, or radar is in a mode which cannot support turbulence detection.
TURB DETECTION UNAVAILABLE	The radar is missing data needed to detect turbulence.

Antenna Stabilization Annunciations on the Weather Radar Page

If the unit fails, an annunciation as to the cause of the failure is shown as a banner in the center of the Weather Radar Page.

Weather Radar Page Center Banner Annunciation	Description
BAD CONFIG	The radar configuration is invalid. The radar should be serviced.
RDR FAULT	The radar unit is reporting a fault. The radar should be serviced.
RADAR FAIL	The system is not receiving valid data from the radar unit. The system should be serviced.

Abnormal Radar Status Annunciations on the Weather Radar Page

TAWS-A ALERTS

Alert Type	PFD/MFD TAWS-A Display Annunciation	Touchscreen Controller Pop-Up Alert	Voice Message
Reduced Required Terrain Clearance Warning (RTC)	PULL UP	TERRAIN - PULL-UP	"Terrain, Terrain; Pull Up, Pull Up"
Imminent Terrain Impact Warning (ITI)	PULL UP	TERRAIN - PULL-UP	"Terrain, Terrain; Pull Up, Pull Up"
Reduced Required Obstacle Clearance Warning (ROC)	PULL UP	OBSTACLE - PULL-UP	"Obstacle, Obstacle; Pull Up, Pull Up"
Imminent Obstacle Impact Warning (IOI)	PULL UP	OBSTACLE - PULL-UP	"Obstacle, Obstacle; Pull Up, Pull Up"
Excessive Descent Rate Warning (EDR)	PULL UP	PULL-UP	"<whoop><whoop> Pull Up"
Excessive Closure Rate Warning (ECR)	PULL UP	PULL-UP	"<whoop><whoop> Pull Up"
Reduced Required Terrain Clearance Caution (RTC)	TERRAIN	CAUTION - TERRAIN	"Caution, Terrain; Caution, Terrain"
Imminent Terrain Impact Caution (ITI)	TERRAIN	CAUTION - TERRAIN	"Caution, Terrain; Caution, Terrain"
Reduced Required Obstacle Clearance Caution (ROC)	TERRAIN	CAUTION - OBSTACLE	"Caution, Obstacle; Caution, Obstacle"
Imminent Obstacle Impact Caution (IOI)	TERRAIN	CAUTION - OBSTACLE	"Caution, Obstacle; Caution, Obstacle"
Premature Descent Alert Caution (PDA)	TERRAIN	TOO LOW - TERRAIN	"Too Low, Terrain"
Excessive Descent Rate Caution (EDR)	TERRAIN	SINK RATE	"Sink Rate"
Excessive Closure Rate Caution (ECR)	TERRAIN	TERRAIN	"Terrain, Terrain"
Negative Climb Rate Caution (NCR)	TERRAIN	DON'T SINK	"Don't Sink"
Flight Into Terrain High Speed Caution (FIT)	TERRAIN	TOO LOW - TERRAIN	"Too Low, Terrain"
Flight Into Terrain Gear Caution (FIT)	TERRAIN	TOO LOW - GEAR	"Too Low, Gear"

Alert Type	PFD/MFD TAWS-A Display Annunciation	Touchscreen Controller Pop-Up Alert	Voice Message
Flight Into Terrain Flaps Caution (FIT)	TERRAIN	TOO LOW - FLAPS	"Too Low, Flaps"
Flight Into Terrain Takeoff Caution (FIT)	TERRAIN	TOO LOW - TERRAIN	"Too Low, Terrain"
Glide Slope/Glide Path Deviation Caution (GSD) (depends on approach type)	GLIDESLOPE or GLIDEPATH	GLIDESLOPE or GLIDEPATH	"Glide Slope" or "Glide Path"
Altitude Voice Callout (VCO)	None	None	"Five-Hundred" "Four-Hundred" "Three-Hundred" "Two-Hundred" "One-Hundred"

TAWS-A System Status Annunciations

Alert Type	PFD/MFD TAWS-A Page Annunciation	TAWS-A Pane Center Banner Annunciation	Aural Message
TAWS System Fail, Terrain or Obstacle database unavailable or invalid, invalid software configuration, system audio fault	TAWS FAIL	TAWS FAIL	"TAWS System Failure"
GPWS System Fail	GPWS FAIL	None	"GPWS System Failure"
System Test in progress	TAWS TEST	TAWS TEST	None
System Test pass	None	None	"TAWS System Test OK"
MFD Terrain or Obstacle database unavailable or invalid. TAWS operating with PFD Terrain or Obstacle databases	None	TERRAIN DATABASE FAILURE	None

Alert Type	PFD/MFD TAWS-A Page Annunciation	TAWS-A Pane Center Banner Annunciation	Aural Message
GPWS System Fail, Radar Altimeter invalid, Altitude or Vertical Speed unavailable	GPWS FAIL	None	"GPWS System Failure"
No GPS position	TAWS N/A	NO GPS POSITION	"TAWS Not Available"
Excessively degraded GPS signal, Out of database coverage area	TAWS N/A	None	"TAWS Not Available"
Out of database coverage area	TAWS N/A	None	"TAWS Not Available" "TAWS Available" when aircraft enters database coverage area.

TAWS-A Alert Availability

TAWS-A Status Annunciation Displayed	TAWS-A Alert Type Available										
	RTC	ITI	ROC	IOI	PDA	EDR	ECR	NCR	FIT	GSD	VCO
TAWS TEST	No	No	No	No	No	No	No	No	No	No	No
TAWS N/A	No	No	No	No	No	Yes	Yes	Yes	Yes	*No	**Yes
TAWS FAIL	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	**Yes
TAWS INH	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
GPWS FAIL	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	**Yes
GS INH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

TAWS-A Status Annunciation Displayed	TAWS-A Alert Type Available										
	RTC	ITI	ROC	IOI	PDA	EDR	ECR	NCR	FIT	GSD	VCO
GP INH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
FLAP OVR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	#Yes	Yes	Yes

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

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

\# Only the portions of FIT Alerting based on flap position are disabled when FLAP OVR annunciation is displayed.

TCAS II ALERTS AND ANNUNCIATIONS

Mode	PFD Mode Annunciation	Traffic Map Pane Mode Annunciation	Traffic Display Status Icon (Other Map Displays)
TCAS II System Test In Progress	None	**TEST** ('TEST MODE' also shown in white on top center of pane)	
Traffic Advisory and Resolution Advisory (TA/RA)	None	**TA/RA**	
Traffic Advisory Only (TA Only)	TA ONLY	**TA ONLY**	
TCAS II Standby	TCAS STBY Or: TCAS STBY *	**STANDBY** (shown in white in center of pane on ground, yellow in the air)	
TCAS II Failed	TCAS FAIL	**FAIL**	

** Annunciation appears in yellow while in the air.*

TCAS II Modes

Traffic Map Page Annunciation	Description
NO DATA	Data is not being received from the TCAS II unit
DATA FAILED	Data is being received from the TCAS II unit, but the unit is self-reporting a failure
FAILED	Incorrect data format received from the TCAS II unit

TCAS II Failure Annunciations

Traffic Status Banner Annunciation	Description
RA OFF SCALE	A Resolution Advisory is outside the selected display range*. Annunciation is removed when traffic comes within the selected display range
TA OFF SCALE	A Traffic Advisory is outside the selected display range*. Annunciation is removed when traffic comes within the selected display range.
RA X.X ± XX ↕	System cannot determine bearing of Resolution Advisory**. Annunciation indicates distance in nm, altitude separation in hundreds of feet, and altitude trend arrow (climbing/descending).
TA X.X ± XX ↕	System cannot determine bearing of Traffic Advisory**. Annunciation indicates distance in nm, altitude separation in hundreds of feet, and altitude trend arrow (climbing/descending).
TRFC FAIL	TCAS II unit has failed (unit is self-reporting a failure or sending incorrectly formatted data)
NO TCAS DATA	Data is not being received from the TCAS II unit

**Shown as symbol on Traffic Map Pane*
***Shown in center of Traffic Map Pane*

TCAS II Traffic Status Annunciations

GDU 1400W PRIMARY FLIGHT DISPLAY & MULTI FUNCTION DISPLAY

System Message	Comments
XTALK ERROR – A flight display crosstalk error has occurred.	The MFD, PFD and GTC are not communicating with each other. The system should be serviced.
PFD1 SERVICE – PFD1 needs service. Return unit for repair.	The PFD and/or MFD self-test has detected a problem. The system should be serviced.
PFD2 SERVICE – PFD2 needs service. Return unit for repair.	
MFD1 SERVICE – MFD1 needs service. Return unit for repair.	
PFD1 MANIFEST – PFD 1 software mismatch, communication halted.	The PFD and/or MFD has incorrect software installed. The system should be serviced.
PFD2 MANIFEST – PFD 2 software mismatch, communication halted.	
MFD1 MANIFEST – MFD 1 software mismatch, communication halted.	
PFD1 CONFIG – PFD1 config error. Config service req'd.	The PFD configuration settings do not match backup configuration memory. The system should be serviced.
PFD2 CONFIG – PFD2 config error. Config service req'd.	
MFD1 CONFIG – MFD1 config error. Config service req'd.	The MFD configuration settings do not match backup configuration memory. The system should be serviced.
PFD1 SOFTWARE – PFD1 mismatch, communication halted.	The specified GDU has different software versions installed. The system should be serviced.
PFD2 SOFTWARE – PFD2 mismatch, communication halted.	
MFD1 SOFTWARE – MFD1 mismatch, communication halted.	

System Message	Comments
PFD1 COOLING – PFD1 has poor cooling. Reducing power usage.	The PFD and/or MFD is overheating and is reducing power consumption by dimming the display. If problem persists, the system should be serviced.
PFD2 COOLING – PFD2 has poor cooling. Reducing power usage.	
MFD1 COOLING – MFD1 has poor cooling. Reducing power usage.	
PFD1 FAN FAIL – PFD1 internal fan failure. Unit needs service.	The PFD and/or MFD internal cooling fan has failed. The system should be serviced.
PFD2 FAN FAIL – PFD2 internal fan failure. Unit needs service.	
MFD1 FAN FAIL – MFD1 internal fan failure. Unit needs service.	
PFD1 BKLT CAL INV – PFD1 bklt cal lost or mismatch. Return for repair.	The PFD and/or MFD backlight calibration cannot be found or found or is invalid. The system should be serviced.
PFD2 BKLT CAL INV – PFD2 bklt cal lost or mismatch. Return for repair.	
MFD1 BKLT CAL INV – MFD1 bklt cal lost or mismatch. Return for repair.	
PFD1 KEYSTK – PFD1 [key name] is stuck.	A key is stuck on the PFD and/or MFD bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.
PFD2 KEYSTK – PFD2 [key name] is stuck.	
MFD1 KEYSTK – MFD1 [key name] is stuck.	
CNFG MODULE – PFD1 configuration module is inoperative.	The PFD1 configuration module backup memory has failed. The system should be serviced.

System Message	Comments
PFD1 VOLTAGE – PFD1 has low voltage. Reducing power usage	The PFD1 voltage is low. The system should be serviced.
PFD2 VOLTAGE – PFD2 has low voltage. Reducing power usage	The PFD2 voltage is low. The system should be serviced.
MFD1 VOLTAGE – MFD1 has low voltage. Reducing power usage	The MFD voltage is low. The system should be serviced.
PFD1 CARD1 REM – PFD1 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.
PFD1 CARD2 REM – PFD1 card 2 was removed. Reinsert card.	
PFD1 CARD3 REM – PFD1 card 3 was removed. Reinsert card.	
PFD2 CARD1 REM – PFD2 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.
PFD2 CARD2 REM – PFD2 card 2 was removed. Reinsert card.	
PFD2 CARD3 REM – PFD2 card 3 was removed. Reinsert card.	
MFD1 CARD1 REM – MFD1 card 1 was removed. Reinsert card.	The SD card was removed from the top card slot of the MFD. The SD card needs to be reinserted.
MFD1 CARD2 REM – MFD1 card 2 was removed. Reinsert card.	
MFD1 CARD3 REM – MFD1 card 3 was removed. Reinsert card.	
PFD1 CARD1 ERR – PFD1 card 1 is invalid.	The SD card in the top card slot of the specified PFD is invalid.
PFD1 CARD2 ERR – PFD1 card 2 is invalid.	
PFD1 CARD3 ERR – PFD1 card 3 is invalid.	

System Message	Comments
PFD2 CARD1 ERR – PFD2 card 1 is invalid.	The SD card in the top card slot of the specified PFD is invalid.
PFD2 CARD2 ERR – PFD2 card 2 is invalid.	
PFD2 CARD3 ERR – PFD2 card 3 is invalid.	
MFD1 CARD1 ERR – MFD1 card 1 is invalid.	The SD card in the top card slot of the MFD is invalid.
MFD1 CARD2 ERR – MFD1 card 2 is invalid.	
MFD1 CARD3 ERR – MFD1 card 3 is invalid.	

DATABASE SYSTEM MESSAGES

Message	Comments
MFD1 DB ERR – MFD1 navigation database error exists.	The specified PFD or MFD detected a failure in one or more databases. Ensure the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
PFD1 DB ERR – PFD1 navigation database error exists.	
PFD2 DB ERR – PFD2 navigation database error exists.	
GTC1 DB ERR – GTC1 database error exists.	The GTC detected a failure in one or more databases. Ensure the data card is properly inserted. Replace data card. If problem persists, the system should be serviced.
GTC2 DB ERR – GTC2 database error exists.	
DB MISMATCH – Navigation database mismatch. Xtalk is off.	The PFDs and MFD 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.

Message	Comments
DB MISMATCH – Standby Navigation database mismatch.	The PFDs and MFD 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.
DB MISMATCH – Terrain database mismatch.	The PFDs and MFD 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.
DB MISMATCH – Obstacle database mismatch.	The PFDs and MFD 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.
NAV DB UPDATED – Active navigation database updated.	System has updated the active navigation database from the standby navigation database.
PFD1 TERRAIN DSP – [PFD1 Terrain awareness display unavailable.	One of the terrain, airport terrain, or obstacle databases required for TAWS in the specified PFD or MFD is missing or invalid.
PFD2 TERRAIN DSP – PFD2 Terrain awareness display unavailable.	
MFD1 TERRAIN DSP – MFD1 Terrain awareness display unavailable.	

GIA 63W INTEGRATED AVIONICS UNIT SYSTEM MESSAGES

System Message	Comments
GIA1 CONFIG – GIA1 config error. Config service req'd.	The GIA1 and/or GIA2 configuration settings do not match backup configuration memory. The system should be serviced.
GIA2 CONFIG – GIA2 config error. Config service req'd.	
GIA1 CONFIG – GIA1 audio config error. Config service req'd.	The GIA1 and/or GIA2 have an error in the audio configuration. The system should be serviced.
GIA2 CONFIG – GIA2 audio config error. Config service req'd.	
GIA1 COOLING – GIA1 temperature too low.	The GIA1 and/or GIA2 temperature is too low to operate correctly. Allow units to warm up to operating temperature.
GIA2 COOLING – GIA2 temperature too low.	
GIA1 COOLING – GIA1 over temperature.	The GIA1 and/or GIA2 temperature is too high. If problem persists, the system should be serviced.
GIA2 COOLING – GIA2 over temperature.	
GIA1 SERVICE – GIA1 needs service. Return the unit for repair.	The GIA1 and/or GIA2 self-test has detected a problem in the unit. The system should be serviced.
GIA2 SERVICE – GIA2 needs service. Return the unit for repair.	
HW MISMATCH – GIA1 hardware mismatch, GIA1 communication halted.	A GIA mismatch has been detected, where only one is WAAS capable.
HW MISMATCH – GIA hardware mismatch, GIA2 communication halted.	

System Message	Comments
GIA1 MANIFEST – GIA1 software mismatch, communication halted.	The GIA1 and/or GIA 2 has incorrect software installed. The system should be serviced.
GIA2 MANIFEST – GIA2 software mismatch, communication halted.	
GFC MANIFEST – GFC software mismatch, communication halted.	Incorrect servo software is installed, or gain settings are incorrect.
COM1 TEMP – COM1 over temp. Reducing transmitter power.	The system has detected an over temperature condition in COM1 and/or COM2. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
COM2 TEMP – COM2 over temp. Reducing transmitter power.	
COM1 CONFIG – COM1 config error. Config service req'd.	The COM1 and/or COM2 configuration settings do not match backup configuration memory. The system should be serviced.
COM2 CONFIG – COM2 config error. Config service req'd.	
COM1 SERVICE – COM1 needs service. Return unit for repair.	The system has detected a failure in COM1 and/or COM2. COM1 and/or COM2 may still be usable. The system should be serviced when possible.
COM2 SERVICE – COM2 needs service. Return unit for repair.	
COM1 MANIFEST – COM1 software mismatch, communication halted.	The COM 1 and/or COM 2 has incorrect software installed. The system should be serviced.
COM2 MANIFEST – COM2 software mismatch, communication halted.	
COM1 PTT – COM1 push-to-talk key is stuck.	The COM1 and/or COM2 external push-to-talk switch is stuck in the enable (or "pressed") position. Press the PTT switch again to cycle its operation. If the problem persists, the system should be serviced.
COM2 PTT – COM2 push-to-talk key is stuck.	

System Message	Comments
COM1 RMT XFR – COM1 remote transfer key is stuck.	The COM1 and/or COM2 transfer switch is stuck in the enabled (or "pressed") position. Press the transfer switch again to cycle its operation. If the problem persists, the system should be serviced.
COM2 RMT XFR – COM2 remote transfer key is stuck.	
LOI – GPS integrity lost. Crosscheck with other NAVS.	GPS integrity is insufficient for the current phase of flight.
GPS NAV LOST – Loss of GPS navigation. Insufficient satellites.	Loss of GPS navigation due to insufficient satellite coverage.
GPS NAV LOST – Loss of GPS navigation. Position error.	Loss of GPS navigation due to position error.
GPS NAV LOST – Loss of GPS navigation. GPS fail.	Loss of GPS navigation due to GPS failure.
ABORT APR – Loss of GPS navigation. Abort approach.	Abort approach due to loss of GPS navigation.
APR DWNGRADE – Apr downgraded.	Vertical guidance generated by SBAS is unavailable. Use only LNAV minimums.
TRUE APR – True north approach. Change HDG reference to true.	Displayed after passing the first waypoint of a true north approach when the nav angle is set to 'AUTO'.
RAIM UNAVAIL – RAIM is 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.
GPS1 SERVICE – GPS1 needs service. Return unit for repair.	A failure has been detected in the GPS1 and/or GPS2 receiver. The receiver may still be available. The system should be serviced.
GPS2 SERVICE – GPS2 needs service. Return unit for repair.	
GPS1 FAIL – GPS1 is inoperative.	A failure has been detected in GPS receiver #1 and/or GPS receiver #2. The system should be serviced.
GPS2 FAIL – GPS2 is inoperative.	

System Message	Comments
NAV1 SERVICE – NAV1 needs service. Return unit for repair.	A failure has been detected in the NAV1 and/or NAV2 receiver. The receiver may still be available. The system should be serviced.
NAV2 SERVICE – NAV2 needs service. Return unit for repair.	
NAV1 RMT XFR – NAV1 remote transfer key is stuck.	The remote NAV1 and/or NAV2 transfer switch is stuck in the enabled (or "pressed") state. Press the transfer switch again to cycle its operation. If the problem persists, the system should be serviced.
NAV2 RMT XFR – NAV2 remote transfer key is stuck.	
NAV1 MANIFEST – NAV1 software mismatch, communication halted.	The NAV 1 and/or NAV 2 has incorrect software installed. The system should be serviced.
NAV2 MANIFEST – NAV2 software mismatch, communication halted.	
G/S1 FAIL – G/S1 is inoperative.	A failure has been detected in glideslope receiver 1 and/ or receiver 2. The system should be serviced.
G/S2 FAIL – G/S2 is inoperative.	
G/S1 SERVICE – G/S1 needs service. Return unit for repair.	A failure has been detected in glideslope receiver 1 and/ or receiver 2. The receiver may still be available. The system should be serviced when possible.
G/S2 SERVICE – G/S2 needs service. Return unit for repair.	

GEA 71 ENGINE/AIRFRAME UNIT SYSTEM MESSAGES

Message	Comments
GEA1 CONFIG – GEA1 config error. Config service req'd.	The GEA1 configuration settings do not match those of backup configuration memory. The system should be serviced.
GEA2 CONFIG – GEA2 config error. Config service req'd.	The GEA2 configuration settings do not match those of backup configuration memory. The system should be serviced.

Message	Comments
GEA3 CONFIG – GEA3 config error. Config service req'd.	The GEA3 configuration settings do not match those of backup configuration memory. The system should be serviced.
GEA1 MANIFEST – GEA1 software mismatch, communication halted.	The #1 GEA 71 has incorrect software installed. The system should be serviced.
GEA2 MANIFEST – GEA2 software mismatch, communication halted.	The #2 GEA 71 has incorrect software installed. The system should be serviced.
GEA3 MANIFEST – GEA3 software mismatch, communication halted.	The #3 GEA 71 has incorrect software installed. The system should be serviced.

GSD 41 MESSAGE ADVISORIES

Message	Comments
GSD1 CONFIG – GSD1 config error. Config service req'd.	GSD1 and the CDU have different copies of the GSD1 configuration.
GSD2 CONFIG – GSD2 config error. Config service req'd.	GSD2 and the CDU have different copies of the GSD2 configuration.
GSD1 COOLING – GSD1 temperature too low.	GSD1 is reporting a low temperature condition.
GSD1 COOLING – GSD1 over temperature.	GSD1 is reporting an over-temperature condition.
GSD2 COOLING – GSD2 temperature too low.	GSD2 is reporting a low temperature condition.
GSD2 COOLING – GSD2 over temperature.	GSD2 is reporting an over-temperature condition.
GSD1 SERVICE – GSD1 needs service. Return unit for repair.	GSD1 is reporting an internal error condition. The GSD may still be usable.
GSD2 SERVICE – GSD2 needs service. Return unit for repair.	GSD2 is reporting an internal error condition. The GSD may still be usable.

Message	Comments
GSD1 MANIFEST – GSD1 software mismatch. Communication halted.	GSD1 has incorrect software installed. The system should be serviced.
GSD2 MANIFEST – GSD2 software mismatch. Communication halted.	GSD2 has incorrect software installed. The system should be serviced.

GMU 44 MAGNETOMETER SYSTEM MESSAGES

Message	Comments
HDG FAULT – AHRS1 magnetometer fault has occurred.	A fault has occurred in the #1 GMU 44. Heading is flagged as invalid. The AHRS uses GPS for backup mode operation. The system should be serviced.
HDG FAULT – AHRS2 magnetometer fault has occurred.	A fault has occurred in the #2 GMU 44. Heading is flagged as invalid. The AHRS uses GPS for backup mode operation. The system should be serviced.
GMU1 MANIFEST – GMU1 software mismatch, communication halted.	The GMU 44 has incorrect software installed. The system should be serviced.
GMU2 MANIFEST – GMU2 software mismatch, communication halted.	

GRS 77 ATTITUDE AND HEADING REFERENCE SYSTEM MESSAGES

System Message	Comments
AHRS1 TAS – AHRS1 not receiving airspeed.	The #1 AHRS is not receiving true airspeed from the air data computer. The AHRS relies on GPS information to augment the lack of airspeed. The system should be serviced.
AHRS2 TAS – AHRS2 not receiving airspeed.	The #2 AHRS is not receiving true airspeed from the air data computer. The AHRS relies on GPS information to augment the lack of airspeed. The system should be serviced.

System Message	Comments
AHRS1 GPS – AHRS1 using backup GPS source.	The #1 AHRS is using the backup GPS path. Primary GPS path has failed. The system should be serviced when possible.
AHRS2 GPS – AHRS2 using backup GPS source.	The #2 AHRS is using the backup GPS path. Primary GPS path has failed. The system should be serviced when possible.
AHRS1 GPS – AHRS1 not receiving any GPS information.	The #1 AHRS is not receiving any or any useful GPS information. Check AFMS limitations. The system should be serviced.
AHRS2 GPS – AHRS2 not receiving any GPS information.	The #2 AHRS is not receiving any or any useful GPS information. Check AFMS limitations. The system should be serviced.
AHRS1 GPS – AHRS1 not receiving backup GPS information.	The #1 AHRS is not receiving backup GPS information. The system should be serviced.
AHRS2 GPS – AHRS2 not receiving backup GPS information.	The #2 AHRS is not receiving backup GPS information. The system should be serviced.
AHRS1 GPS – AHRS1 operating exclusively in no-GPS mode.	The #1 AHRS is operating exclusively in no-GPS mode. The system should be serviced.
AHRS2 GPS – AHRS2 operating exclusively in no-GPS mode.	The #2 AHRS is operating exclusively in no-GPS mode. The system should be serviced.
AHRS MAG DB – AHRS magnetic model database version mismatch.	The #1 AHRS and #2 AHRS magnetic model database versions do not match.
AHRS1 SRVC – AHRS1 Magnetic-field model needs update.	The #1 AHRS earth magnetic field model is out of date. Update magnetic field model when practical.
AHRS2 SRVC – AHRS2 Magnetic-field model needs update.	The #2 AHRS earth magnetic field model is out of date. Update magnetic field model when practical.
GRS1 SERVICE – GRS1 needs service. Return unit for repair.	The #1 AHRS should be serviced when possible.
GRS2 SERVICE – GRS2 needs service. Return unit for repair.	The #2 AHRS should be serviced when possible.

System Message	Comments
GEO LIMITS – AHRS1 too far north/south, no magnetic compass.	The aircraft is outside geographical limits for approved AHRS operation. Heading is annunciated as invalid.
GEO LIMITS – AHRS2 too far north/south, no magnetic compass.	
GRS1 CONFIG – GRS1 config error. Config service req'd.	GRS configuration settings do not match those of backup configuration memory. The system should be serviced.
GRS2 CONFIG – GRS2 config error. Config service req'd.	
GRS1 MANIFEST – GRS1 software mismatch, communication halted.	The #1 AHRS has incorrect software installed. The system should be serviced.
GRS2 MANIFEST – GRS2 software mismatch, communication halted.	The #2 AHRS has incorrect software installed. The system should be serviced.

GTC 570 TOUCHSCREEN CONTROLLER SYSTEM MESSAGES

System Message	Comments
GTC1 CONFIG – GTC1 config error. Config service req'd.	GTC configuration settings do not match those of backup configuration memory. The system should be serviced.
GTC2 CONFIG – GTC2 config error. Config service req'd.	
GTC1 SERVICE – GTC1 needs service. Return unit for repair.	The GTC should be serviced..
GTC2 SERVICE – GTC2 needs service. Return unit for repair.	
GTC1 COOLING – GTC1 has poor cooling. Reducing power usage.	The GTC has insufficient cooling. If the problem persists, the system should be serviced.
GTC2 COOLING – GTC2 has poor cooling. Reducing power usage.	

System Message	Comments
GTC1 VOLTAGE – GTC1 has low voltage. Reducing power usage	The GTC voltage is low. The system should be serviced.
GTC2 VOLTAGE – GTC2 has low voltage. Reducing power usage	
GTC1 FAN FAIL – GTC1 internal fan failure. Unit needs service.	The internal fan in the GTC has failed. The system should be serviced.
GTC2 FAN FAIL – GTC2 internal fan failure. Unit needs service.	
GTC1 MANIFEST – GTC 1 software mismatch, communication halted.	The GTC has incorrect software installed. The system should be serviced.
GTC2 MANIFEST – GTC 2 software mismatch, communication halted.	
GTC1 CARD1 ERR – GTC1 card 1 is invalid.	The internal SD card in the GTC contains invalid data. The system should be serviced.
GTC2 CARD1 ERR – GTC2 card 1 is invalid.	
GTC1 CARD1 REM – GTC1 card 1 was removed. Reinsert card.	The internal SD card in the GTC was removed. The system should be serviced.
GTC2 CARD1 REM – GTC2 card 1 was removed. Reinsert card.	
GTC1 KEYSTK – GTC1 [key name] key is stuck.	A knob or joystick 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.
GTC2 KEYSTK – GTC2 [key name] key is stuck.	

GSR 56 MESSAGE ADVISORIES

Message	Comments
GSR1 FAIL – GSR1 has failed.	A failure has been detected in GSR1. The system should be serviced.
MANIFEST – GSR1 software mismatch, communication halted.	The GSR1 has incorrect software installed. The system should be serviced.

GDL 59 MESSAGE ADVISORIES

Message	Comments
GDL59 CONFIG – GDL 59 config error. Config service req'd.	GDL 59 configuration settings do not match those of backup configuration memory. The system should be serviced.
GDL59 FAIL – GDL 59 has failed.	A failure has been detected in the GDL 59. The receiver is unavailable. The system should be serviced.
GDL59 SERVICE – GDL 59 needs service. Return unit for repair.	A failure has been detected in the GDL 59. The system should be serviced.
GDL59 RTR FAIL – The GDL 59 router has failed.	A failure has been detected in the GDL 59 router. The system should be serviced.
REGISTER GFDS – Data services are inoperative, register w/GFDS.	The GDL 59 is not registered with Garmin Flight Data Services, or its current registration data has failed authentication.
GDL59 MANIFEST – GDL59 software mismatch, communication halted.	The GDL 59 has incorrect software installed. The system should be serviced.

GDR 66 VHF DATALINK TRANSCEIVER SYSTEM MESSAGES

System Message	Comments
ATC MESSAGE – <message>.	Message has been received from ATC via CPDLC.
CPDLC – CPDLC is available.	Logon successful. Data link is available for use.
CPDLC – CPDLC connection lost. Establish new connection.	Data link connection has been lost.
CPDLC – CPDLC facility logon failed.	Logon failed. Check pertinent entries for accuracy.
CPDLC – CPDLC data link available. Logon is still required.	The data link is ready for use, but logon to the facility has not yet taken place.
GDR TEMP – GDR over temp. Reducing transmitter power.	The system has detected an over temperature condition in the GDR. The transmitter operates at reduced power. If the problem persists, the system should be serviced.
GDR FAIL – GDR is inoperative.	A failure has been detected in the GDR. The system should be serviced.

System Message	Comments
GDR TX FAIL – GDR transmitter is inoperative.	If GDR service is not set then check antenna for faults and unit for extreme temperatures
GDR PTT – GDR push-to-talk key is stuck.	The GDR 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.
GDR RMT XFR – GDR remote transfer key is stuck.	The GDR transfer switch is stuck in the enabled (or "pressed") position. Press the transfer switch again to cycle its operation. If the problem persists, the system should be serviced.
GDR SERVICE – GDR needs service. Return unit for repair.	The GDR should be serviced when possible.
GDR CONFIG – GDR config error. Config service req'd.	GDR configuration settings do not match those of backup configuration memory. The system should be serviced.
GDR MANIFEST – GDR software mismatch, communication halted.	The GDR has incorrect software installed. The system should be serviced.
GDR AUX MANIFEST – GDR AUX software mismatch, communication halted.	The GDR secondary processor has incorrect software installed. The system should be serviced.

GDL 69A SATELLITE DATALINK RECEIVER SYSTEM MESSAGES

System Message	Comments
GDL69 CONFIG – GDL 69 config error. Config service req'd.	GDL 69A configuration settings do not match those of backup configuration memory. The system should be serviced.
GDL69 FAIL – GDL 69 has failed.	A failure has been detected in the GDL 69A. The receiver is unavailable. The system should be serviced.
GDL69 MANIFEST – GDL69 software mismatch, communication halted.	The GDL 69A has incorrect software installed. The system should be serviced.

GWX 70 AIRBORNE COLOR WEATHER RADAR SYSTEM MESSAGES

Message	Comments
GWX CONFIG – GWX config error. Config service req'd.	GWX configuration settings do not match those of the GDU configuration. The system should be serviced.
GWX FAIL – GWX is inoperative.	The GDU is not recieving status packet from the GWX or the GWX is reporting a fault. The radar system should be serviced.
GWX SERVICE – GWX needs service. Return unit for repair.	A failure has been detected in the GWX. The GWX may still be usable.
GWX MANIFEST – GWX software mismatch, communication halted.	The GWX has incorrect software installed. The system should be serviced.
WX ALERT – Possible severe weather ahead.	Possible severe weather detected within +/- 10 degrees of the aircraft heading at a range of 80 to 320 nm.

GMA 36 REMOTE AUDIO CONTROLLER SYSTEM MESSAGES

System Message	Comments
GMA1 FAIL – GMA1 is inoperative.	The audio controller has detected a failure. The audio controller is unavailable. The system should be serviced.
GMA2 FAIL – GMA2 is inoperative.	
GMA1 CONFIG – GMA1 config error. Config service req'd.	The audio controller configuration settings do not match backup configuration memory. The system should be serviced.
GMA2 CONFIG – GMA2 config error. Config service req'd.	
GMA XTALK – GMA crosstalk error has occurred.	The GMA Audio Controllers are not communicating with each other. The system should be serviced.
DIG GMA1 MANIFEST – DIG GMA 1 software mismatch, communication halted.	The digital audio controller has incorrect software installed. The system should be serviced.
DIG GMA2 MANIFEST – DIG GMA 2 software mismatch, communication halted.	

System Message	Comments
GMA1 AUDIO MANIFEST – GMA1 audio software mismatch, communication halted.	The audio system has incorrect software installed. The system should be serviced.
GMA2 AUDIO MANIFEST – GMA2 audio software mismatch, communication halted.	
GMA1 AUX MANIFEST – GMA 1 AUX software mismatch, communication halted.	The digital audio controller has incorrect software installed. The system should be serviced.
GMA2 AUX MANIFEST – GMA 2 AUX software mismatch, communication halted.	
GMA1 SERVICE – 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 possible.
GMA2 SERVICE – GMA2 needs service. Return unit for repair.	

GMC 715 AFCS CONTROLLER SYSTEM MESSAGES

System Message	Comments
GMC CONFIG – GMC Config error. Config service req'd.	Error in the configuration of the GMC.
GMC FAIL – GMC is inoperative.	A failure has been detected in the GMC. The GMC is unavailable.
GMC MANIFEST – GMC software mismatch. Communication halted.	The GMC has incorrect software installed. The system should be serviced.
GMC KEYSTK – GMC [key name] key is stuck.	A key is stuck on the GMC bezel. Attempt to free the stuck key by pressing it several times. The system should be serviced if the problem persists.

MISCELLANEOUS SYSTEM MESSAGES

System Message	Comments
FPL WPT LOCK – Flight plan waypoint is locked.	Upon power-up, The system detects that a stored flight plan waypoint is locked. This occurs when an 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.
FPL WPT MOVE – Flight plan waypoint moved.	The system has detected that a waypoint coordinate has changed due to a new navigation database update. Verify that stored flight plans contain correct waypoint locations.
TIMER EXPIRD – Timer has expired.	The system notifies the pilot the timer has expired.
DB CHANGE – Database changed. Verify user modified procedures.	This occurs when a stored flight plan contains procedures that have been manually edited. This alert is issued only after a navigation database update. Verify the user-modified procedures in stored flight plans are correct and current.
DB CHANGE – Database changed. Verify stored airways.	This occurs when a stored flight plan contains an airway that is no longer consistent with the navigation database. This alert is issued only after a navigation database update. Verify use of airways in stored flight plans and reload airways as needed.
FPL TRUNC – Flight plan has been truncated.	This occurs when a newly installed navigation database eliminates an obsolete approach or arrival used by a stored flight plan. The obsolete procedure is removed from the flight plan. Update flight plan with current arrival or approach.
WPT ARRIVAL – Arriving at waypoint - [xxxx]	Arriving at waypoint [xxxx], where [xxxx] is the waypoint name.
STEEP TURN – Steep turn ahead.	A steep turn is 15 seconds ahead. Prepare to turn.

System Message	Comments
INSIDE ARSPC – Inside airspace.	The aircraft is inside the airspace.
ARSPC AHEAD – Airspace ahead - less than 10 minutes.	Special use airspace is ahead of aircraft. The aircraft will penetrate the airspace within 10 minutes.
ARSPC NEAR – Airspace near and ahead.	Special use airspace is near and ahead of the aircraft position.
ARSPC NEAR – Airspace near – less than 2 nm.	Special use airspace is within 2 nm of the aircraft position.
APR INACTV – Approach is not active.	The system notifies the pilot the loaded approach is not active. Activate approach when required.
SLCT FREQ – Select appropriate frequency for approach.	The system notifies the pilot to load the approach frequency for the appropriate NAV receiver. Select the correct frequency for the approach.
SLCT NAV – Select NAV on CDI for approach.	The system notifies the pilot to set the CDI to the correct NAV receiver. Set the CDI to the correct NAV receiver.
UNABLE V WPT – Can't reach current vertical waypoint.	The current vertical waypoint can not be reached within the maximum flight path angle and vertical speed constraints. The system automatically transitions to the next vertical waypoint.
VNV – Unavailable: 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.
VNV – Unavailable: Excessive cross-track error.	The current crosstrack exceeds the limit, causing vertical deviation to go invalid.
VNV – Unavailable: Excessive track angle error.	The current track angle error exceeds the limit, causing the vertical deviation to go invalid.
VNV – Unavailable: Parallel course selected.	A parallel course has been selected, causing the vertical deviation to go invalid.
BARO MISMATCH – Correct baro mismatch for VNAV guidance.	Altimeter setting is not the same on PFD1 and PFD2. Synchronize settings for VNAV guidance.

System Message	Comments
NON WGS84 WPT – Do not use GPS for navigation to [xxxx]	The position of the selected waypoint [xxxxx] 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.
TRAFFIC FAIL – Traffic device has failed.	The system is no longer receiving data from the traffic system. The traffic device should be serviced.
FAILED PATH – A data path has failed.	A data path connected to the GDU or the GIA has failed.
MAG VAR WARN – Large magnetic variance. 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°.
USER MAG VAR – User magnetic variation is active.	User entered magnetic variation is being used for system calculations.
SCHEDULER [#] – <message>.	Message criteria entered by the user.
SVT DISABLED – Out of available terrain region.	Synthetic Vision is disabled because the aircraft is not within the boundaries of the installed terrain database.
SVT DISABLED – Terrain DB resolution too low.	Synthetic Vision is disabled because a terrain database of sufficient resolution (9 arc-second or better) is not currently installed.
TERRAIN DISABLED – 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.
TRN AUD FAIL – Trn Awareness audio source unavailable.	TAWS is disabled because an aural alert audio source is unavailable.
TERRAIN AUD CFG – Trn Awareness audio config error. Service req'd.	TAWS is disabled because the audio configuration is invalid. The system should be serviced.
CHECK CRS – Database course for LOC1 / [LOC ID] is [CRS]°.	Selected course for LOC1 differs from published localizer course by more than 10 degrees.
CHECK CRS – Database course for LOC2 / [LOC ID] is [CRS]°.	Selected course for LOC2 differs from published localizer course by more than 10 degrees.

System Message	Comments
[PFD1, PFD2, or MFD1] CARD 1 REM – [PFD1, PFD2, or MFD1] card 1 was removed. Reinsert card.	The SD card was removed from the top card slot of the PFD or MFD. The SD card needs to be reinserted.
[PFD1, PFD2, or MFD1] CARD 2 REM – Card 2 was removed. Reinsert card.	The SD card was removed from the bottom card slot of the PFD or MFD. The SD card needs to be reinserted.
[PFD1, PFD2, or MFD1] CARD 1 ERR – [PDF1 or MFD1] card 1 is invalid.	The SD card in the top card slot of the PFD or MFD contains invalid data.
[PFD1, PFD2, or MFD1] CARD 2 ERR – [PFD1 or MFD1] Card 2 is invalid.	The SD card in the bottom card slot of the PFD or MFD contains invalid data.
[PFD1, PFD2, or MFD1] CARD 3 REM – Card 3 was removed. Reinsert card.	The internal SD card was removed from the PFD or MFD. The system should be serviced.
[PFD1, PFD2, or MFD1] CARD 3 ERR – [PDF1 or MFD1] card 3 is invalid.	The internal SD card in the PFD or MFD contains invalid data. The system should be serviced.
DATA LOST – Pilot stored data was lost. Recheck settings.	The system was unable to save pilot data. Verify settings.

FLIGHT PLAN IMPORT/EXPORT MESSAGES

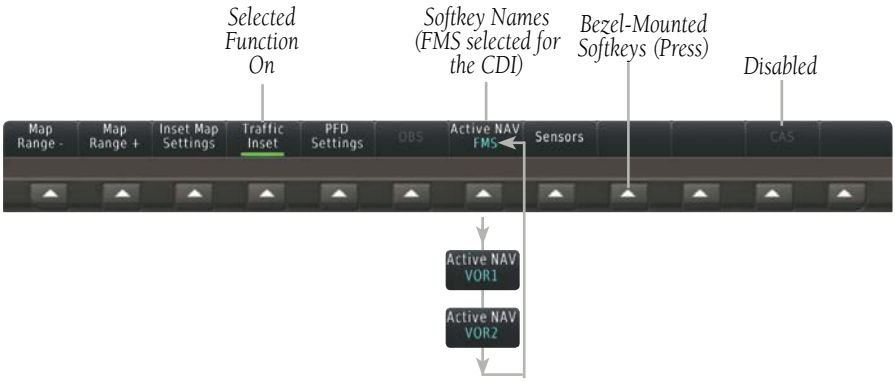
In some circumstances, some messages may appear in conjunction with others.

Flight Plan Import/Export Results	Description
'Flight plan successfully imported.'	A flight plan file stored on the SD card was successfully imported as a stored flight plan.
'File contained user waypoints only. User waypoints imported successfully. No stored flight plan data was modified.'	The file stored on the SD card did not contain a flight plan, only user waypoints. These waypoints have been saved to the system user waypoints. No flight plans stored in the system have been modified.
'No flight plan files found to import.'	The SD card contains no flight plan data.

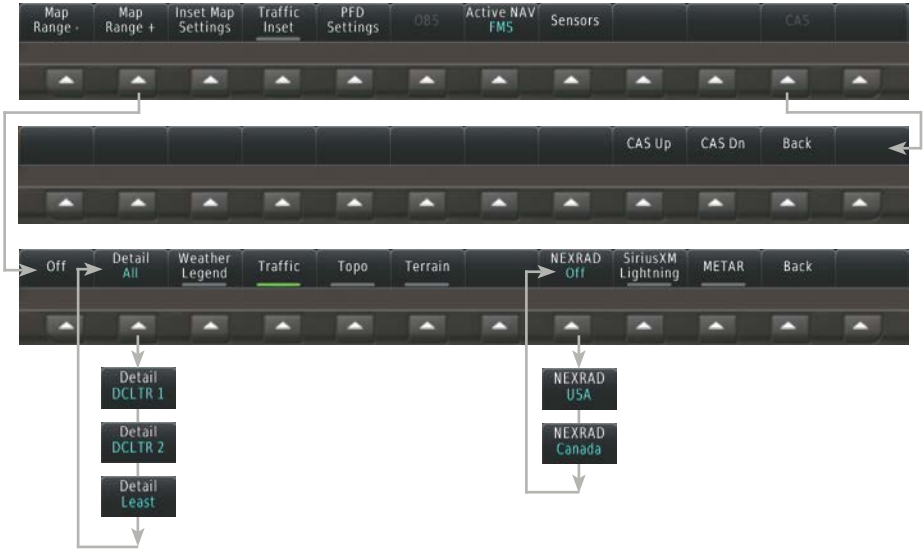
Flight Plan Import/Export Results	Description
'Flight plan import failed.'	Flight plan data was not successfully imported from the SD card.
'Flight plan partially imported.'	Some flight plan waypoints were successfully imported from the SD card, however others had errors and were not imported. A partial 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.
'User waypoint database full. Not all loaded.'	The flight plan file on the SD card contains user waypoints. The quantity of stored user waypoints has exceeded system capacity, therefore not all the user waypoints on the SD card have been imported. Any flight plan user waypoints that were not imported are locked in the flight plan. The flight plan must be edited within the system before it can be activated for use.
'One or more user waypoints renamed.'	One or more imported user waypoints were renamed when imported due to naming conflicts with waypoints already existing in the system.
'Flight plan successfully exported.'	The stored flight plan was successfully exported to the SD card.
'Flight plan export failed.'	The stored flight plan was not successfully exported to the SD card. The SD card may not have sufficient available memory or the card may have been removed prematurely.

APPENDIX

PFD SOFTKEYS



Top Level PFD Softkeys



Inset Map Settings and CAS Softkeys

PFD Settings Softkeys

Sensor Softkeys

Level 1	Level 2	Level 3	Level 4	Description
Map Range -				Decreases the Inset Map display range
Map Range +				Increases the Inset Map display range
Inset Map Settings				Displays the Inset Map display settings softkeys
	Off			Removes the Inset Map from the display
	Detail			Selects desired amount of map detail; cycles through declutter levels: **All** (No Declutter): All map features visible **DCLTR 1**: Declutters land data **DCLTR 2**: Declutters land and SUA data **Least**: Removes everything except for the active flight plan
	Weather Legend			Displays/removes the name of the selected data link weather provider (SiriusXM, Connext) and the weather product icon and age box (for enabled weather products).
	Traffic			Adds or removes the display of traffic on the Inset Navigation Map. The softkey annunciator is green when the traffic function is on. When the traffic function is off, the annunciator is gray.
	Topo			Adds or removes the display of map topography on the Inset Map. The softkey annunciator is green when topography is on. When topography is off, the annunciator is gray.

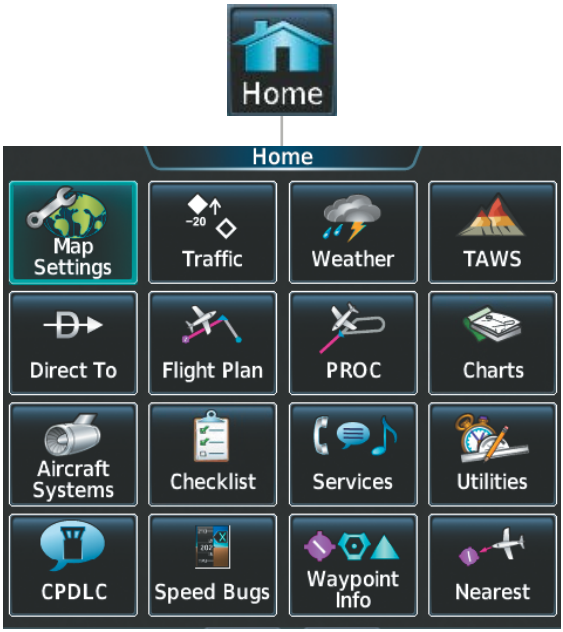
Level 1	Level 2	Level 3	Level 4	Description
	Terrain			Adds/removes the display of relative terrain information on the Inset Navigation Map. The softkey annunciator is green when topography is on. When topography is off, the annunciator is gray.
	NEXRAD Radar			Displays/removes NEXRAD Inset Map; cycles through regions. USA: Displays NEXRAD data only for the United States Canada: Displays NEXRAD data only for Canada Off: Removes NEXRAD data from the Inset Map
	SiriusXM Lightning			Adds/removes the display of SiriusXM information on the Inset Navigation Map. The softkey annunciator is green when the lightning function is on. When the lightning function is off, the annunciator is gray.
	METAR			Adds/removes the display of SiriusXM or Connext METAR data on the Inset Navigation Map. The softkey annunciator is green when the METAR data is enabled. When the METAR data is off, the annunciator is gray.
Traffic Map				Replaces the Inset Map with a dedicated traffic display. The softkey annunciator is green when the dedicated traffic display on. When the Inset Map is on, the softkey annunciator is gray.
PFD Settings				Displays the PFD settings softkeys.
	Synthetic Vision			Displays the softkeys for enabling or disabling Synthetic Vision features.

Level 1	Level 2	Level 3	Level 4	Description
		Pathways		Displays Pathway Boxes on the Synthetic Vision Display.
		Synthetic Terrain		Enables synthetic terrain depiction.
		Horizon Heading		Displays compass heading along the Zero-Pitch line.
		Airport Signs		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.
	PFD Mode			Enables or disables a multi-function Display Pane on the PFD. **FULL**: Display Pane is disabled. The PFD display occupies the full screen. **Split**: Display Pane is enabled. The PFD screen is split between the PFD display and the Display Pane.
	Bearing 1			Cycles the Bearing 1 Information Window through NAV1, GPS/waypoint identifier and GPS-derived distance information, ADF/frequency, and Off.
	Bearing 2			Cycles the Bearing 2 Information Window through NAV2, GPS/waypoint identifier and GPS-derived distance information, ADF/frequency, and Off.
	Other PFD Settings			Displays additional PFD settings softkeys.
		Wind		Displays the wind option softkeys
			Option 1	Headwind/Tailwind and crosswind components.
			Option 2	Wind direction arrow and speed.
			Option 3	Wind direction arrow with direction and speed.

Level 1	Level 2	Level 3	Level 4	Description
			Off	Information not displayed.
		Altitude Units		Displays softkeys to select altitude unit parameters.
			Meters	When enabled, displays altimeter in meters.
			IN	Press to display the BARO setting as inches of mercury
			HPA	Press to display the BARO setting as hectopacals.
		COM1 121.5		Tunes COM1 to the emergency frequency.
OBS				Selects OBS mode on the CDI when navigating by GPS (only available with active leg). When OBS is on, the softkey annunciator is green.
Active NAV				Cycles through FMS, VOR1, and VOR2 navigation modes on the CDI.
Sensors				Displays the sensor selection softkeys.
	ADC Settings			Displays the ADC selection softkeys.
		ADC 1		Selects the number 1 ADC. The softkey annunciator is green when selected.
		ADC 2		Selects the number 2 ADC. The softkey annunciator is green when selected.
		ADC Standby		Indicates the standby ADC input is being used by the system.
	AHRS Settings			Displays the AHRS selection softkeys.
		AHRS 1		Selects the number 1 AHRS. The softkey annunciator is green when selected.
		AHRS 2		Selects the number 2 AHRS. The softkey annunciator is green when selected.
		AHRS Standby		Indicates the standby AHRS input is being used by the system.

GTC SCREENS

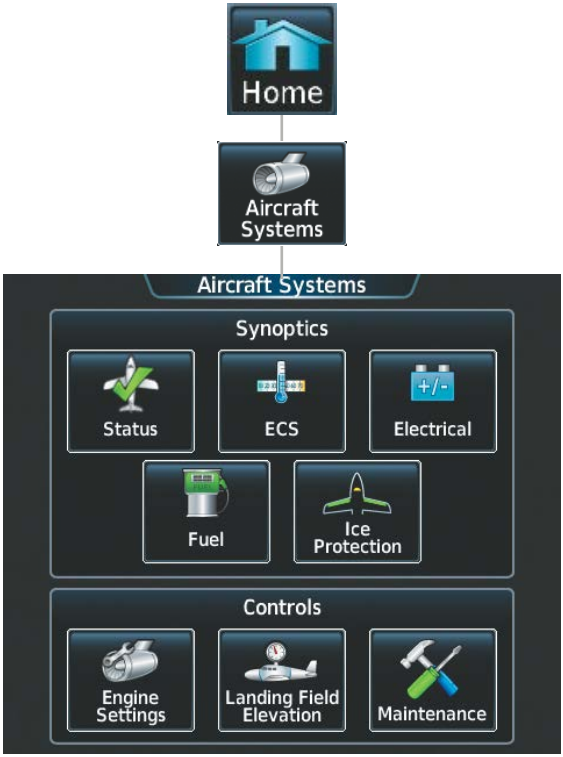
Home Screen



Map	Shows Navigation Map Display in the selected Display Pane. Touch button again to access Map Settings Display on Touchscreen Controller.
Traffic	Shows Traffic Map Display in the selected Display Pane. Touch button again to access Traffic Map Settings Display on Touchscreen Controller.
Weather	Shows Weather Display in the selected Display Pane. Touch button again to access Map Settings Display on Touchscreen Controller.
TAWS	Shows the TAWS Display in the selected Display Pane. Touch button again to access TAWS Settings screen on Touchscreen Controller.
Direct To	Accesses Direct-To screen on Touchscreen Controller.

Flight Plan	Accesses Active Flight Plan screen on the Touchscreen Controller. A Flight Plan display is shown in the MFD.
PROC	Accesses Procedures screen on Touchscreen Controller. Additional map displays may be shown as procedures are selected.
Charts	Accesses Charts screen on Touchscreen Controller. Charts are shown on MFD.
Aircraft Systems	Accesses Systems screen on Touchscreen Controller. Systems data can be selected for display on the Touchscreen Controller, and displayed on the MFD. Also provides means to perform and monitor system tests.
Checklist	Touch to display the Checklist Screen. The Checklist Screen provides access to the various aircraft checklists.
Services	Accesses Services Menu Screen on Touchscreen Controller. Includes optional voice phone and text messaging services, SiriusXM Satellite Radio controls.
Utilities	Weight and Fuel, TOLD (Takeoff and Landing Data) VREF, Trip Planning functions, Minimums, Trip Statistics, Timer, Scheduled Messages, GPS Status, FLC Profile, Initialization.
CPDLC	Displays the CPDLC (Controller Pilot Data Link Communications) Screen. Provides controls for managing CPDLC connections, and message management features.
Speed Bugs	Displays the Speed Bugs Screen on the Touchscreen Controller. Provides for enabling and disabling speed bugs and setting bug parameters.
Waypoint Info	Provides information about Airports, Intersections, VORs, NDBs, User Waypoints. Also allows creation of User Waypoints.
Nearest	Provides information about the nearest Airports, Intersections, VORs, NDBs, User Waypoints, Airspace, ARTCC facilities, Flight Service Stations, and Weather reporting stations.

Aircraft Systems Screen



Status	Shows the Status display in Half-Mode in the selected Display Pane. Includes information on various aircraft systems.
ECS	Shows the Environmental Control System synoptic display in the selected Display Pane in Half-Mode. Includes information on the cabin temperature, oxygen quantities, and cabin pressurization.
Electrical	Shows the Electrical synoptic display in the selected Display Pane in Half-Mode. Includes information on batteries, generators, and busses.
Fuel	Shows the Fuel synoptics display in the selected Display Pane in Half-Mode. Includes the fuel quantities and weights, statuses of fuel flow, and valve positions.
Ice Protection	Shows the Anti Ice synoptic display in the selected Display Pane. Displays anti-ice system status information.

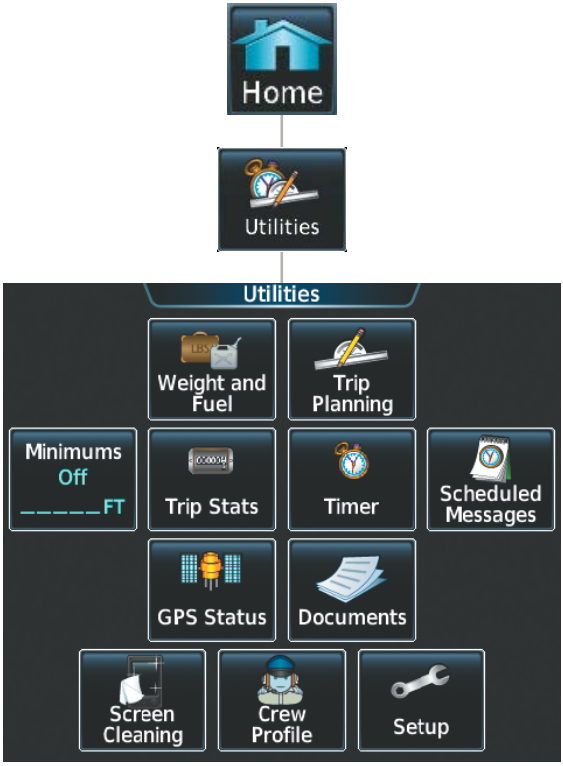
	Displays the Engine Settings Screen on the Touchscreen Controller. This screen provides for changing engine thrust rating and entering takeoff data.
	Displays the Landing Field Elevation Screen on the Touchscreen Controller. Allows for manual or FMS entry of field elevation.
	Provides functions accessible to maintenance personnel.

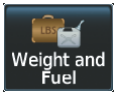
Services Screen

	Music Screen provides controls for SiriusXM Satellite Radio including channel selection, volume, and muting settings.

	Telephone Screen shows the status of the Iridium satellite telephone connection and provides telephone controls.
	SMS Text Messaging Screen provides management of incoming and outgoing SMS (short message service) text messages.
	Contacts Screen provides management of contact information including phone and email addresses. Also provides quick access to stored contacts via phone, SMS, or email.

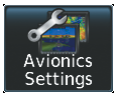
Utilities Screen



	Accesses Weight and Fuel screen on the Touchscreen Controller. Provides for input of weight and balance data and performs calculations.

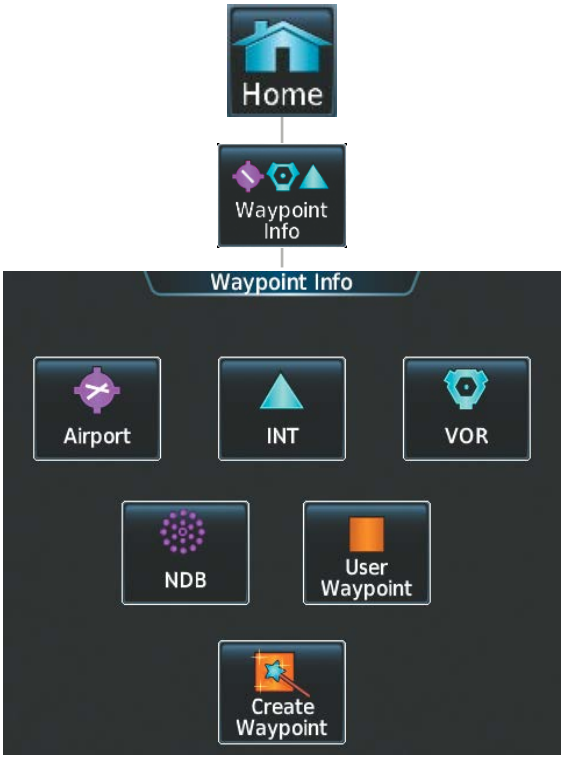
Trip Planning	Accesses the Trip Planning screen on the Touchscreen Controller.
Minimums Off _____ FT	Accesses the Minimums screen on the Touchscreen Controller. Provides controls for the Minimum Descent Altitude/Decision Height alerting function. Button displays the current minimums altitude and source if provided.
Trip Stats	Accesses the Trip Statistics screen on the Touchscreen Controller. Shows information regarding Flight Time, Departure Time, Odometer, Trip Odometer, Average Ground Speed, and Maximum Ground Speed. Also provides controls for trip statistic configuration.
Timer	Accesses the Timer screen on the Touchscreen Controller. Controls the timer on the PFD.
Scheduled Messages	Used to create custom messages to be displayed one-time or periodically. The Touchscreen Controller displays these messages on the Messages Screen on the Touchscreen Controller.
GPS Status	Shows the GPS Status display in the selected Display Pane. Touchscreen Controller provides additional RAIM prediction function, GPS receiver selection, and SBAS selection.
Documents	Shows controls for viewing electronic documents on the Touchscreen Controller, and displays documents in the selected Display Pane.
Screen Cleaning	Feature temporarily disables touchscreen glass input to allow for manual cleaning. Turn or press any knob on the Touchscreen Controller to exit Screen Cleaning Mode.
Crew Profile	Controls for activating and managing crew profiles.
Setup	Avionics Settings and Status, Data Link Services registration and status, Wi-Fi setup.

Setup Screen

	Provides controls for changing system avionics settings, such as, time format, units of measure, airspace alert settings, and MFD Data Bar Fields.
	Displays information on the Touchscreen Controller for installed LRUs, system software, and databases.
	Shows the SiriusXM Information Screen on the Touchscreen Controller. Used to activate audio and data services from SiriusXM Satellite Radio and to verify subscriptions of SiriusXM Weather products.
	Used to register with Garmin Flight Data Services (GFDS). Also provides information on current GFDS registration.

Wi-Fi Setup	Provides controls for selecting available wireless networks, and for storing favorite wireless hotspots.
CPDLC Settings	Displays the CPDLC Screen, giving access to the CPDLC Test Mode.

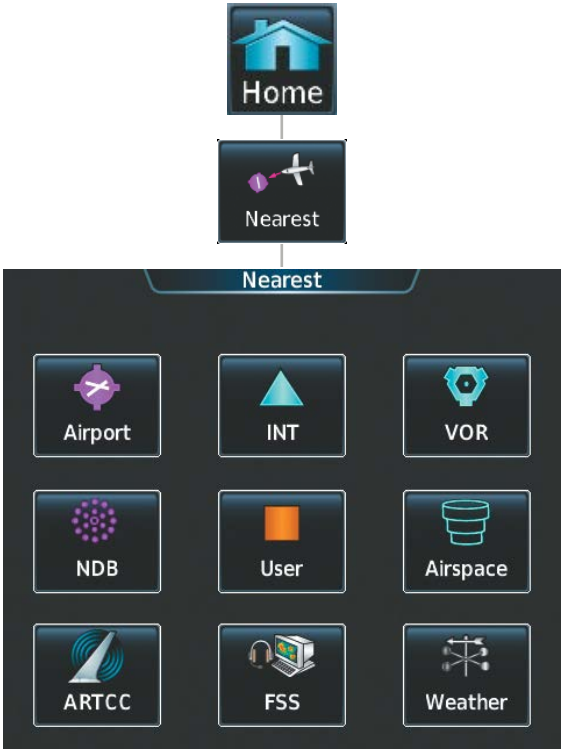
Waypoint Info Screen

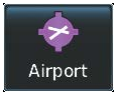
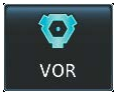
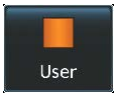
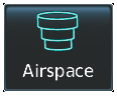
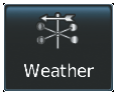


Airport	Accesses airport information including frequencies, weather, procedures, charts, runways, and airport directory data.
INT	Shows information for a selected intersection including bearing, distance, and location.

VOR	Provides VOR information including frequencies and location.
NDB	Provides NDB information including frequencies and locations.
User Waypoint	Provides location information for User Waypoints including a list of User Waypoints.
Create Waypoint	Create User Waypoints based on present position or a designated location.

Nearest Screen



	Displays a list of the nearest airports, with runway, bearing, and distance information.
	Displays a list of the nearest intersections with bearing and distance information.
	Displays a list of the nearest VORs with bearing, distance, and frequency information.
	Displays a list of the nearest NDBs with bearing, distance, and frequency information.
	Displays a list of the nearest User Waypoints with bearing and distance information.
	Displays information about the nearest airspace and status.
	Displays information about the nearest ARTCC facilities including bearing, distance, and frequencies.
	Displays the nearest Flight Service Stations with bearing, distance, and frequency information
	Displays the nearest weather reporting sources, bearings, distances, and frequencies

DATABASE MANAGEMENT

***CAUTION:** Never disconnect power to the system when loading a database. Power interruption during the database loading process could result in maintenance being required to reboot the system.*

The system uses Secure Digital (SD) cards to load and store various types of data. For basic flight operations, SD cards are required for database storage as well as Jeppesen navigation and ChartView database updates. Not all SD cards are compatible with the system. Use only SD cards supplied by Garmin or the aircraft manufacturer.

***CAUTION:** When downloading updates to the Jeppesen Navigation Database, copy the data to an SD card other than a Garmin Supplemental Data Card. Otherwise, data corruption can occur.*

***NOTE:** When loading database updates, the 'DB Mismatch' message will be displayed until database synchronization is complete, followed by turning system power off, then on. Synchronization can be monitored on the Avionics Status Screen on the Touchscreen Controller.*

***NOTE:** Loading a database in the system prior to its effective date will result in the expiration date on the power-up screen and the effective date on the Avionics Status Screen being displayed in yellow.*

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

Jeppesen Databases

The Jeppesen navigation database is updated on a 28-day cycle. The ChartView database is updated on a 14-day cycle. If the ChartView database is not updated within 70 days of the expiration date, ChartView will no longer function. Both of these databases are provided directly from Jeppesen.

The ChartView database should be copied to a Garmin supplied Supplemental Data Card which will reside in the bottom card slot on of one of the GDUs. The navigation database must be installed from the Jeppesen or user supplied SD data card. Contact Jeppesen (www.jeppesen.com) for subscription and update information.

NOTE: After the navigation database is installed, the card may be removed.

Updating the active Jeppesen navigation database (not using the Dual Navigation Database or Automatic Database Synchronization Features):

1) With the system OFF, insert the SD card containing the new navigation database version into the top card slot of the MFD with the label of SD card facing left.
2) Turn the system ON. A prompt is presented on the MFD display:

```
DO YOU WANT TO UPDATE THE STANDBY NAVIGATION DATABASE ON THE BOTTOM CARD?
THE STANDBY DATABASE WILL BE ACTIVATED UPON THE FIRST ON-GROUND POWER CYCLE ON OR
AFTER 00:00 SYSTEM TIME ON THE EFFECTIVE DATE.
            FROM            TO
REGION:     WORLDWIDE       WORLDWIDE
CYCLE:      1204            1205
EFFECTIVE:  09-APR-2012     07-MAY-2012
EXPIRES:    07-MAY-2012     04-JUN-2012
```

3) Press the **NO** Softkey to proceed to loading the active database.
4) A prompt is displayed, press the **YES** Softkey to update the active navigation database.

```
DO YOU WANT TO UPDATE THE ACTIVE NAVIGATION DATABASE?
SELECTING YES WILL OVERWRITE THE ACTIVE NAVIGATION DATABASE.
            FROM            TO
REGION:     WORLDWIDE       WORLDWIDE
CYCLE:      1204            1205
EFFECTIVE:  09-APR-2012     07-MAY-2012
EXPIRES:    07-MAY-2012     04-JUN-2012

NO WILL BE ASSUMED IN 8 SECONDS.
UPDATING THE ACTIVE NAVIGATION DATABASE, PLEASE WAIT.
.
UPDATED 1 FILES SUCCESSFULLY!
PRESS ANY KEY TO CONTINUE.
CONTINUING IN 8 SECONDS.
```

5) After the update completes, the display starts in normal mode. Do not remove power while the display is starting.
6) Turn the system OFF and remove the SD card from the top card slot.
7) Turn the system ON.
8) From the Home Screen on the Touchscreen Controller, touch **Utilities** > **Setup** > **Avionics Status**.
9) If necessary, touch the **Database** Tab. The Touchscreen Controller shows a list of displays on which databases reside.

10) Touch the **MFD1** button from the list to view the navigation database information. Verify the active navigation database cycle information is correct. While the database is copying, progress can be monitored at the bottom of the applicable database field. When copying is finished, 'Sync Complete' is displayed.

11) Touch **Back** to return to the list of displays, and repeat step 10 to verify the information for each display. The new active navigation database is copied to the internal memory of PFD1, PFD2, GTC1, and GTC2.

12) When copying is complete to all GDUs and GTCs, turn the system OFF.

13) Turn the system ON.

Dual Navigation Database Feature

The dual navigation database feature allows each display to store an upcoming navigation database on the bottom SD card so that the system can automatically load it to replace the active database when the new database becomes effective (the next cycle becomes available seven days prior to its effective date).

If a navigation database loader card is inserted into the top SD card slot of a display, and an SD card is in the bottom slot, the system will prompt the user (upon on-ground power up) as to whether the database should be stored on the bottom SD card as the standby database. If the user responds affirmatively, the system will copy the navigation database from the top SD card to the bottom SD card. As long as the bottom SD card remains in the card slot, this standby navigation database will be available for the system to use as the active database as soon as it becomes effective.

The system checks the active and standby databases upon (on-ground only) power-up. If the standby database is current and the active database is out of date, the display will upload the standby database into the active internal database location. Uploading the standby database to the active location takes approximately 45-55 seconds. The pilot is alerted that the update is complete by a system alert message, 'NAV DB UPDATED'.

Loading a standby navigation database:

1) With the system OFF, insert the SD card containing the new navigation database version into the top card slot of the MFD with the label of SD card facing left.

2) Ensure a Supplemental Data Card is inserted into the bottom card slot of each GDU.

3) Turn the system ON. A prompt is presented on the MFD display:

```
DO YOU WANT TO UPDATE THE STANDBY NAVIGATION DATABASE ON THE BOTTOM CARD?
THE STANDBY DATABASE WILL BE ACTIVATED UPON THE FIRST ON-GROUND POWER CYCLE ON OR
AFTER 00:00 SYSTEM TIME ON THE EFFECTIVE DATE.
            FROM            TO
REGION:     WORLDWIDE       WORLDWIDE
CYCLE:      1204            1205
EFFECTIVE:  09-APR-2012     07-MAY-2012
EXPIRES:    07-MAY-2012     04-JUN-2012

NO WILL BE ASSUMED IN 21 SECONDS.
```

4) Press the **YES** Softkey. The navigation database is copied to the Supplemental Data Card in the bottom card slot of the MFD.

5) After the navigation database files are copied to the bottom card, the display will appear.

```
INITIALIZING SYSTEM

DO YOU WANT TO UPDATE THE STANDBY NAVIGATION DATABASE ON THE BOTTOM CARD?
THE STANDBY DATABASE WILL BE ACTIVATED UPON THE FIRST ON-GROUND POWER CYCLE ON OR
AFTER 00:00 SYSTEM TIME ON THE EFFECTIVE DATE.
            FROM            TO
REGION:     WORLDWIDE       WORLDWIDE
CYCLE:      1211            1212
EFFECTIVE:  26-AUG-2012     18-NOV-2012
EXPIRES:    23-SEP-2012     16-DEC-2012

NO WILL BE ASSUMED IN 18 SECONDS.
UPDATING STANDBY NAVIGATION DATABASE. PLEASE WAIT.
.
UPDATED STANDBY NAVIGATION DATABASE SUCCESSFULLY.
PRESS ANY KEY TO CONTINUE.
CONTINUING IN 9 SECONDS.
```

6) As instructed on the display, press any key to continue. The display will now appear.

```
DATABASE NAVIGATION WILL BE VERIFIED BEFORE USE.
DATABASE STANDBY NAV WILL BE VERIFIED BEFORE USE.
PRESS ANY KEY TO CONTINUE.
CONTINUING IN 6 SECONDS.
```

7) Press any key to continue.

```
DO YOU WANT TO UPDATE THE ACTIVE NAVIGATION DATABASE?
SELECTING YES WILL OVERWRITE THE ACTIVE NAVIGATION DATABASE.
            FROM            TO
REGION:     WORLDWIDE       WORLDWIDE
CYCLE:      1204            1205
EFFECTIVE:  09-APR-2012     07-MAY-2012
EXPIRES:    07-MAY-2012     04-JUN-2012

NO WILL BE ASSUMED IN 8 SECONDS.
```

8) Press the **NO** Softkey. The display now starts in normal mode. Since the database effective date is not yet valid, it should not be loaded as the active database. The display now starts in normal mode. Do not remove power while the display is starting.

9) Press any key to acknowledge the startup screen.

10) From the Home Screen on the Touchscreen Controller, touch **Utilities > Setup > Avionics Status**.

11) If necessary, touch the **Database** Tab. The Touchscreen Controller shows a list of displays on which databases reside.

12) The new database is copied to the SD card in the bottom card slot of PFD1 and PFD2. While the database is copying, progress can be monitored at the bottom of the applicable database field. When copying is finished, 'Sync Complete' is displayed.

13) Turn system power OFF.

14) Remove the SD card from the top card slot of the MFD.

15) Apply power to the system.

16) From the **Home** Screen on the Touchscreen Controller, touch **Utilities > Setup > Avionics Status**.

17) If necessary, touch the **Database** Tab. The Touchscreen Controller shows a list of displays on which databases reside.

18) Touch a button from the list to view database information associated with that display (**MFD1, PFD1, PFD2, GTC1, GTC2**).

19) Scroll through the database information and verify the standby navigation database cycle information is correct.

20) Touch **Back** to return to the list of displays, and repeat steps 17 through 19 to verify the standby navigation cycle information for each display.

21) When finished, touch **Back** or **Home**.

AUTOMATIC DATABASE SYNCHRONIZATION FEATURE

When updating the active navigation database, the automatic database synchronization feature automatically transfers the navigation database from a single SD Card to the internal memory of all GDUs and GTCs. When updating all other databases (including the standby navigation database) the data is transferred from a single SD card to the remaining SD cards on each GDU, as well as the internal

memory of each GTC. After power-up, the system compares all copies of each applicable database. If similar databases do not match, the most recent valid database is automatically copied to each card in the system that does not already contain that database.

The following databases are checked and synchronized: Navigation, Basemap, Safetaxi, Terrain, Obstacle, FliteCharts, ChartView, and Airport Directory.

NOTE: The terrain database may take as long as 100 minutes to synchronize using this method. Therefore the user may want to transfer the data using a PC, or connect the system to a ground power source while performing the database synchronization.

The synchronization progress may be monitored on the Database Status Screen on the Touchscreen Controller. This screen shows the synchronization status of each applicable database as follows:

- Sync in Progress with percent complete
- Sync Complete
- Sync Error

While database synchroniztion is occurring, 'Sync in Progress' is displayed along with percent complete. When the synchronization is complete for the selected GDU or GTC Database Status Screen, the status is listed as 'Sync Complete'. The synchonization status is only present when a sync is occurring or has occurred on the current power-up.

An indication of 'Sync Complete' still requires a power cycle before the synchronized databases will be used by the system.

To view database status:

1) From the **Home** Screen on the Touchscreen Controller, touch **Utilities > Setup > Avionics Status**.

   Or From the **PFD Home** screen**,** touch **Utilities > Avionics Status.**

2) If necessary, touch the **Database** Tab. The Touchscreen Controller shows a list of displays on which databases reside.

3) Touch a button from the list to view database information associated with that display (**MFD1, PFD1, PFD2, GTC1, GTC2**).

4) Scroll through the database information to view database status.

If an error occurs during the synchronization, 'Sync Error' is displayed in the synchronization status field. If synchronization completes for one GDU or GTC, but an error occurs for another, the error message will be displayed on the Database Status Screen for the affected GDU or GTC. When an error message is displayed, the problem must be corrected before the synchronization can be completed. A power cycle is required to restart synchronization.

GARMIN DATABASES

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

- Expanded basemap
- Terrain
- Obstacle
- SafeTaxi
- FliteCharts
- Airport Directory (AOPA or AC-U-KWIK)

After subscribing to the desired database product, these database products will be downloaded and ultimately stored on three Supplemental Data Cards. A Supplemental Data Card resides in the bottom card slot of each GDU.

Databases residing on Supplemental Data Cards are not stored internally in the displays (except for the Touchscreen Controllers), therefore, a Supplemental Data Card containing identical database versions must be kept in the bottom card slot of each GDU.

The basemap database contains data for the topography and land features, such as rivers, lakes, and towns. It is updated only periodically, with no set schedule. There is no expiration date.

The terrain database contains the terrain mapping data. This database is updated periodically and has no expiration date.

The obstacle database contains data for obstacles, such as towers, that pose a potential hazard to aircraft. Obstacles 200 feet and higher are included in the obstacle database. It is very important to note that not all obstacles are necessarily charted and therefore may not be contained in the obstacle database. This database is updated on a 56-day cycle.

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

The SafeTaxi database contains detailed airport diagrams for selected airports. These diagrams aid in following ground control instructions by accurately displaying the aircraft position on the map in relation to taxiways, ramps, runways, terminals, and services. This database is updated on a 56-day cycle.

The AOPA or AC-U-KWIK Airport Directory provides data on airports and heliports throughout the U.S., and offers detailed information for over 5,300 U. S. airports, along with the names and phone numbers of thousands of FBOs. These databases are updated every 56 days.

The FliteCharts database contains procedure charts for the United States only. This database is updated on a 28-day cycle. If not updated within 180 days of the expiration date, FliteCharts will no longer function.

Updating Garmin Databases

The Garmin database updates can be obtained by following the instructions detailed in the 'Aviation Databases' section of the Garmin website (fly.garmin.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. Equipment required to perform the update is as follows:

- Windows-compatible PC computer (running Windows XP, Vista, or Windows 7)
- SD Card Reader: SanDisk SDDR-93, SanDisk SDDR-99, Verbatim #96504, or equivalent
- Updated database obtained from the Garmin website
- Existing Supplemental Database SD Cards (010-00474-44) from each GDU.

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.

After the data has been copied to the appropriate data card, perform the following steps:

1) With system power OFF, remove the Supplemental Data Card from the bottom card slot of GDU2.

2) Update the Garmin databases on the Supplemental Data Card.

3) Insert the Supplemental Data Card into the bottom card slot of GDU2.

4) Apply power to the system.

5) From the Home Screen on the Touchscreen Controller, touch **Utilities > Setup > Avionics Status**.

6) If necessary, touch the **Database** Tab. The Touchscreen Controller shows a list of displays on which databases reside.

7) The new databases are copied to the SD card in the bottom card slot of the appropriate displays. While the database is copying, progress can be monitored at the bottom of the applicable database field. When copying is finished, 'Sync Complete' is displayed.

8) Turn system power OFF.

9) Apply power to the system.

10) From the **Home** Screen on the Touchscreen Controller, touch **Utilities > Setup > Avionics Status**.

11) If necessary, touch the **Database** Tab. The Touchscreen Controller shows a list of displays on which databases reside.

12) Touch a button from the list to view database information associated with that display (**MFD1, PFD1, PFD2, GTC1, GTC2**).

13) Scroll through the database information and verify the database cycle information is correct.

14) Touch **Back** to return to the list of displays, and repeat steps 11 through 13 to verify the database cycle information for each display.

15) When finished, touch **Back** or **Home**.

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.

CLEANING THE TOUCHSCREEN

Screen Cleaning mode makes the touchscreen inactive to facilitate cleaning. The touchscreen can be cleaned using a microfiber or soft cotton cloth dampened with clean water. DO NOT use chemical cleaning agents.

1) From the **Home** Screen, touch **Setup** > **Screen Cleaning**.

2) Clean the touchscreen.

3) Press or turn any knob to go back.

A

B

C

D

E

F

G

T

U

V

W

Blank Page

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