EX500/EX600

Multi-Function Display
Pilot's Guide

Software Release 4 or Later

AVIDYNE®

Document History

Date	Revision	Description
10/30/08	00	Released per ECO-08-426 Supports Release 4, including TWX Cell mode and Iridium Datalink (MLX770).
11/06/08	01	Released per ECO-08-479.
11/13/09	02	Released per ECO-09-480
12/15/09	03	Released per ECO-09-518
2/4/2011	04	Released per ECO-11-017
3/10/2011	05	Released per ECO-11-063

This document is applicable to the following part numbers:

● Software Part Numbers 530-00193-020, Release 4 or Later, 530-00201-800, and 530-00201-900

● Hardware Part Number 700-00007-() and 700-00167-().

System Configuration

When contacting your dealer, Avidyne technical support, or logging onto MyAvidyne.com for the first time, please have your EX500/EX600 serial number and datalink receiver serial number available:

EX500/EX600 S/N: _____

MLB700 S/N: _____

MLX770 S/N: _____

About This Guide

This guide describes the Avidyne EX500/EX600 MFD with all available sensors and software options installed. Therefore, the EX500/EX600 page layouts and key descriptions in this guide may differ from those on your EX500/EX600 display.

The standard EX500/EX600 version and the radar-capable EX500/EX600 differ in the number of function knobs.

● The standard EX500 has two knobs: a Page knob and a Range knob.

● The radar-capable EX500 and the EX600 have four knobs, two on the left of the display and two on the right. The right-hand knobs are usually used for Page and Range, the left-hand knobs provide dedicated radar Bearing and Tilt control, along with other functionality, depending on the page being viewed.

See *Starting the EX500/EX600* on page 2 for descriptions of the knobs and their functions. The EX500/EX600 examples shown in this manual use the four-knob radar version.

All images contained within this document, including screenshots and other displays, are for reference use only and are subject to change. The images contained herein may differ slightly from your actual equipment or display.

Notes and Warnings

Notes and Warnings provide guidance for the use of the EX500/EX600. Avidyne strongly suggests that you read all Notes and Warnings for your own safety.

For example:

Note: Notes provide useful information about how to use the EX500/EX600.

⚠️ Warnings are prefaced with exclamation points and denote information that can prevent serious injury or death on the part of the user.

The instructions and warnings in this manual, however, are not intended to replace the instructions and warnings for other equipment

on your aircraft. It is critical that as the pilot in command, you have a complete understanding of the warnings, operating instructions, and limitations for all equipment installed on your aircraft.

⚠️ This manual assumes that the reader is an appropriately licensed pilot. Avidyne strongly recommends that you use the EX500/EX600 only under VFR conditions until you are very familiar with the EX500/EX600.

If you have questions, please contact Avidyne at **800-284-3963 (800-AVIDYNE)** or **1-781-402-7400** before operating with the EX500/EX600 under IFR conditions.

⚠️ Before conducting flight operations, be sure to verify that time and date settings on the System Time Setup page are correct and in GMT (UTC). It is critical that the time be set to GMT to provide accurate display of Datalink weather. See Chapter 9 "Aux Page for more information.

⚠️ Certain GPS navigators do not support transmission of curved flight path segments (e.g. DME arcs). These units include:

KLN-89B/90B/94 - Flight plan ends at entry point to arc.
Trimble 2000, 2101 - Sends multiple waypoints around arc.
Garmin 400/500 series - RS-232 displays a straight line.
Bendix/King GNS-XLS - Arc is depicted as a gap.

Notice regarding NOTAM information

NOTAM information is subject to constant change, and it is extremely important that all pilots check with Flight Service for applicable NOTAMs prior to EVERY flight. Call 1-800-WXBRIEF (992-7433) for the latest information. Outside the United States, call your local Flight Service Station or other official flight advisory service.

The NOTAM information provided by the EX500/EX600 is for planning purposes only. Always consult official NOTAMS for the latest restrictions.

Avidyne does not provide a complete list of NOTAMS. Local NOTAMS, most laser light NOTAMS, and any NOTAMS other than restricted airspace are not listed.

By using the Avidyne Services you are able to access information made available from a variety of sources. Avidyne does not control, edit or review the content of such information and is not responsible for such information or the actions or conduct of any company that provides sources of weather data procured by Avidyne. Therefore, although Avidyne uses diligent efforts to provide Services of high quality, ALL SERVICES AND WEATHER DATA ARE PROVIDED AS-IS and neither Avidyne nor its suppliers (including ORBCOMM and its affiliates), subcontractors, information sources or developers (collectively called "Suppliers") are responsible for: 1) the accuracy, completeness, timeliness, reliability, content, or availability of the Services or any information accessed; 2) loss or damage to your records or data; or 3) your use of, or results achieved from, the Services or any information accessed.

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1   Introduction

The Avidyne EX500/EX600 Multi-Function Display (MFD) is the most advanced situational awareness system in general aviation. Its display consolidates information from a variety of optional sensors in your aircraft (see Figure 1.1).
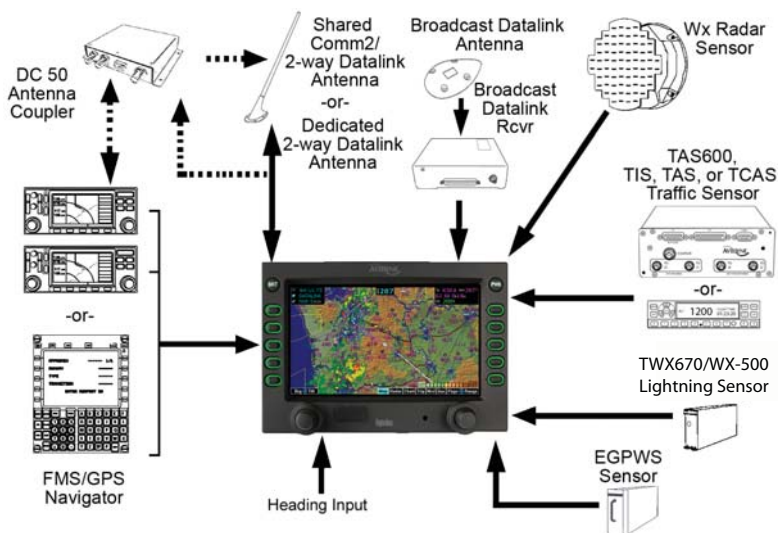
Figure 1.1 Avidyne EX500/EX600 MFD System

Display information can include the following information if configured with optional sensors:

- Up to two GPS systems.

- An on-board weather radar.

- Lightning strikes or storm cells from a lightning sensor such as the Avidyne TWX670 or other supported lightning sensor.

- Traffic information from a traffic system such as the Avidyne TAS600 or other supported traffic reporting unit.

- Terminal procedure chart using the CMax™ function.

- Weather and flight restriction information when interfaced with an external Broadcast Datalink receiver or 2-Way Datalink receiver

such as the internal Quake SC or external MLX770 two-way datalink transceiver.

● TAWS terrain information when interfaced with an installed EGPWS system.

The Flight Manual Supplement (FMS) that is provided with the aircraft contains information that is specific to your installation and might contain operating limitations that are applicable to your aircraft configuration. Please review it before operation.

Note: The FAA requires that Class III aircraft with radar installations have another independent weather indicator installed as well.

1.1   Starting the EX500/EX600

Before conducting flight operations, be sure to verify that time and date settings on the System Time Setup page are correct and in GMT (UTC). It is critical that the time be set to GMT to provide accurate display of Datalink weather. See Chapter 9 "Aux Page for more information.

To turn on your EX500/EX600 display, do the following:

1) Press the *PWR* button. After a brief initialization period, the system will display version and database expiration information and the message, **Press Any Bezel Key**. The EX500/EX600 displays the Map page in a configuration that is consistent with the sensor set that you have installed (see Figure 1.2).

Figure 1.2 Radar-Capable EX500

1) **BRT Button** - Allows you to set the brightness level of the EX500/EX600.

2) **PWR Button** - Turns the power on and off. When you turn the power off, you need to hold the PWR button for a few seconds. The screen displays the power-down cycle.

3) **Sensor keys** - Selects modes or changes the display as indicated. A key is active when the label appears on the screen adjacent to the key.

4) **Map Function keys** - Controls the basic look of the map in terms of orientation, declutter settings, base map features, and weather overlay.

5) **Message Bar** - The message bar keeps you informed about critical as well as routine information from the EX500/EX600. When information needs to be conveyed, the message bar appears next to the bottom right key.

Note: The message bar displays one message at a time. If more than one message is available, it will display the highest priority message first. Press the *ACK* key to clear the current message and view those underneath.

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6) **Radar Bearing Control knob (Brg)** - Controls the radar bearing selection. If you have radar-capable EX500/EX600, see Chapter 4, *Radar Page (Optional)*, beginning on page 33, for more information.

7) **Radar Tilt Control knob** - Controls the radar's Tilt selection. If you have radar-capable EX500/EX600, see Chapter 4, *Radar Page (Optional)*, beginning on page 33," for more information.

8) **Data Port** - Provides a front panel access point for loading database updates. For information on database updates, see Chapter 11 "Updating Your Databases.

Note: When removing the rubber plug from the data port, pull the cap gently **from the right** until it pops out. Make sure the plug is all the way out before you plug anything into the USB port.

Do not pull too hard on the tab that attaches the plug to the EX500/EX600. This can separate the plug from the EX500/EX600 bezel.

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9) **Range & Cursor Control knob** - Allows you to set the Map range. When other pages are in view, this knob provides cursor control.

Note: The map range choices change depending on the radar configured The Map page and Radar page always use the same selected range; switching between them displays the same range.

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10) **Page Control knob** - Provides access to the EX500/EX600's Map, Radar, TAWS, Chart, Trip, Nearest, Datalink, and Aux pages. The active page is highlighted in the lower edge of screen.

1.2 2-Knob and 4-Knob Functionality

Table 1.1 lists the functions of the knobs for the standard 2-knob and the radar-capable 4-knob EX500/EX600. The versions have different configurations to reflect different functionalities, (see Table 1.1)

.

Table 1.1   2-Knob and 4-Knob Functionality

	Page Control	**Range & Cursor Control**	**Radar Brg**	**Radar Tilt**
2-Knob	Left	Right	N/A	N/A
4-Knob	Right outer	Right inner	Left outer	Left inner

The knob controls are:

1) **Page Control knob** - Provides access to the EX500/EX600 Map, Radar, TAWS, Chart, Trip, Nearest, Datalink and Aux pages. The active page is highlighted in the lower edge of screen.

2) **Range & Cursor Control knob** - Allows you to set the Map range. When other pages are in view, this knob provides cursor control.

3) **Radar Bearing Control knob (Brg)** - Controls the radar bearing selection. If you have radar-capable EX500/EX600, see Chapter 4, *Radar Page (Optional)*, beginning on page 33 for more information.

4) **Radar Tilt Control knob** - Controls the radar's Tilt selection. If you have radar-capable EX500/EX600, see Chapter 4, *Radar Page (Optional)*, beginning on page 33 for more information.

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2 Map Page

The Map page displays your flight plan and position as an overlay of a map of the current flight area (see Figure 2.1). The EX500/EX600 allows you to select the data you want to display on the *Map* page. The sensor keys enable you to tailor the information to meet your flying needs. To display the Map page, rotate the **Page** knob to Map.

2.1 Map Page Controls

Figure 2.1 EX500 Map Page with Radar

Note: For information about the Map page symbols, see *Map Symbols* on page 143.

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1) **Sensor Functions** - Controls overlay and modes of available sensors. keys are displayed only for the sensors installed in your aircraft:

■ **Radar (if available)** - Controls radar function selection.

◆ **On** - Starts radar operation.

- ◆ **Test** - Initiates radar self-test function.
- ◆ **Standby** - Places the radar circuitry in an energized but inactive state.

Note: When no lightning or traffic sensors are installed, the Lightning and Traffic keys are not displayed on the Map page. Instead, dedicated radar keys, similar to those on the Radar page, are displayed.

For more information about radar functions, see Chapter 4, *Radar Page (Optional)*, beginning on page 33.

■ **Wx Rprts** - Controls the type of Datalink weather information displayed on the map.

- ◆ **All** - Displays graphical METARs, AIRMETs, and SIGMETs.
- ◆ **METARS** - Displays graphical METARs only.
- ◆ **AIRMET** - Displays graphical AIRMETs only.
- ◆ **SIGMET** - Displays graphical SIGMETs only.
- ◆ **DISPLAY OFF** - Turns off the display of weather information from the Map page. While the display is off, your aircraft may still be receiving weather information.

The Lightning and Traffic keys are not displayed if radar, lightning or traffic sensors are not installed. Instead, the METAR and AIR/SIG keys are displayed. These keys are On\Off switches of the respective features.

Figure 2.2 METAR and AIR/SIG Keys

Note: For 2-way Datalink, the EX500/EX600 does not display graphical METARs for AWOS reporting stations that are more than 300nm from the current position or for ASOS reporting stations that are more than 450nm from the current position.

■ **Lightning** - Controls the display of lightning strikes or cells (cells for WX-500 only) on the map (when interfaced with an Avidyne TWX670, an L3 WX-500 Stormscope, or a satellite-weather Datalink receiver). For instructions on using the L3 WX-500 Stormscope, see that manufacturer's documentation. For TWX670 cell information, see the **WxOvly** key > **TWXCELL** selection.

Only one mode can be displayed on the EX500/EX600 MFD at any time. The EX500/EX600 provides scalable support for a number of different weather sensors so you can use the MFD to get the best view of hazardous weather and options to avoid it.

◆ **Datalink** - Displays lightning strikes obtained from the Datalink weather service, depending on the weather service and subscription level. Lightning strikes are represented by lightning bolts in white, yellow or dark yellow, depending on the age of the strike.

◆ **Strike** - Displays lightning strikes obtained from the lightning sensor. Lightning strikes are displayed as follows:

◆ WX-500 lightning strikes are displayed as yellow X's.

◆ TWX670 lightning strikes are displayed as X's. Strike intensity is indicated using 5 colors from red to green-yellow. A strike displayed in red indicates an area of very high intensity, while a strike displayed in green-yellow indicates an area of low-to-moderate intensity.

Note: When strikes are selected to display along with TWX cell data, the strike colors change to white to improve visibility against the colored cells.

◆ **Cell** - Displays storm cells using cell data obtained from a WX-500 stormscope. Each lightning strike is displayed as a yellow '+' sign, and clumps of strikes indicate the cell and cell intensity.

◆ **Display Off** - Turns display of lightning information off.

- ■ **Clear Strikes** - Clears all lightning-sensor-generated lightning strikes from the display. New lightning strikes are more visible. Clear Strikes does *not* remove Datalink lightning.

- ■ **Traffic** - Selects the altitude range of the displayed traffic from the traffic sensor. See your traffic sensor user's manual for details of available modes.

2) **Map Functions** - Controls the "look and feel" of the map, including orientation, number of elements, and base map.

  - ■ **View** - Changes the map orientation. Press *View* to cycle between the following:

    - ◆ **Forward** - 120° view with airplane's present position displayed at the bottom. Current heading (or track) is displayed at the top of the map.

    - ◆ **Center** - 360° view with airplane's present position displayed at the center of the compass range ring with current heading (or track) at the top of map.

    - ◆ **North up** - 360° view with airplane's present position displayed at the center, and north is always at the top of the map.

  - ■ **Declutter** - Controls the density of symbols and labels displayed on the map, from highest to lowest, based on settings defined on the Declutter Setup page. See *Declutter Setup* on page 86 for additional information on customizing the declutter settings.

  - ■ **BaseMap** - Controls the base map background. Press this key to cycle through the following display options:

    - ◆ **Terrain** -Terrain data background with water and geo-political boundaries.

    - ◆ **Base** - Black background with water and geo-political boundaries.

    - ◆ **None** - Black background. Terrain scale is removed.

- ■ **Wx Ovly** - Weather Overlay controls the type of weather information displayed on the map. Press Wx Ovly to toggle the display options:

    - ◆ **DL RDR** - If installed and available, displays 2-Way Datalink RADAR information on the map. 2-Way Datalink uses two-way messaging to send your present position and flight plan to the Avidyne Network Operations Center (NOC), which then sends you only the data for your position or flight plan, depending on your Datalink setup preferences.

    - ◆ **US RDR** or **CAN RDR** - If Broadcast Datalink is installed and available, the single down arrow displays basic Datalink RADAR information on the map. Storm cell movement is not displayed. The external Broadcast Datalink receiver receives a constant stream of weather data for the entire United States via a satellite radio system. US RDR displays CONUS weather. CAN RDR displays Canadian weather.

    - ◆ **US RDR+** - If Broadcast Datalink is installed and available (depending on your Datalink service level), the single down arrow and plus sign displays full Datalink RADAR for CONUS, including storm cells.

        For many operations, the EX500 displays weather data in the same way, regardless of which Datalink system is in use. Both systems provide datalink radar data—a composite image depicting precipitation as seen by multiple ground-based weather radar sites. The image is color-coded to show intensity levels and precipitation types. Broadcast Datalink, however, especially at a

higher service level, provides more data (such as storm cell movement and Datalink lightning).

> For Datalink RADAR, small areas of high-intensity datalink radar data might not be displayed on the EX500/EX600 at high range settings. Instead, larger areas of surrounding lower-intensity returns might obstruct indications of severe precipitation at Map ranges higher than 250 nm. Avoid using Map ranges greater than 250 nm when RADAR echoes are shown in the vicinity of the aircraft.

◆ **TWXCELL** - If Wx Ovly is set to TWXCELL, the EX500/EX600 displays thunderstorm cells detected by the TWX670, using colors (Table 2.1) to indicate levels of storm intensity. For example, Figure 2.3 shows an aircraft located at the edge of intense thunderstorm activity. In this instance, the aircraft must be flown away from the thunderstorm. The TWX670 detects and measures lightning strike energy and generates cell data that the EX500/EX600 displays

in color. This mode shows dangerous convective areas that you must avoid.
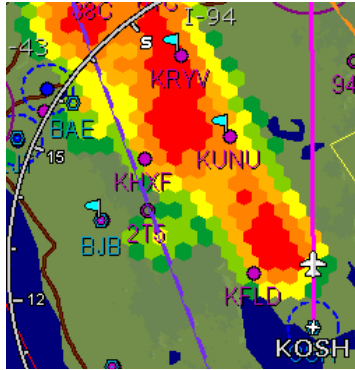
Figure 2.3 TWXCELL Mode Display

Note: In Release 4, if cells appear in the same location as navaids, obstacles, or TFRs, the cells will cover part or all of the navaids, obstacles, or TFRs. To more clearly view the navaids, obstacles, or TFRs, turn off the TWXCELL mode by pressing WxOvly and selecting DSPLY OFF or one of the other options. When desired, you can switch back to CELLMODE to see the storm cells.

In Release 4.1 and later, cells are located underneath navaids, obstacles, and TFRs.

The TWX670 sensor outputs hexagons of varying widths from 0.5 NM to 10.0 NM. Occasionally, as the MFD display is zoomed, you may notice that the hexagon size changes abruptly. This is normal as the MFD consistently uses the highest fidelity TWX lightning data available.

Note: (EX600 Only) When panning with TWXCELL mode displayed, cells further than the current range setting, centered on the the aircraft present position, will not be displayed. To see all cells when panning, select 200 nm range or greater.

Table 2.1 describes the colors displayed by the EX500/EX600.

Table 2.1 Thunderstorm Activity (Cell) Colors

Color	Interpretation
Red	Intense thunderstorm activity - presence of hazardous atmospheric conditions is certain.
Orange	Weather conditions are approaching intense thunderstorm activity.
Orange-Yellow	Heavy thunderstorm activity - high likelihood of hazardous atmospheric conditions.
Yellow	Weather conditions are approaching heavy thunderstorm activity.
Green-Yellow	Moderate thunderstorm activity - severe turbulence and unsettled atmospheric conditions likely.
Green	Weather conditions are approaching moderate thunderstorm activity and moderate turbulence is likely.
Blue-Green	Light thunderstorm activity - atmospheric instability and moderate turbulence is likely *(Release 4 only, Blue-Green color is not used in Release 4.1 and later).*

Color representing less intense thunderstorms does not imply that it is acceptable or safe to fly in those areas. **Always avoid areas of indicated thunderstorm activity, regardless of color displayed**.

The TWX670 detects thunderstorm cell activity up to a 200 nm range. The range control on the EX500/EX600 enables you to zoom in or out to see the distribution of convective activity.

If both datalink weather and TWX670 are installed in the aircraft, you can use both to determine the best course of action to avoid dangerous weather.

◆ **RADAR** - Displays on-board weather radar returns on the map. This choice does not appear if the EX500/EX600 is not configured with an aircraft heading source, or if aircraft heading is currently unavailable.

◆ **Sat IR -** If installed and available, displays 2-Way Datalink Infrared Satellite cloud information on the map, using shades of gray. The SatIR depiction uses a series of grayscale values to represent cloud tops of different temperatures, ranging from approximately 0 deg C (dark gray) to -110 deg C (white). Colder cloud tops are generally higher than warmer clouds. Occasionally, warm clouds may not be visible on the display. Additionally, very cold terrain may be displayed as clouds when no clouds actually exist.

The Sat IR images are delivered with variable resolution of between approximately 10 km near the ownship to 30 km 100+ nm along the flight path. The EX500/EX600 smooths the edges of the SatIR images so that the images are not distracting at smaller zoom ranges. Like DL RDR, the 2-way Datalink Sat IR uses two-way messaging to send your present position and flight plan to the Avidyne Network Operations Center (NOC), which then sends you only the Sat IR data for your position or flight plan, depending on your Datalink Setup preferences.
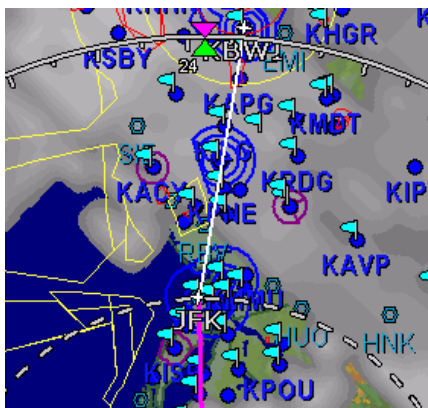
Figure 2.4 Sat IR Display

◆ **DSPLY OFF** - Removes all onboard and datalink radar data from the map display.

Note: Diagonal stripes indicate the boundary of available datalink radar or SatIR data. If datalink radar or SatIR is unavailable in a particular area, hatched lines appear in that area.

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3) The ACK is used to display and acknowledge system messages.

2.2 Panning (EX600 Only)

The EX600 includes the ability to pan the map. This allows the map to be panned to areas of interest that otherwise would not be visible at a given range. This is especially useful for viewing the current datalink weather along your route of flight and at your destination. On the EX600, there are 5 keys that allow panning on the map.

Figure 2.5 EX600 Panning Controls and Indications

1) **Direction keys** - Pan the map in on of four directions on the screen: left, right, up, and down.

2) **QuickPan^{TM} key -**

   ■ If in panning mode, press to center the map on the own-ship symbol and exit panning mode.

   ■ If not in panning mode, press to enter panning mode and center the map on the last panned location.

Note: For best results, press and hold down the appropriate direction key until the map is panned to the desired location, then release.

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3) **Range indication -** Panning circle radius in nautical miles (NM) for determining the map scale.

4) **Distance -** Distance from the ownship in nautical miles (NM).

5) **Ownship Direction -** Arrow points in the direction to the current ownship location.

6) **Panning mode indication** - Displays when in panning mode. Also indicates the time remaining in seconds before panning mode will time-out.

Panning will time-out after 20 seconds from the last button push or range change. At that point panning mode will exit and the map will center on the own-ship position.

The map range can be adjusted while in panning mode to allow greater flexibility in viewing information of interest.

Note: Panning is limited to 75° S to 75° N latitudes. The panning cursor will not pan across the 180° longitude meridian.

Note: When panning with TWXCELL mode displayed, cells further than the current range setting, centered on the the aircraft present position, will not be displayed. To see all cells when panning, select 200 nm range or greater.

2.3 Map Page Symbols—Terrain and Position

The EX500/EX600 Map page uses included and optional sensors to depict the position of your aircraft in relation to the following: your flight plan, nearby airports, terrain, traffic, lightning, special use airspace and other navaids (see Figure 2.3).

Note: For detailed information about each Map page symbol, see *Map Symbols* on page 143.
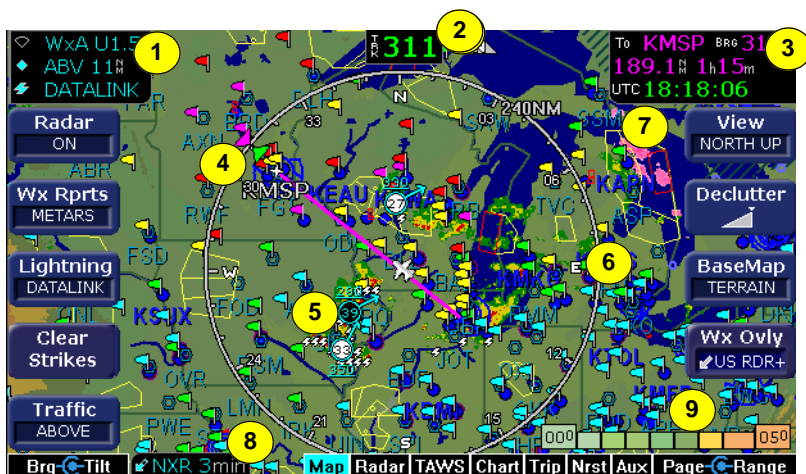
Figure 2.6 Map Page - **Terrain and Position**
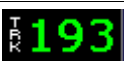
1) **Sensor Status Box** - Displays the status of the available sensors including radar, traffic, lightning, and Datalink.

The onboard radar display includes the mode and tilt angle. The traffic display shows the mode and range. For lightning, the source is displayed.

The datalink radar or Sat IR display includes the data age, which is the elapsed time since the last product was created by the weather provider.

2) **Heading/Track Block** - The Heading/Track (H/T) Block provides a digital readout of the current heading, or actual track. Map orientation is indicated in the triangle to the right of the H/T Block.

Table 2.2   Track Indicator Graphics

Heading		Track		Map Orientation	
011	Heading	▼	Desired Track	N	North Up
193	Track	▲	Heading		Heading Up
		▲	Actual Track		Track Up

3) **Data Block** - Displays pilot-selected navigation data in the upper right corner of the screen. See *Data Block Setup* on page 88 for details on how to configure this display.

4) **Heading/Track Indicator** - Three triangles around the compass range ring provide actual track, desired track, and heading indications.

5) **Lightning and Storm Cell Indications** - Displays geographically referenced lightning strikes (if configured). Strikes are represented by a yellow "X" in Strike Mode and by a yellow "+" in Cell Mode (WX-500 only). Strikes from a Datalink system are represented by a lightning bolt symbol in one of three different colors, depending on the age of the strike.

If you have Broadcast Datalink, and depending on your level of service, storm cells will show speed and direction of movement. The underlined number indicates the tops of the storm cells, in hundreds of feet. The storm cell indicators are black for rain (or snow) and white to show probability of hail. In the example, the bottom storm cell, which includes the probability of hail, is moving NNE at 33 knots. The cell top is 35,000 feet high.

Note: At longer range settings, individual lightning strikes and storm cells are combined into single strikes or single storm cells, depending on their proximity. This avoids clutter and improves readability. And vice versa, lower map range settings will display more strikes and storm cells.

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6) **Compass/Range Ring** - Displays a 360-degree compass range ring or a 120-degree compass arc with current range setting. The range number is the distance from the graphic aircraft symbol to the outer compass range ring.

7) **Special Use Airspace** -The EX500/EX600 uses several different line styles to convey special use and class airspaces. Class B, Class C, Class D, MOA, SFRA, Warning, and Alert areas, restricted and prohibited areas are displayed. See *Map Symbols—Line Styles* on page 146 for more information.

> ⚠️ Do not rely on the EX500/EX600 as your sole source for SUAs. The status of SUAs may change or may be unavailable. Before conducting a flight, always confirm the state of SUAs with FAA Flight Service.

8) **Datalink Radar Status Box (EX500 only)** - If more than three sensors are installed on the EX500, data for the datalink radar status is displayed at the bottom of the page instead of in the Sensor Status Box. DL RDR indicates MLX770 Iridium datalink radar data status, NXR for ORBCOMM datalink radar data status, US Rdr for US Broadcast datalink radar status, and CAN Rdr for Canadian Broadcast datalink radar status.

> ⚠️ When using Datalink weather, monitor the data age so that you are aware of the time elapsed since the last weather update.

9) **Terrain Scale** - Legend colors represent terrain elevations. The left number on the scale shows the lowest terrain currently displayed on the map, and the right number shows the highest terrain on the map. The terrain scale also displays obstacle height if the highest obstacle exceeds the highest terrain. A small cyan window will be displayed when this occurs.

Note: Terrain data is not displayed when that latitude of your aircraft is greater than 75 degrees (north or south).

Note: Terrain data may not be displayed while you are near the 180 degree meridian (while the meridian is within the displayed map area).

Terrain legend colors are shown in *Terrain Display Color Coding* on page 141.

⚠️ The displayed terrain and obstacle indicators are only advisory. It is dangerous to rely on the EX500/EX600 as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate terrain and obstacle information.

⚠️ The EX500/EX600 Map Terrain display is not a substitute for a TAWS display and does not provide any type of terrain alert function. The map terrain displayed on the EX500/EX600 is presented as the height above mean sea level (MSL) and does not indicate the height of the aircraft above the terrain.

2.4 Map Page Symbols - Runways and Flight Plan

When you look at the Map page at lower ranges, you can see details, such as runway diagrams that are not available at longer ranges (see Figure 2.4).
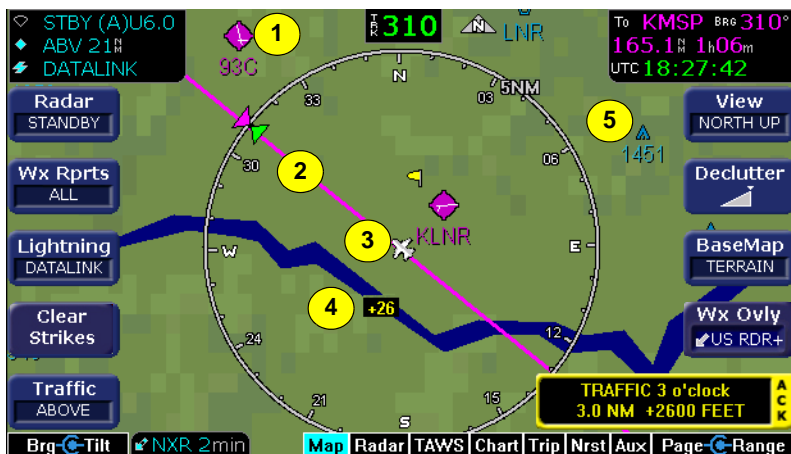
Figure 2.7 Map Page—Runways and Flight Plan Symbology

1) **Airport Runway Diagrams** - When the Map page is set to under 20NM, the EX500/EX600 displays runway layouts of the destination airport and nearby airports.

2) **Flight Plan** - Displays the active flight plan from the selected GPS on the map. The current leg is displayed in magenta and all other legs are shown in white. When an approach procedure is selected on a GPS that supports the GAMA graphics interface, the EX500/EX600 shows all approach segments including the following: holds, DME arcs, and procedure turns.

3) **Ownship Symbol** - Shows the position of your aircraft in relation to the moving map and the selected view.

4) **Traffic Indications** - Displays traffic symbols relative to the present position of the aircraft and includes relative altitude (when available) with respect to aircraft. See the Traffic Sensor User's Manual for further details.

5) **Obstacles** - The EX500/EX600's U.S. database contains the location and height of towers and other obstacles that are greater than 200 feet AGL. All obstacles are depicted in height above mean sea level (MSL).

Note: A 2000 foot tall TV tower located in Denver (elevation 5300 feet MSL) will be depicted as being at 7300 feet MSL.

> The EX500/EX600 obstacle database only contains U.S. obstacles. Not all obstacles are displayed in the database (due to new construction, temporary structures, etc.). Consult your charts and NOTAMS as required by the FARs
>
> The Map page Terrain Display is neither certified as nor intended to be a primary Terrain Awareness system. The displayed terrain and obstacle indicators are only advisory. Do not rely on the EX500/EX600 as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate terrain and obstacle information.

You can also use the Nearest (NRST) function to determine the specific information relative to the obstacles around you. Obstacles are sorted by distance from your aircraft. The altitude of the obstacle is also displayed.

Additional terrain awareness and alerting capability is available for the EX500/EX600 when interfaced with a Terrain Awareness and Warning System (TAWS). For more information, see Chapter 5, *TAWS Page (Optional)*, beginning on page 45.

2.5 Errors Displayed on the Map Page

2.5.1   Loss of GPS Input

The loss of primary GPS on the EX500/EX600 is shown as follows:

1)   The aircraft symbol is removed.

2)   There is no heading information displayed (if GPS has been selected as your heading source/track).

3)   The desired track icon is removed from the compass range ring.

4)   There is no groundspeed information displayed.

The EX500/EX600 will continue to provide Datalink weather for your flight based on the last known GPS track and groundspeed. If the primary GPS fails during the flight, and you have a second GPS connected to the EX500, you can switch your GPS input to the backup source by pressing the *Nav Src* key on the Aux page.

2.5.2   Loss of Heading Input

The source of heading data on your aircraft depends on the other sensors you have installed in your aircraft. Loss of heading is typically associated with the failure of one of the following:

1)   The WX-500 Stormscope system (if installed and a heading source is connected to the WX-500).

2)   The Skywatch system (if installed and a heading source is connected to the TAS).

3)   A separate heading Synchro (if installed).

4)   An Avidyne PFD.

5)   The GPS (This would be a pass through. The GPS does not determine heading).

Loss of heading will be shown in the following ways:

●   The heading indicator will be blank.

●   A "Heading source invalid" message will be displayed.

●   The aircraft symbol will change to a plus ("+") sign (non-directional).

●   The map display orientation will change to North-up.

●   The heading block value will be dashed ("- - -").

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3 Traffic Mode and the Traffic Page (Optional)

When a Traffic Advisory (TA) is reported from the traffic sensor, the EX500/EX600 displays a traffic alert message in the Message Bar. To acknowledge the traffic alert, press the *ACK* key next to the message. This displays the dedicated traffic page to provide you with maximum traffic situational awareness.

> ⚠️ It is dangerous to rely on the EX500/EX600 as your sole source of data for collision avoidance. Traffic information is provided as an aid to your visual determination of traffic. Maneuver your aircraft based only on ATC guidance or positive acquisition of conflicting traffic. It is your duty as pilot in command to see the possible danger and avoid collisions.

Notes: The intruder track information provided by TIS traffic systems is only accurate to within 45° of true intruder track. Take this into account when visually determining the reported traffic.

Keep in mind that intruder traffic can maneuver at any time, and the current intruder track direction does not guarantee that the intruder will continue along that track.

For traffic sensors without track information (e.g. TAS), traffic symbols are shown without the "stinger".

3.1 Traffic Advisories

Figure 3.1 Traffic Advisory Message

If your aircraft is equipped with a traffic system such as TAS, TIS, TCAS, or TCAD, you can see traffic overlaid on the moving map.

1) Traffic key - Basic traffic system control is performed through the *Traffic* key on the Map page. Target aircraft are displayed in standard format relative to current aircraft position. The available *Traffic* key modes are:

- **Avidyne TAS600 series (including 9900BX), Skywatch, and Bendix/King, TCAS** - ABOVE, NORMAL, UNLIMTD, BELOW, and DSPLY OFF.

- **TCAD 9900B** - GROUND, TERMINAL, STANDARD, ENROUTE, UNLIMITD, APPROACH, and DSPLY OFF.

Note: Some TCAD installations will support automatic mode-switching by the TCAD unit. The current mode is always reported on the EX500 screen.

- **TIS** - DSPLY ON and DSPLY OFF.

For more information on specific traffic sensor modes, consult the user documentation for your traffic sensor.

2) **View key** - Use *View* to control the orientation of the map and sensor data displayed on the EX500/EX600. EX500/EX600 traffic and weather symbols are positioned relative to the aircraft symbol nose.

3) **Traffic Advisory** - When a Traffic Advisory (TA) is reported from the traffic sensor, the traffic symbol of the threat aircraft turns yellow, and the EX500/EX600 displays a traffic alert message in the message bar (see Figure 3.1) to help focus your attention where it is needed.

   When you acknowledge this message, the EX500/EX600 displays a dedicated Traffic page (see Figure 3.2) to allow you to identify the threat and take appropriate action. The TA message is removed automatically when the threat is reduced or the target aircraft is no longer present.

3.2 The Traffic Page

The Traffic page is a specially configured Map page that is displayed only when you acknowledge (by pressing ACK) a Traffic Alert (TA) message. This page displays the following:

● **View** - With either Center View or North up View selected on the Map page, acknowledging a traffic alert opens a dedicated traffic page with a complete circular range ring. With Forward View selected on the Map page, acknowledging a traffic alert opens a dedicated traffic page with an Arc range ring.

● **Range** - 5 NM

● **Base Map** - No terrain or political boundaries

● **Declutter** - No symbol or airspace depictions

● **Lightning** - Not displayed

● **Flight Plan** - Displayed

● **Datalink Weather** - Not displayed

● **Wx Reports** - Not displayed

The EX500/EX600 displays up to five (5) non-bearing intruders below the airplane symbol, that is, traffic threats reported by the traffic sensor but without valid bearing. This serves as an alert that there is traffic, but its exact location cannot be determined.

Figure 3.2 Traffic Page

1) **Exit Traffic** - Takes you to the regular Map page. Keep in mind the following:

   ■ Pressing *Exit Traffic* always takes you to the Map page.

   ■ If you press Exit Traffic while the intruder is still in range, the TA message will remain on the Map page. Acknowledging it will re-display the Traffic page.

Note: Traffic limitations and operational ranges depend on the installed traffic sensor. For TAS or TCAD sensors, see the corresponding sensor Pilot Guide. For TIS sensors, see the Aeronautical Information Manual.

---

2) **Range Control** - Turn the Range knob to select from the available ranges.

Note: For Traffic messages, see *Traffic Messages* on page 150.

3.3 Traffic Symbols

Aircraft that are detected by a Traffic Sensor are referred to as intruders and are displayed as one of three symbols (see Table 3.1). If a compatible TIS system is installed and intruder track information is available, the appropriate symbol will be shown with a "stinger", which depicts the current ground track of the intruder, as detected by ATC radar.

Table 3.1   Traffic Symbols

Symbol	Type	Meaning
	Traffic Alert (TA) (with intruder track)	Traffic that is within the alert zone defined by the traffic sensor.
	Proximate Traffic (without intruder track)	Traffic that is not within an alert zone but is close to your position.
	Other Traffic (with intruder track)	Traffic that is detected by the traffic sensor, but determined not to be a current threat.

Traffic sensors do not provide any traffic awareness data for aircraft without operating transponders. Therefore, these aircraft will not be displayed on the EX500/EX600. It is your responsibility to see and avoid all other traffic and to maintain appropriate separation.

Traffic alert information is displayed in the message bar (shown above). The traffic alert display contains the following information:

1)   Relative bearing of target.

2)   Range in nautical miles.

3)   Relative altitude, for example, -200 would be 200 feet below.

If the intruder altitude and vertical speed are known, they are displayed alongside the intruder symbol. The number immediately above or below the traffic symbol indicates the relative altitude of the

intruder to your position, in hundreds of feet. An arrow next to an intruder symbol shows the direction of any vertical movement of the intruder that is in excess of 400 feet per minute.

3.4   TIS Sensor Status

The following may be reported in the Traffic status block on the Map page:

● **OPER** - The TIS sensor is operating normally.

● **CST 00:00** - The TIS sensor has temporarily lost the information feed from ground-based radar and is in "coast" mode. The MFD will continue to display the traffic last received, while the CST timer will count the seconds since the last valid data.

● **RMV 00:00** - After 12 seconds of coasting, the TIS sensor will remove the traffic display and display RMV, and continue to count the time since the last valid data.

● **UNAVAIL** - More than 60 seconds have passed since valid data was received, or TIS data is not available at the current aircraft location.

● **SBY** - The TIS sensor is in standby mode.

● **DATA FAIL** - The TIS sensor has reported an internal fault. Traffic information is removed from display.

4   Radar Page (Optional)

The radar-capable EX500/EX600 is designed to replace an existing radar indicator. Its user interface is more intuitive, and it is integrated with other sensors such as traffic and lightning (if installed).

For convenience, the radar control functions used most frequently are on the left side of the Map page. This placement enables you to use your map functions continuously and even overlay weather radar data on your base map.

To view the largest amount of situational data, use the Map page with your radar. You can use the dedicated Radar page to provide occasional radar-only display and/or detailed radar control.

Turn the right outer knob to display the Radar page. This page provides a traditional (non-overlaid) radar display as well as comprehensive control of the radar as well as access to the complete list of features.

Note: Actual operation of the radar function depends on the particular make and model of the installed radar. Make sure you are familiar with the functionality and operation of the radar system installed on your aircraft. See the user's guide for your radar for details.

Radar is intended as a severe weather avoidance tool only. Do not use the EX500/EX600 to penetrate severe weather, thunderstorms, cells or lines of cells.

4.1 Map Page Overlay
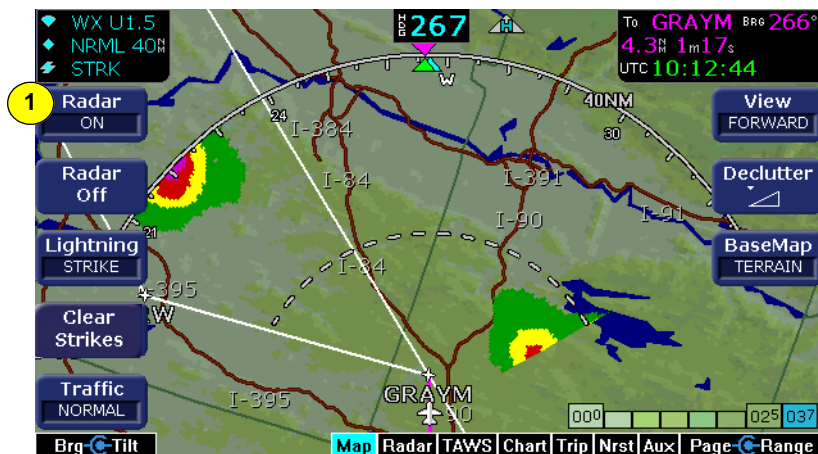
Figure 4.1 Map Page with Radar Overlay

1) Radar key - Press the Radar key to turn on the radar. The current tilt (up or down) will be displayed in the sensor status box. Use the left knob to change the bearing (outer knob) and tilt (inner knob) of the radar. The left outer knob can be configured to control Gain when in Ground/Search Mode (Bendix) or all of the time (Collins).

As part of your pre-takeoff check, check for proper operation of your installed radar. While at a safe distance from ground personnel and other aircraft, briefly turn the radar ON and tilt the antenna below zero degrees. If the radar is working properly this will produce ground reflections and verify the correct operation of the transmitter/receiver and antenna tilt functions.

After landing, set the radar to Standby. A warning message is displayed if the radar is not OFF or in standby and your groundspeed (as received from the GPS system) falls below 20 Kts. If Auto Standby is enabled, the EX500/EX600 switches the radar to Standby automatically when ground speed falls below 20 Kts.

When Traffic and Lightning sensors are installed, only the main Radar key is available on the Map page. However, if fewer external sensors are installed, the EX500/EX600 takes advantage of the available keys. For example, if a second key is available for radar functions, a dedicated *Radar Off* key is displayed. Similarly, if other keys become free, additional radar keys display, including *Radar Test* and *Radar Standby*.

Note: For radar messages, see *Radar Messages* on page 161.

4.2 Dedicated Radar Page

If your EX500/EX600 is radar-equipped, select *Radar* from the Page Bar to display the Radar page.

Figure 4.2 Dedicated Radar Page

1) Tilt Indicator - Indicates the tilt angle and direction of the radar antenna: U for up, D for down with the amount of antenna tilt in quarter degrees using decimal notation.

2) **Precipitation Echoes** - Precipitation returns from the R/T are displayed as color coded echoes. Refer to Appendix G for color meanings.

3) **Scan Indicator (BeamView™)** - The current position of the scan is shown by a gray radial arc, representing the width of the radar beam.

4) **Range** - Indicates the current range scale (the outer ring). In this case, the current range is 80 nautical miles.

5) **Stabilization Status (not shown)** - Indicates the status of the radar's gyro stabilization. When stabilization is turned OFF, a STAB OFF screen annunciation appears.

6) **Function Annunciation** - The function annunciation (On, Test, Standby, Off) indicates the function status.

7) **Beam Altitude (TiltView™)** - The Beam Altitude numbers display the relative altitude (in thousands of feet) of the center of the radar beam compared to the aircraft's altitude at the distance shown above each number.

8) **Bearing & Gain Control (Brg/Gain)** - The left outer knob controls either the bearing line or the radar gain, depending on the state of the Knob key.

   ■ **Brg** - When selected with the Knob key, the bearing line is controlled in increments of 1°. The relative bearing is displayed at the top of the screen: L for left, R for right, with the number of degrees relative to the aircraft heading.

   ■ **Gain** - When selected with the Knob key, the left outer knob controls the radar's gain setting.

9) **Tilt Control** - The left inner knob controls the antenna tilt. Each click of the knob changes the tilt by 0.25°. Turning the knob to the right tilts the antenna up, to the left tilts the antenna down. Tilt angle is displayed in the upper left corner of the display screen. Tilt values are in degrees and range from D 15.00° (DOWN) to U 15.00° (UP).

   Range - The right inner knob controls the range scale. Turn the knob clockwise to increase the range scale and counter-clockwise to decrease the scale.

10) The range scale includes the following ranges:

- ■ **Collins** - 10, 25, 50, 100, and 250nm.

- ■ **Bendix/King** - 5*, 10, 20, 40, 80, 160, 240, and 320nm, depending on radar/Type.

> Based on recommendations made by the FAA and the radar manufacturer, Avidyne recommends the following safety procedures:
>
> • At startup, if the radar is not being used in flight, ensure that it is turned off.
>
> • Upon landing, if the radar is being used during the flight, switch to standby as soon as possible.
>
> • Set the radar to test whenever it is convenient to do so in pre-takeoff checks. No microwave radiation is emitted in test operation. Never turn the radar on without first checking its operation in test mode.
>
> • Never turn the radar on while on the ramp under any circumstances.

4.3   Dedicated Radar in Ground Mode
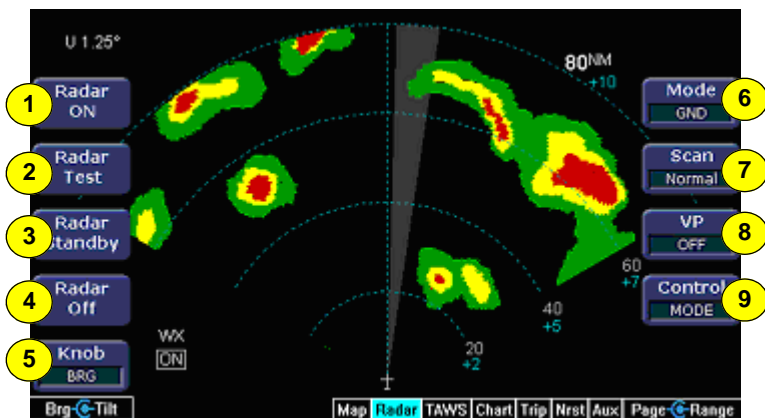
Figure 4.3 Dedicated Radar Page in Ground Mode

1) **Radar ON** - Turns the radar on in normal operation. If the radar is on, the mode annunciator is set to ON, and the moving scan indicator, radar echoes are visible.

2) **Radar Test** - Initiates a radar self-test function that is monitored by the EX500/EX600. The test function is confirmed by the presence of the test annunciation and the test pattern display. During self test, all of the circuitry and functions of the R/T are exercised with the exception of the magnetron tube. No microwave energy is emitted in the test function. The display will have a test pattern with the following colors: green, yellow, red and magenta.

3) **Radar Standby** - Places the radar circuitry in an energized but inactive state. Select Standby as soon as it is practical to do so after starting the EX500/EX600. When the radar is in standby, the mode annunciator is set to STBY, and the moving scan indicator and radar echo returns are not present. Standby mode also places the antenna in the desired park position.

4) **Radar Off** - Removes power from the radar. The antenna does not scan and no microwave energy is emitted. When the radar is off, the mode annunciator is set to OFF, and the moving scan indicator and radar echo returns are not present.

5) **Knob** - Toggles the left outer knob function from "Bearing" to "Gain" to allow you to adjust the Gain setting. The Knob settings depend on the radar type as follows:

- ■ **Collins** - Knob is only available if the Control key (9) is set to MODE.

- ■ **Bendix/King** - Knob is only available if the Control key (9) is set to MODE *and* the Mode key (6) is set to GND (or SRCH for RT1301/RT1401).

6) **Mode** - There are three radar Modes:

- ■ **WX** - Normal weather mode used during flight. At startup the WX mode is preselected.

- ■ **WXA** (Bendix)**/CYC** (Collins) - The weather alert mode (Cyclic Contouring) operates the same as the Wx mode except the red areas (indicating severe conditions) flash between red and black as a further visual cue of hazardous conditions.

- ■ **GND** (Bendix)**/MAP** (Collins)/**SRCH** (RT1301/RT1401) - Ground map mode orients the radar to the ground features. While in ground map mode, the radar's receiver gain may be adjusted using the left outer knob. At startup, the gain is set for maximum.

7) **Scan** - On supporting antennas, Scan allows the selection of either Normal or Sector Scan. Sector Scan reduces scanning azimuth.

8) **VP** - (Bendix/King RDS84VP/86VP and RDR2000/2100 radar only) Places the radar in Vertical Profile operation, described in *Vertical Profile Mode* on page 42. Confirmation that the radar is on is indicated by the presence of the moving scan indicator, radar echoes, and the on screen annunciation.

9) **Control** - Switches the bottom left key and top right three key functions to control the Settings as described in *Typical Radar* on page 40. Push *Control* again to bring the top right three key functions back to "Mode" as described above.

4.4   Typical Radar
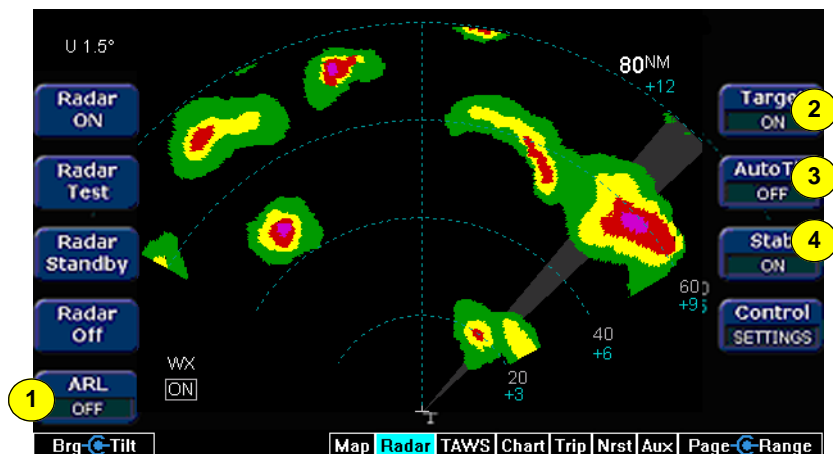
Figure 4.4 Typical Radar (Bendix/King Shown)

1) ARL (Automatic Range Limit) - (Bendix/King RDR-2100 and RDS86/VP only) Automatic range limit (ARL) depicts the limit of your radar range. ARL calculates the attenuation of the microwave signal based on an integration of the returned echoes along the radial path. The R/T draws BLUE from that calculated point to the edge of the covered range. When ARL is selected, an on-screen annunciation is displayed to indicate that it is active.

2) Target - Turns the Target Alert mode on or off. A target alert appears when the radar detects heavy echoes ahead that might not be appear within the displayed range of the Radar. Target Alert works as follows:

■   **Collins** - Target Alert consists of two screen indications. When Target Alert is ON but not active, the alert is displayed as, "TGT", in white text in the upper right corner of the screen. When the alert becomes active, it turns yellow and is surrounded by a yellow box.

The second indication is a Message warning when viewing another page (Map, for example). The Message text is, "Heavy Radar Echoes Beyond 60nm". The Message warning is cancelled when you acknowledge it (by pressing the *ACK* key), or when the alert is eliminated by the radar sensor.

■ **Bendix/King** - A Target Alert consists of two screen indications. When echoes are detected beyond 80nm, two red arcs will appear on the dedicated Radar page at the top of the screen. The second indication is a Message warning when viewing another page (Map, for example). The message text is, "Heavy Radar Echos Beyond 80nm", and is cancelled when you acknowledge it (by pressing the ACK key), or when the alert is eliminated by the radar sensor.

3) **Auto Tilt** - Press the AUTO TILT key to select manual or automatic radar antenna tilt control. When in AUTO TILT, the antenna position will be adjusted automatically to maintain a common beam intercept point with the earth. For example, if the last 10% of the display is ground returns, then during ascent or descent the antenna tilt will be changed automatically to maintain ground returns on 10% of the display. Ranging in and out will also maintain a common beam interception point up to the physical limit of the antenna.

4) **Stab (Stabilization)** - Turns the radar sensor gyro stabilization ON or OFF. An on-screen annunciation (STAB OFF) is displayed in the upper right hand corner when stabilization is turned OFF.

4.5 Vertical Profile Mode

VP (Vertical Profile) - The vertical profile mode allows you to view approaching weather as a slice of the vertical plane instead of the conventional horizontal, forward view.

The vertical profile display contains the same functions and modes shown on the horizontal display. However, they may be in another location due to the different configuration. A vertical profile annunciation (PROFILE) provides the current azimuth displayed on the screen, in degrees left (L), right (R) or centered.
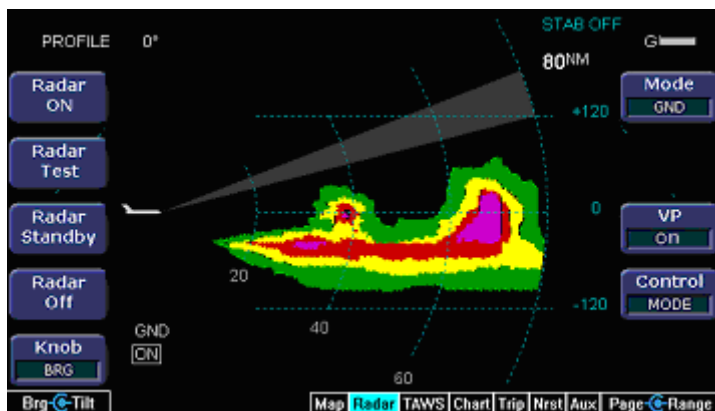
Figure 4.5 Vertical Profile view
(Bendix/King RDS 84VP/86VP and RDR 2000/2100)

4.6   Radar Warnings

> Aircraft weather radar is specifically designed to emit a concentrated beam of microwave energy at potentially hazardous power levels. These hazards include the possibility of injury to ground personnel, ignition of flammable materials, including fuel, and damage to sensitive electronic devices. The pilot in command is responsible for management of the radar system.
>
> The FAA has published an Advisory Circular, AC 20-68B, Recommended Radiation Safety Precautions for Airborne Weather Radar, with basic guidelines for safe radar operation.
>
> U.S. Government standards for human exposure to microwave radiation permit a maximum level of 10 mW per square centimeter. When the radar is operating, this level may be exceeded within the area indicated in the figure below. According to information published by the radar manufacturer, strict observance of this boundary whenever the radar is operating should provide adequate protection.
>
> Exposure of ground personnel or other aircraft occupants to microwave energy emitted at positions within the MPEL boundary depicted in below may be hazardous. Be aware that the MPEL boundary is determined with respect to the antenna, not the radome or any other aircraft structure. The MPEL boundary shown below applies only to units specifically approved for use with the EX500. The MPEL boundary shown below does not guarantee protection against ignition of flammable materials or damage to sensitive electronic equipment exposed to microwave energy from your radar.
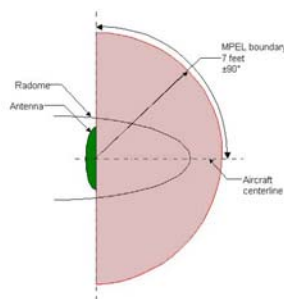
Figure 4.6 Maximum Permissible Exposure Level

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5 TAWS Page (Optional)

The Terrain Awareness and Warning System (TAWS) provides situational awareness, providing warnings and alerts to avoid potential hazards. If your EX500/EX600 system has been configured with a Terrain Awareness and Warning System (TAWS), you can turn the Page knob to *TAWS* to view the TAWS page.

⚠️ Any display of yellow or red on the TAWS page indicates an imminent terrain hazard.

⚠️ The displayed terrain and obstacle indicators are only advisory. Do not rely on the EX500/EX600 as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate terrain and obstacle information

5.1 TAWS Information
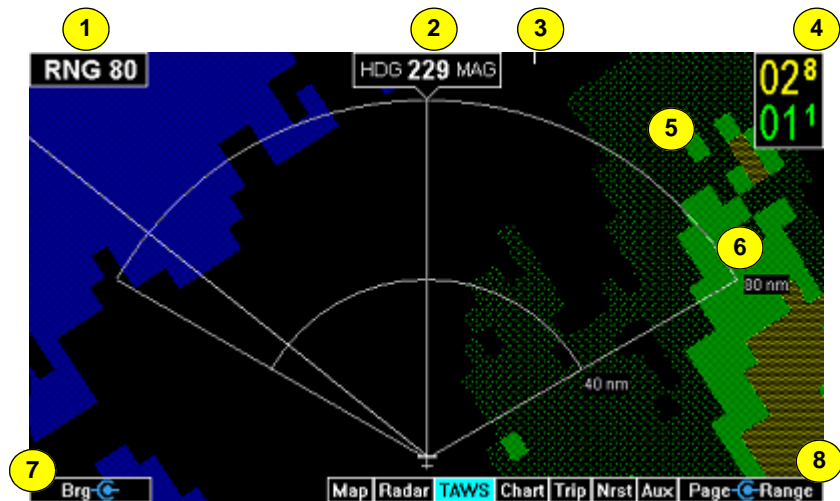
Figure 5.1 TAWS Display as shown on 4-knob EX500

1) Range Annunciation - The range number indicates the currently selected range as selected by the Range knob (8). The supported

ranges are 2.5, 5, 10, 20, 40, 80, 160, 240, and 320 nm. At start up, the EX500/EX600's TAWS range defaults to 80nm.

2) Display Orientation - Describes the orientation of the TAWS display:

■ If Heading is available to the EGPWS, the TAWS display orientation is "heading up". The Display Orientation displays HDG ### MAG where ### is the aircraft's magnetic heading as reported by the EGPWS.

■ If Heading is lost or unavailable to the EGPWS, the EGPWS may use magnetic ground track instead, and the Display Orientation annunciation will change to TRK ### MAG, where ### is the aircraft's magnetic ground track.

■ In certain locales, such as near the magnetic poles, magnetic variation might become unreliable. In these cases, the Display Orientation switches to the "true" value, for example, HDG ### TRU or TRK ### TRU.

■ If neither Heading nor ground track is available, the terrain is not displayed and the blue message "TAWS Display Unavailable" is displayed.

3) Scan Marker - The marker is a short white line that moves across the top of the display area. It indicates the current position of the scan.

4) Peaks Mode Elevations - Appears only when your EX500/ EX600 has been installed with the "Peaks Mode" option. The two numerical values correspond to the highest terrain/obstacle elevation displayed and the bottom elevation of the lowest color band displayed. Elevations are expressed in feet above sea level, with the hundreds digit displayed half size (i.e., 108 is equal to 10,800 feet and 010 is equal to 1,000 feet). If there is no appreciable difference in elevation (flat terrain), only the highest value is displayed. The color of each elevation value is the same as the color of the terrain display containing that elevation (green, yellow, or red).

During a terrain alert, threatening terrain is displayed in bright red and/or bright yellow. The elevation colors are not modified in this case, but continue to correspond to the colors that would appear

in the TAWS display under normal circumstances and represent the actual elevation of the terrain relative to the aircraft.

5) **Terrain Data** - Terrain data is depicted as colored areas representing various elevations relative to your aircraft and potential hazard situations. For information about the TAWS color scale, see *TAWS Display Color Coding* on page 140.

6) **Range Rings** - Range rings are shown as solid white lines. The distance to the outer ring is shown in the Range annunciation. The inner ring is one-half the range of the outer ring.

Note: The EX500/EX600 displays TAWS data that is received from the TAWS sensor. The EX500/EX600 does not generate its own TAWS data.

---

7) **Brg (**Bearing Control) - The Brg knob (only available on the 4-knob EX500/EX600) controls the position of the bearing line. The digital readout at the top of the screen displays L for left, R for right and the number of degrees relative to the aircraft heading. Turning the left outer knob adjusts the bearing line in increments of 5 degrees.

8) **Range knob** - Changes the TAWS display range. During the brief delay between the request for a new range (by turning the range knob) and the actual display of data at the new range, a dashed box is displayed immediately below the Range Annunciation that contains the new requested range.

9) **Azimuth Lines (not shown)** - On a 2-knob EX500, there is no Brg knob, so the bearing line feature is not available. Instead, there is an *Azimuth Lines* key. When pressed, labeled azimuth lines appear every 20 degrees. Press it again to remove the azimuth lines.

> ⚠ The TAWS display on the **EX500/EX600** is an optional component of any TAWS-B installation and is intended only to enhance situational awareness. All terrain avoidance maneuvering must be predicated on indications from the installed TAWS system and not from the **EX500/EX600**.

> ⚠️ MSL-G is based on an internally calculated geometric altitude by the TAWS. Geometric altitude is the height above MSL derived from GPS. It represents the aircraft's calculated height above MSL and serves as the reference altitude for color-coding of the TAWS terrain display and as the input to the TAWS look-ahead algorithm. Because it is derived from GPS altitude, this reference altitude often differs from corrected barometric altitude. The geometric altitude, which might be in error by 100 feet or more, is not to be used for navigation. It is presented to provide the crew with additional situational awareness of true height above sea level upon which TAWS terrain alerting and display is based.

5.2 TAWS Operation

Terrain and obstacle alerts are the most critical situations displayed by TAWS. There are two levels of alerts: They are:

● **Caution** - Possible terrain or obstacle conflict within 40-60 seconds.

● **Warning** - Possible terrain or obstacle conflict within 30 seconds.

Note: At the maximum range settings of 240nm and 320nm, terrain data for portions of the display beyond 320 nm might not be available. At these range settings, portions of the display that represent distances greater than 320 nm might be black even though significant terrain is present. The occasional loss of this display data occurs at the extreme limits of the EGPWS but does not compromise safety or terrain awareness.

When a caution alert is triggered, the terrain or obstacle that caused the alert displays in bright yellow, as shown below. Also, a message describing the nature of the alert is presented in the message bar.
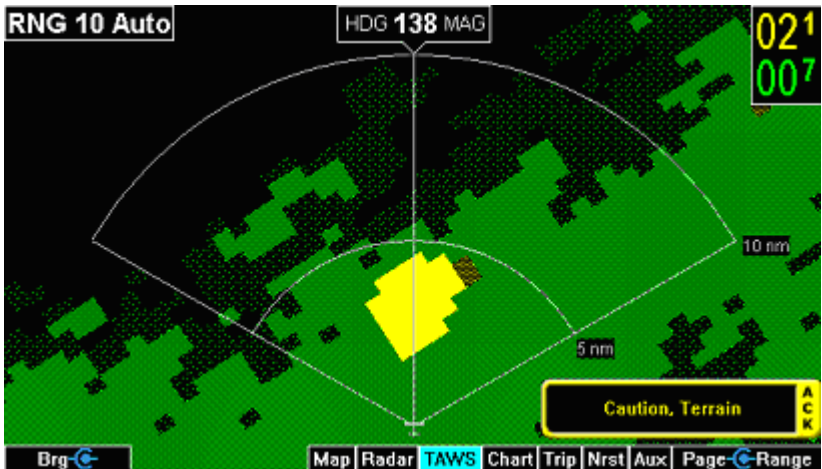
Figure 5.2 Terrain Caution Condition

When a warning alert is triggered, the terrain or obstacle that caused the alert displays in bright red. Also, a message describing the nature of the alert is presented in the message bar.
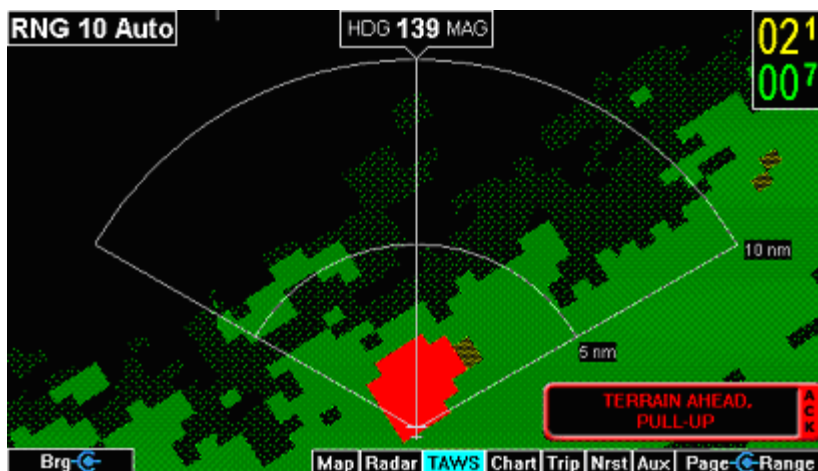
Figure 5.3 Terrain Warning Condition

When a caution or warning alert is active, the display image surrounding the target is enlarged to allow the terrain or obstacle to be seen more clearly. See Table 11.17 TAWS Messages on page 159 for a listing of TAWS messages.

If a terrain or obstacle alert occurs while a page other than TAWS Display is being displayed, a terrain or obstacle alert message is displayed in the Message Bar. When you acknowledge this message, the EX500/EX600 automatically switches to the TAWS Display page. The message bar is removed from the display when the EGPWS is no longer in alert status, or if you acknowledge the message from the TAWS page.

5.3 TAWS Reference

5.3.1   Auto-Range

If the EGPWS has been installed with the "auto range", the terrain display range is set to 10nm automatically whenever a terrain or obstacle alert takes place, thus, overriding the current range selection. To remind you that the range has been changed, the text "Auto" is added in the range annunciation. Manual range control is not disabled by auto-range. You can reset the range to any desired value.

5.3.2   Simultaneous Alerts

If a terrain or obstacle alert and a Traffic Advisory (TA) are issued simultaneously, TAWS has priority, and the terrain or obstacle alert message will be presented in the Message Bar. When you acknowledge the alert, the EX500/EX600 switches to the TAWS Display page. After you acknowledge the TAWS message from the TAWS page, the TA is shown in the Message Bar. If you then acknowledge the TA, the dedicated Traffic page (discussed in *The Traffic Page* on page 29) is displayed.

If a TA occurs while a terrain or obstacle alert is in progress, and the TAWS Display page is being displayed, the EX500 remains in TAWS Display and the TA message will appear in the Message Bar. Acknowledging the TA message displays the dedicated Traffic page.

5.3.3   Terrain Messages and Error Indications

The TAWS display might present messages in the Message Bar. Press *ACK* key to acknowledge TAWS page messages and remove them from the message bar. Large text annunciations will remain. See Table 11.17 TAWS Messages on page 159 for a listing of possible TAWS messages.

If the TAWS page is accessed immediately after you turn on the EGPWS, the system may still be initializing and the TAWS page will display the text, "TAWS Initializing", rather than the expected terrain. The EGPWS and TAWS page will begin normal operation when the initialization is complete.

TAWS Page (Optional)

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6 CMax Chart Pages (Optional)

CMax™ charts is an optional Avidyne feature. It includes the following: instrument approach procedures, arrivals, departures, airport diagrams, and various taxiway and airspace diagrams typical of Jeppesen printed charts. CMax requires that you have a valid chart data subscription from Jeppesen Sanderson, Inc.

For information on obtaining a CMax subscription, see the *Avidyne Data Update Guide* (P/N 600-00148-000) or the Jeppesen website at www.jeppesen.com. The *Data Update Guide* also contains instructions for loading the chart data to your Zip Drive or USB Flash Memory Drive. See *Loading CMax Chart Data* on page 137 for information about loading CMax Data onto your EX500/EX600.

Note: You can load new CMax Chart data into the EX500/EX600 as soon as you receive it. Any charts that have changes that are effective on a certain date are controlled within the data. The EX500/EX600 displays the proper Chart data based on the current date and the effective date of the changes to the chart.

Update the Jeppesen database regularly and prior to conducting flight operations to insure accurate data. Charts labeled "Not for Navigation" are expired and should not be used for navigation. Use of an outdated database is entirely at your own risk.

6.1 Chart Validity

CMax™ charts are valid for a period of 56 days. Charts will continue to be displayed normally for up to 10 weeks after the chart expiration date.

On Release 4.0 and earlier, after 10 weeks from the chart expiration date, access to the charts is revoked until new CMax data is loaded.

On Release 4.1 and later, after 10 weeks from the chart expiration date, charts will display a "NOT FOR NAVIGATION" watermark. The ownship symbol and flight plan legs are removed from charts that cannot be used for navigation. The watermark can be temporarily removed by pressing the Remove Labels key.

6.2   About Geo-Referenced Charts

The greatest additions to situational awareness come from charts that are geo-referenced. A chart is geo-referenced when the chart data supports a correlation of the chart position to the actual latitude and longitude coordinates. This allows an ownship symbol and flight plan legs to be represented on the chart accurately. If a chart is not geo-referenced, the ownship and flight plan legs cannot be drawn on the chart. Most Jeppesen approach charts and airport diagrams are geo-referenced; most arrival, departure, and miscellaneous charts are not.

6.3   CMax Chart Page

The Chart page can have two charts ready for viewing at any one time: an airport diagram, and a procedure chart (or other miscellaneous chart associated with that airport). The airport and associated charts are selected on the Chart Selection page.

The EX500/EX600 Startup page reports the valid dates for the currently loaded chart data. If the date for the next update has passed, the Startup page reports this in yellow cautionary text. If the chart data is more than ten (10) weeks out-of-date, access to the charts is revoked until a new chart data is loaded.

On power up, if your EX500/EX600 is receiving a valid position from your GPS unit, the Chart page displays the airport diagram of your current position. An approach procedure chart will not be displayed until you select it. If no valid GPS position is available at start-up, the

Chart page will default to the Chart Selection page to allow you to select a chart manually.

On landing, if the Chart page is displayed or subsequently selected, the EX500/EX600 switches automatically to the Airport diagram for the current location when the GPS Ground Speed drops below 40 knots. The Chart page shows the airport diagram of the current airport with ownship symbol for current aircraft position, if the airport diagram is geo-referenced.

6.3.1   CMax Procedure Charts
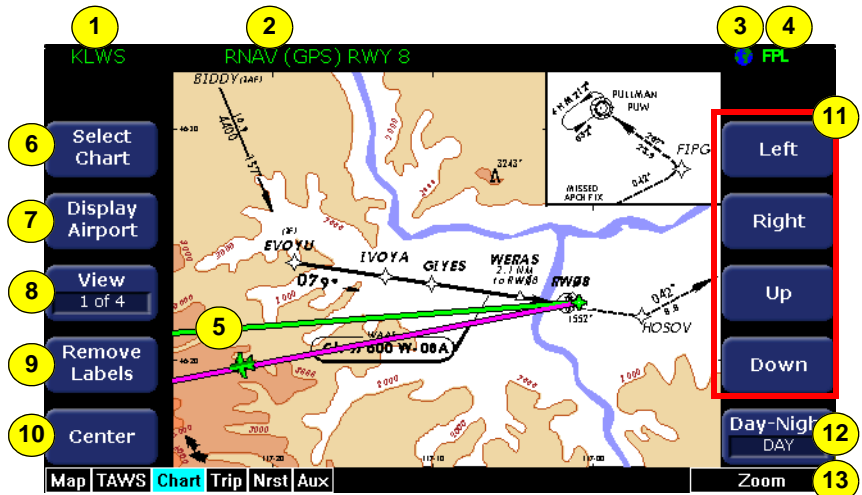
Figure 6.1 CMax Procedure Chart (2-Knob)

1) **Airport Identifier** - The airport identifier for the current airport is displayed in green.

2) **Chart Name** - The name of the current chart being displayed, also in green.

3) **Geo-referenced Symbol** - A globe is shown when the displayed chart is geo-referenced. If the chart is not geo-referenced, the globe symbol is crossed out, and your flight plan cannot be displayed on the chart.

4) **Flight Plan Symbol** - An FPL symbol indicates that the option to display the current flight plan is turned ON. If the display of flight plan is turned OFF, the FPL symbol is crossed out. If a chart is

not geo-referenced, or no flight plan is received from the GPS, the flight plan cannot be displayed even if the option is selected.

5) Ownship - If the aircraft is on the chart, and the chart is geo-referenced, its location is displayed with the ownship symbol. The chart nominally remains fixed and the ownship symbol moves across the chart with aircraft movement.

6) Select Chart key - Displays the Selection page for the selection of a new chart for display. See *Selecting an Airport* on page 63.

7) Display - The *Display* key allows you to toggle between displaying Airport and Procedure charts.

■ *Display Airport* shows when the current Procedure chart displays. Press to display the Airport chart.

■ *Display Procedure* shows when the current Airport chart is displayed. Press to display the Procedure chart.

8) View key - Controls which portion of the chart is being displayed. See details below.

9) Remove Labels - Clears the screen immediately of all labels next to the keys. This allows you to see data that might be obscured. Press any key to restore the labels.

10) Center key - Repositions the chart so that the ownship symbol is in the center of the screen. The chart appears to move underneath the ownship as the flight progresses. The Center key only appears if the chart has been manually panned in any direction. By default, charts are depicted with Centering engaged.

11) Pan knobs or Movement keys - Depending on the type of MFD you have, you can move the charts as follows:

■ **2-Knob EX500** - Use the keys on the right-hand side of the display labeled Up, Down, Left, and Right to manually move the chart on the screen (as shown in Figure 6.1).

■ **4-Knob EX500/EX600** - Use the Pan X (left outer) and Pan Y (left inner) knobs to move the chart on the screen horizontally and vertically. The Pan X and Pan Y controls the display when the current view can be panned. You can pan any view when information is off the screen as occurs when you zoom in on the view.

■ **EX600** - Use the dedicated panning keys to move the chart horizontally and vertically when the current view can be panned. Pressing the center panning key repositions the chart so that the ownship symbol is in the center of the screen. Subsequent pushes of the center panning key will not move the chart.

12) Day/Night key - Toggles the chart display mode between the Day and Night modes. The Day display is black text on a white background, while the Night display is white text on a black background. Other colors such as water or shaded terrain are also adjusted between Day and Night modes. The EX500/EX600 starts up with a default to Night mode. In a 2-knob EX500, the Day/Night key is on the bottom right corner (shown in Figure 6.1).

13) Zoom control - Zooms the chart for close-up examination of a specific area. The label only appears when the current view can be zoomed. If you pan the chart using the right knob to zoom to the full-screen chart size, the chart will also be re-centered on the screen.

A typical approach procedure chart is shown in Figure 6.2.
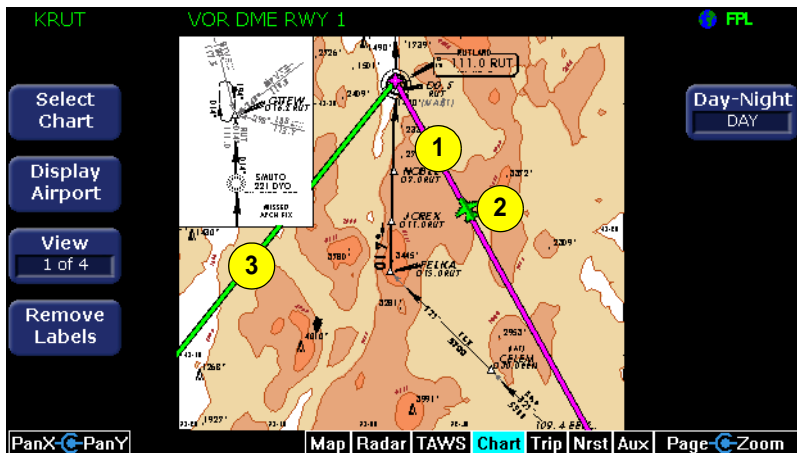
Figure 6.2 Plan Procedure Chart (4-Knob)

1) Flight Plan Active Leg - The active leg of the current flight plan, if it appears on the chart, is depicted in magenta. The non-active legs are shown in green.

2) **Ownship** - If the aircraft is on the chart, and the chart is geo-referenced, its location is displayed with the ownship symbol. The chart nominally remains fixed and the ownship symbol moves across the chart with aircraft movement.

3) **Flight Plan** - The flight plan is overlaid on the chart plan view when the flight plan display option is selected (on Selection page) and the chart is geo-referenced. If a flight plan is expected and does not appear, check that the correct airport and approach have been selected.

Note: Northstar GPS units do not send non-active legs in approach mode. Only the active leg will be depicted on the EX500/EX600.

Note: The ownship symbol on the Chart page is always oriented according to the current GPS ground track. Therefore, the ownship is always pointed in the direction that the aircraft is moving and does not show any crab angle induced by crosswind components.

6.4 CMax Chart Views

The EX500/EX600 provides Procedure charts and Airport charts. For ease of use and readability, each chart is divided into sections that are shown individually. Use the *Display* key to toggle between Procedure charts and Airport charts. Press *View* to cycle through the available views for that chart.

Note: If CMax detects non-standard data for a particular chart, a full chart view will be the only available view for that chart, and the geo-referenced ownship and flightplan will not be displayed.

6.4.1 Procedure Views

For ease of use and readability, the chart is divided into sections, which are shown individually. Press the *View* key to cycle through the available views for that chart. The available views are as follows:

Table 6.1   Procedure Chart Views

#	View	Description
1 of 4	Plan	Includes a flight plan overlay, if geo-referenced (shown on Figure 6.2 on page 57.
2 of 4	Header	Contains general chart information and appropriate communication frequencies.
3 of 4	Profile	Includes the profile view of the approach procedure. Note that in Figure 6.3, this chart is shown with the labels removed.
4 of 4	Minimums	Shows the descent minimums for the approach.

The key legend shows the number of the current view as well as the total number of views available for that procedure (i.e., "1 of 4", "2 of 4", and so forth).

CMax Chart Pages (Optional)

Header View

Profile View

Minimums View
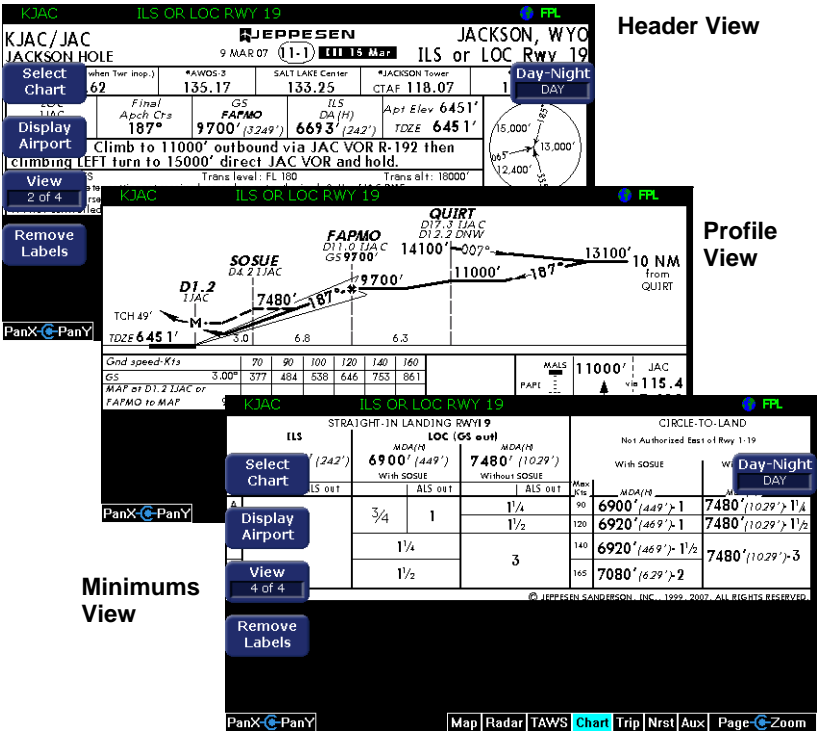
Figure 6.3 Procedure Chart views

6.4.2   Airport Chart Views

For airport charts, the available views are as follows:

Table 6.2   Airport Chart Views

#	Chart	Description
1 of 4	Plan	Includes a flight plan overlay, if geo-referenced. Shown on Figure 6.1 on page 55.
2 of 4	Header	Includes general chart information and communications frequencies.
3 of 4	Runways	Shows runway information for the airport.
4 of 4	Departure	Displays specific departure procedure information.
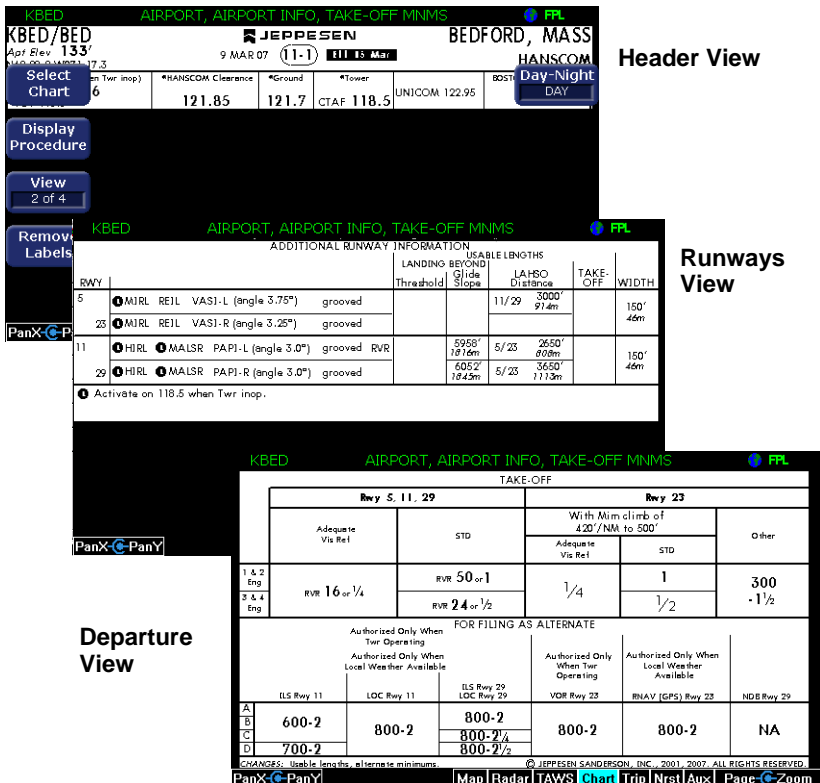
Figure 6.4 Airport Chart Views

Note: In the Runways and Departure views, the labels have been removed (using *Remove Labels*).

Not all charts will have all information sections. Airport charts, for example, might or might not have runway or departure information. For larger airports, this information is often large enough to warrant a separate chart, which can be selected from the list on the Selection page.

Charts that cannot be split into smaller sections are shown as a complete chart, with the View key not displayed, since only one View type is available.
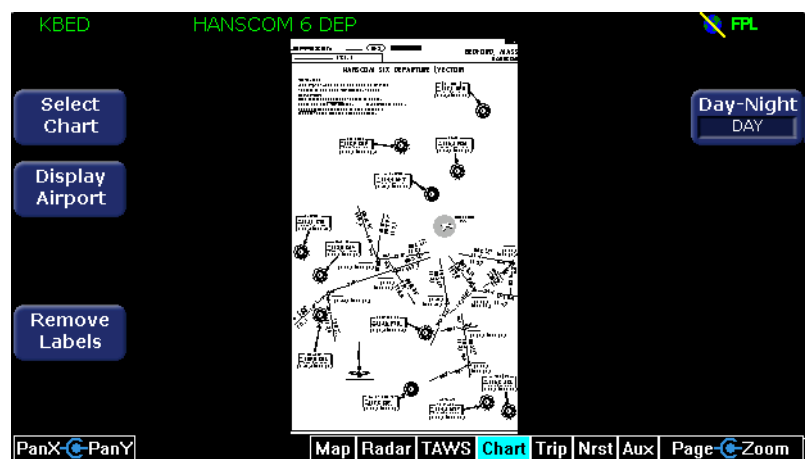
Figure 6.5 Airport Departure chart

6.5 Selecting an Airport

This page allows you to select the airport for which you want to view charts and, using the Select Chart key, view a specific chart for that airport.

Figure 6.6 Airport Selection Page

1) Airport Entry Field - This field accepts airport identification codes (such as KCAD, etc.). On startup, the field displays the current position airport. If the EX500/EX600 cannot determine a valid position, the field is left blank. Changing the Airport Entry Field depends on the type of EX500/EX600 you have:

■ **2-Knob** - (Not shown) Rotate the *Select* knob to select a character. The character selection goes from A to Z, then 0 to 9, then wraps to the beginning. Press the *Next Letter* key to move to the next character; press *Prev Letter* to go back.

■ **4-Knob** - Rotate the *Select* knob to select a letter or number (A-Z, 0-9). Use the *Pos* knob to move to the next or previous position in the Airport Entry Field.

The EX500/EX600 attempts to auto-complete an airport entry as the first characters are entered. Press the *AutoFill* key to immediately enter the destination airport. Only those airports within the subscriber's coverage area are automatically completed.

When the entry field contains the desired airport identifier, press *Select Chart*. A list of all charts available for the identified airport appears in the chart list area and the cursor moves to the Chart Selection list. The name of the airport in the Airport Entry Field is listed directly below the entry field.

2) **Chart Selection List** - A list of all charts available for the identified airport. This list does not appear until you press *Select Chart*. Although the majority of charts listed are instrument approach procedure charts, and are generally referred to in this documentation as procedures, the list also includes other types of charts such as airspace diagrams, taxi diagrams, special instructions, and other miscellaneous charts.

Note: The EX500/EX600 presents only those charts covered by your Chart data subscription. The Charts are listed in the Jeppesen chart index order.

---

3) **FlightPlan key** - Toggles the display of the flight plan overlay on the chart Plan View between Display and Off. Changes to this selection are effective immediately.

4) **Back to Active key** - *Back to Active* returns you to the chart display screen. Any inputs to the Airport Entry Field or Chart list are abandoned. Changes to FlightPlan display status, however, are preserved.

5) **Auto Fill key** - Detects the destination airport automatically if the final waypoint is an airport or a waypoint that is part of an instrument approach procedure. However, for some approaches, the Auto Fill key displays the desired destination airport before pressing the key. The Auto Fill key does not display a destination airport under the following conditions:

- An airport cannot be determined due to GPS limitations.

- When the feature is not supported by some GPS models.

- The current airport destination is not available in your chart data coverage area.

6) **Select Chart** - Moves the active selection cursor from the Airport Entry Field to the Chart Selection list, described in *Selecting a Chart* on page 65.

6.5.1   Selecting a Chart

When you press *Select Chart* from the Airport Selection page, a complete list of available charts for the selected airport displays.
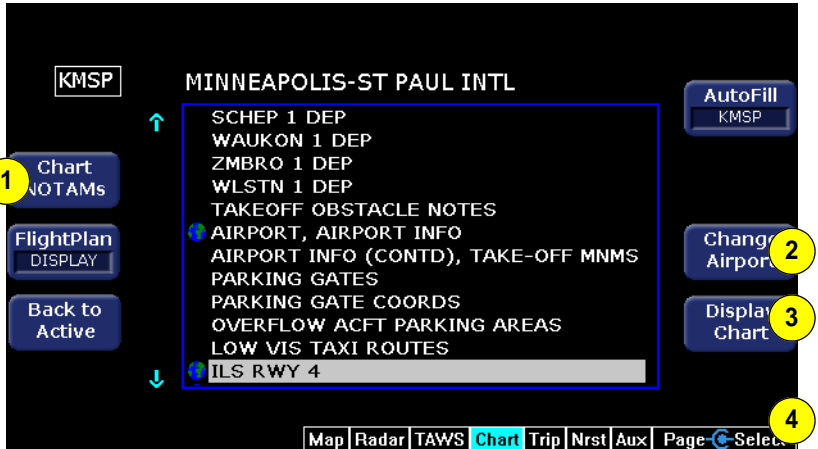
Figure 6.7 Chart Selection Page

1) **Chart NOTAMs key** - The *Chart NOTAMs* key is displayed only if chart NOTAMs exist for the currently-selected airport. Press *Chart NOTAMs* to bring up a window that lists any associated chart NOTAMs for the airport currently entered in the Airport Entry Field.

2) **Change Airport key** - Press the Change Airport key to return to the Airport Entry Field (see 63) for entry or to modify the selected airport identifier.

3) **Display Chart key** - The Display Chart key becomes active when you enter a valid airport in the Airport Entry Field, and you press the Select Chart key to move the selection control to the Chart Selection list. Press the *Display Chart* key to load the selected chart and display it on the Chart page. Remember, when you press Display Chart the associated Airport diagram is also made available on the Chart page automatically when a procedure chart is loaded.

Note: As a valid chart, the Airport diagram is listed in the Chart Selection list. However, it is not usually necessary to load the Airport chart, since it is always accessible on the Chart page by pressing the *Display Airport* key.

---

4) Select knob - When the Chart Selection list is the active selection area, the *Select* knob controls the selection of charts from the list. If the list of charts is longer than the available space, scroll down to see the rest of the list.

> In the unlikely event of data corruption during operations, the MFD may exhibit one of the following symptoms:
>
> • MFD reports that no chart data is available at all.
>
> • Chart page is not accessible.
>
> • Expected airports are not available for chart selection.
>
> If you observe any of these, reload the CMax chart data using the CMax data loader. If problems persist, contact your dealer or Avidyne Technical Support.
>
> As pilot in command, it is your duty to have backup sources of data available.

6.6 Chart NOTAMs Page

The Chart NOTAMs key on the Selection page displays any chart
NOTAMs associated with that airport. Chart NOTAMs specific to that
airport are listed first, followed by any general chart NOTAMs.

Note: Chart NOTAMs address changes to information contained on
the charts, and do not include local or regional operational
NOTAMs. Always obtain local and regional NOTAMS before
any flight.
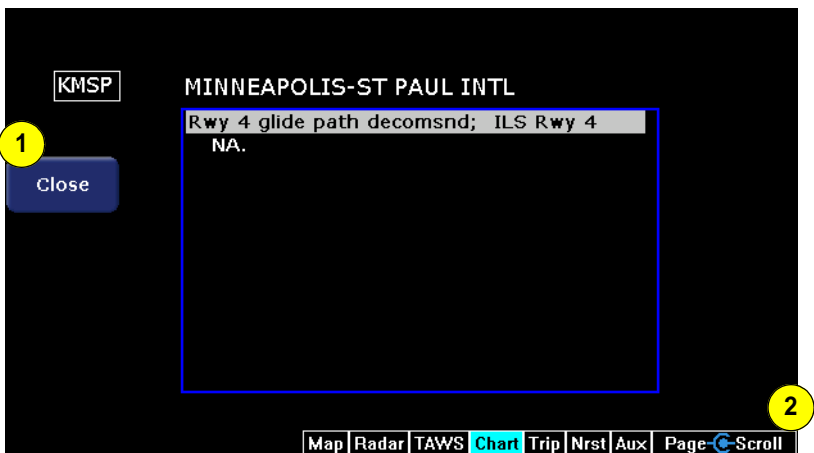
Figure 6.8 Chart NOTAMs

1) **Close key** - Press *Close* to close the Chart NOTAMs window and
   return to the Chart Selection page.

2) **Scroll knob** - The Scroll knob scrolls the list of NOTAMs. If the
   list is longer than the screen area, scroll down to bring the
   remaining items into view.

6.7 European VFR Charts

European VFR Charts can be included in the CMax subscription from Jeppesen. If loaded, these European VFR Charts can be accessed like standard CMax charts.

<Insert image of chart selection page with both. Indicate VFR charts with a (1) and standard charts with a (2)>

1) **VFR Charts** - If loaded, VFR charts will be listed first in the list of CMax charts for a given airport.

2) **IFR Charts** - If loaded, standard CMax IFR charts will appear second on the CMax Selection Page below European VFR charts.

If a VFR chart is selected pressing "Display Airport" will display the VFR airport diagram. Likewise, if an IFR chart is selected, pressing "Display Airport" will display the standard Jeppesen airport diagram.

7   Trip Page

The Trip page shows the remaining legs in the current flight plan and other data being received by the EX500/EX600 from the GPS. The Trip page is split horizontally into two sections.

7.1   About the Trip Page

The upper portion of the Trip page displays the following:

● Information about the waypoints in your flight plan, updated continuously.

The lower portion displays the following:

● Important flight information, which, depending on your options, can include text METARs, Broadcast and 2-Way Datalink status, Winds and Temperatures Aloft, and TAFs, along with a legend for weather symbols displayed on the Map page and other pages.

The distance and the time values to each waypoint are updated with each new positive fix from the GPS. The route legs advance with each waypoint message.

If the entire flight plan does not fit on the screen, an ellipsis (...) is displayed in the next to the last line. The destination line is always displayed.

All flight plans are from the GPS. A message, "No Flightplan Available", is displayed if there is no flight plan entered, or if the GPS has failed.

7.2   Trip Page Information
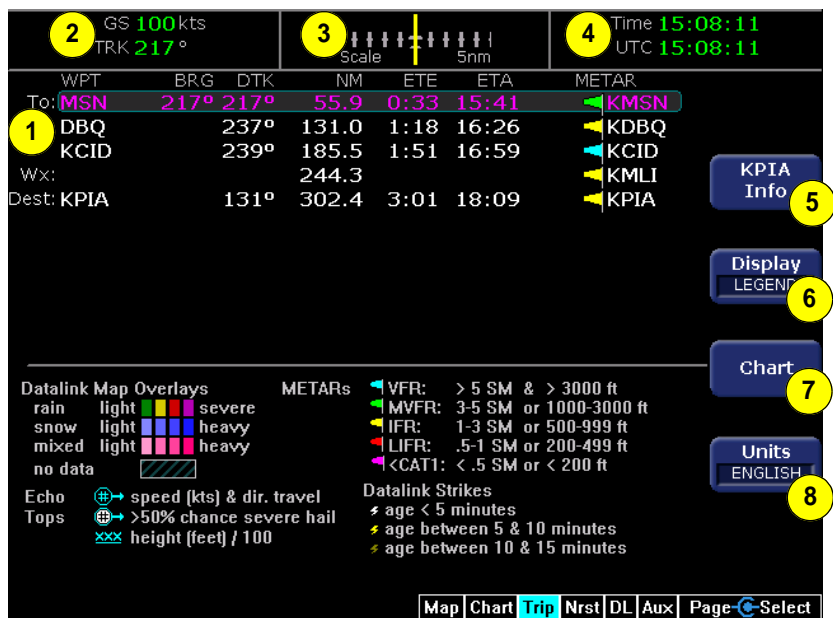
Figure 7.1 Trip Page: Upper Display items

1) **Flight Plan Waypoints** - Flight Plan information from your GPS.
   Active waypoint is shown in magenta.

   - The following data is displayed for Flight Plan waypoints, if
     available:

     ◆ **WPT** - Waypoint identifier as received from the GPS.

     ◆ **BRG** - Bearing to current waypoint.

     ◆ **DTK** - Desired track to waypoint.

     ◆ **NM** - Cumulative great circle distance of each flight plan
       leg.

     ◆ **ETE** - Cumulative estimated time en route to waypoint in
       H:MM format for each flight plan leg at current ground
       speed.

     ◆ **ETA** - Estimated time of arrival to waypoint in HH:MM
       formatted for local time.

     ◆ **METAR** - Graphical METAR and reporting point
       identifier.

- ◆ **Chart Icon** - Indicates that a chart is available for the associated airport. An "I" on the icon indicates that at least one ILS approach chart is available for the associated airport, on the CMax Chart page. Chart icons are displayed only for those airports for which you have JeppView subscription coverage. For more information, see Chapter 6 "CMax Chart Pages (Optional).

- ■ When the EX500/EX600 Datalink is enabled, any leg on your flight plan that is longer than 100NM generates "intermediate waypoints" to display en route weather. These points are identified with a *Wx:* prefix, rather than *To:* in the flight plan display.

2) **Current ground speed and track** - As reported by your GPS.

3) **Course Deviation Indicator (CDI)** - Shows the lateral distance (Crosstrack deviation) from desired course, providing continuous navigation reference when viewing the Trip page.

4) **Local and UTC time** in HH:MM:SS using a 24-hour clock format.

5) *Destination Airport* **Info** - Provides quick access to airport information for the destination airport. Press Airport Info to display a page similar to Figure 7.3 on page 77.

6) **Display** - Controls the display shown in the lower portion of the screen. Press Display to toggle through the selections. The selections available depend on your options.

- ■ METAR - Displays the decoded text METAR for the selected waypoint, when available:


```
METAR Conditions at KMSP          Age:       29 minutes
Cloud:    500 feet overcast       Wind:      160° at 7 kts
                                  Gust:      none
                                  Visibility: 2 1/2SM
Weather: mist                     Tmp/Dew:9°C / 8°C
                                  Altimeter: 29.76 inches of Hg
```

Note: The EX500/EX600 translates coded METAR reports into plain English. Should the MFD fail to translate a particular message, part of the METAR report might not be available and will not be displayed. The absence of displayed data does not mean that data is zero (for example, the absence of

wind data does not necessarily mean that winds are calm). In some cases when the METAR cannot be decoded, the raw text is displayed.

■ LEGEND - When Datalink is enabled, the Legend shows the type of data associated with the various Datalink products. The Units key is only available when Legend is selected (Release 4.1 and later).
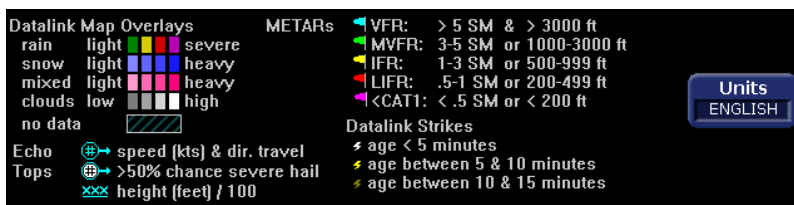
Figure 7.2 Datalink Legend

The Legend includes:

◆ Datalink Radar colors and meanings
◆ SatIR colors and meanings (clouds) (Release 4.1 and later)
◆ METAR flag colors and meanings
◆ Storm cells/Echo Tops, including the speed and direction of the storm cell and the height of the cell (in hundreds of feet). A white cell indicates the probability of hail.
◆ Datalink lightning strike colors.

■ STATUS - If 2-Way Datalink is installed and available, the double-headed arrow Status key displays signal information for the 2-Way Datalink system. It also displays the elapsed time since the last reception of the various types of weather data.

Time Since Reception		Narrowcast Status	
METAR Symbols:	1 Min.	Satellite in View:	FM69
AIRMETS/SIGMETS:	0 Min.	Signal Strength:	10
SUA Status:	0 Min.	Signal Quality:	10
TFRs:	0 Min.	Message Quality:	10
Datalink Radar:	1 Min.	7:57 pm NarrowCast: Rcv TFRs	

For Datalink/Narrowcast Status, the following information is displayed:

◆ **Satellite in View (ORBCOMM Only)** - Displays the name of the satellite that is currently being used.

◆ **Signal Strength/Signal Quality** - Signal Status represents the overall health of the satellite signal. The possible values are None, Weak, Marginal, and Good.

◆ **Message Quality (ORBCOMM Only)** - Even when the signal strength is good, messages might be dropped if the local interference level is too high.

◆ **Network Status (MLX Only)** - Status of the Iridium network, either OK or BAD.

◆ **Modem Health (MLX Only)** - Status of the MLX transceiver, either OK or BAD

> ⚠ The quality of data reception is not guaranteed, even when signal strength indicators are high. Be aware that breaks in reception can and do occur.

■ ✏STATUS - If Broadcast Datalink is installed and available, the single-headed, down-arrow Status key displays satellite, signal and serial number information for the Broadcast Datalink system, as well as the time elapsed since reception of the various types of weather data. If the time since reception for any particular weather product is greater than the limits defined by the system, a cyan alert message is displayed in the message box on the Aux Main page and in the message bar. For example, if 91 minutes has elapsed since the last TAF data was received, a message, "Broadcast TAFs > 90 min", will be displayed in the message bar and in the message list on the Aux page. When these messages are displayed, all data for that product is removed from the MFD. The Trip page will indicate that new data for that product has

not been received for greater than X minutes, where 'X' is the time limit defined for each product (typically 90 minutes).

Time Since Reception		Broadcast Status	
NEXRAD	2 min.	Service Level	Aviator
METARs	Not Received	XM Serial Number	2LM320CU
AIRMETs	Not Received	Signal Quality	good
SIGMETs	3 min.		
TFRs	Not Received		
Lightning	3 min.		
TAFs	2 min.		
Winds Aloft	1 min.		
Storm Cells	0 min.		
Freezing Level	Not Received		
Canadian Radar	Not Received		

Note: For the Broadcast Datalink, the "Time Since Reception" heading on the Trip page lists the times elapsed since the product was last received by the MFD. Remember, there is an inherent time delay between the creation and reception of broadcast weather data.

For Broadcast Status, the following information is displayed:

◆ **Service Level** - The Broadcast Datalink service level. If "Deactivation" is displayed, contact WSI/Sirius or XM.

◆ **Serial Number (XM Receiver Only)** - Serial number of the XM receiver.

◆ **Receiver ID (WSI Receiver only)** - Serial number of the WSI receiver

◆ **Signal Quality** - Signal Status represents the overall health of the satellite signal. The possible values are None, Weak, Marginal, and Good.

◆ **Signal Noise (WSI Receiver only)** - WSI/Sirius displays the error rate, which is a measure of the signal quality from the receiver. 0 indicates no errors.

◆ **Signal Lock (WSI Receiver only)** - Displays whether the receiver was able to obtain lock on the satellites in view. It will display either "locked" or "not locked".

■ **WINDS** - Displays Winds and Temperatures Aloft and Freezing Level data from Broadcast or 2-Way Datalink, if available. WSI shows Winds and Temperatures Aloft. XM shows Winds Aloft and Freezing Levels. 2-Way Datalink shows Winds and Temperatures Aloft (Release 4.1 and later).

```
Winds & Temps Aloft Forecast for KBOS
FL030  135°/31kts 15°C   FL240  165°/30kts -18°C
FL060  120°/38kts 11°C   FL300  180°/30kts -32°C
FL090  135°/38kts 7°C    FL340  180°/28kts -44°C
FL120  135°/30kts 3°C    FL390  180°/30kts -56°C
FL180  150°/25kts -8°C   FL410  195°/40kts -59°C
```

The Winds Aloft direction is depicted from true (not magnetic) North. Winds are interpolated for each Trip page waypoint and are based on a computer forecast model that is updated hourly.

Note: If wind data for a particular flight level has not been received, the message, *Not Available,* is displayed. If the EX500/EX600 has received wind data, but the value is undefined for a particular level, the wind value is displayed as dashes. This can happen for a number of reasons; for example, when terrain is at a higher altitude than the data level.

WSI/Sirius and 2-Way Datalink winds aloft data includes the temperature at each wind reporting altitude. XM WX data does not display temperatures aloft. Rather, the XM Freezing Level forecast displays the expected altitude of the freezing level for the waypoint.

■ **TAF** - The EX500/EX600 provides text Terminal Aerodrome Forecasts (TAF) via Broadcast or 2-Way Datalink, if available. TAFs are not decoded.

```
Terminal Aerodrome Forecast (TAF) for KMSP

211727Z 211818 15013KT 2SM BR OVC005 TEMPO 1820 1SM -DZ BR
OVC003 FM2000 19011KT 2SM BR OVC007 TEMPO 2303 1SM -SHRA BR
FM0300 29010KT 4SM BR OVC015 FM0600 32011KT 5SM BR SCT015
OVC050 FM0900 29007KT P6SM SCT050 BKN200
```

Note: Winds Aloft and TAFs are only available with certain Broadcast Datalink packages. See your weather provider's documentation for more information.

---

7) Chart key - If CMax approach charts are installed and available, the **Chart** key provides a quick jump to the Chart page with the highlighted airport pre-selected.

> ⚠️ Using an outdated database is entirely at your own risk. It is critical that you update the Jeppesen database regularly and prior to conducting flight operations to ensure accurate data.

8) Units key - (Release 4.1 and later) Controls the units used for decoded METARs and Datalink Legend. The selections are:

■ **English** - Displays the decoded METAR text and Datalink Legend using statute miles (SM), feet (ft), and inches of mercury (inHg)

■ **Metric** - Displays the decoded METAR text and Datalink Legend using meters (m), kilometers (km), and hectopascals (hPa). Cloud heights are still displayed in feet (ft)

Note: Unit selections apply to decoded METAR text on both the Trip page and Nearest page.

Note: The Units key is only displayed when the legend is selected as the Trip page display.

> **Garmin GNS400/500-series users:** When the EX500/EX600 is interfaced to a Garmin GNS400/500-series GPS via RS-232, the GPS may send duplicate waypoints while in approach mode. These duplicate waypoints might affect the distance and time readings on the Trip page. Use the GPS as the primary source of navigation information for approach procedures. Consult your avionics installation facility to determine if your EX500/EX600 is interfaced to the Garmin GNS-430 via ARINC 429 or RS-232.

7.3   Airport Information Page

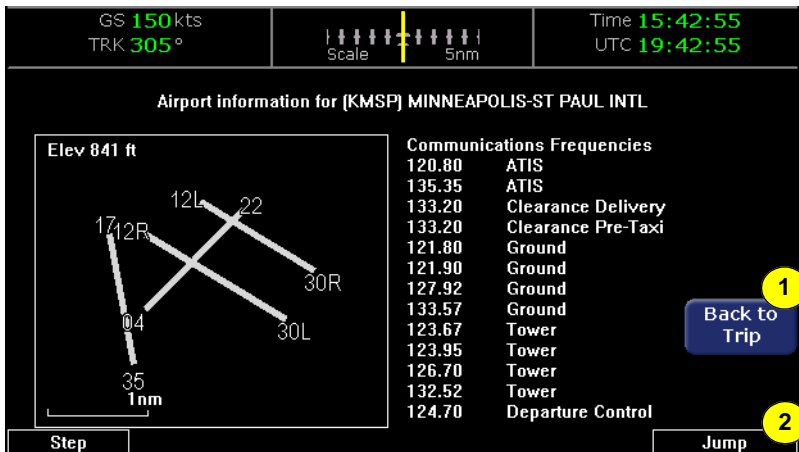**Figure 7.3 Trip Airport Information Page**

1) **Back to Trip** - Returns to the Trip page.

2) **Step and Jump knobs** - If the communications frequencies list is too long to fit on a single page, the Step and Jump labels appear.

   ■ **Step** - Scrolls the page one line.

   ■ **Jump** - Scrolls an entire page (or to the end of the list).

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8   Nearest Page (NRST)

The Nearest page displays the nearest airports within 100NM of your present position or the nearest airports to your destination. The keys to the right of the display (see Figure 8.1) allow you to access detailed information about each airport. For example, the Type key allows you to view the nearest VORs, NDBs, Intersections, and Obstacles from your present position.

8.1   Nearest Page

The Nearest page provides two distinct functions:

● Information and weather data for nearby airports and navaids

● Information and weather data for your destination airport
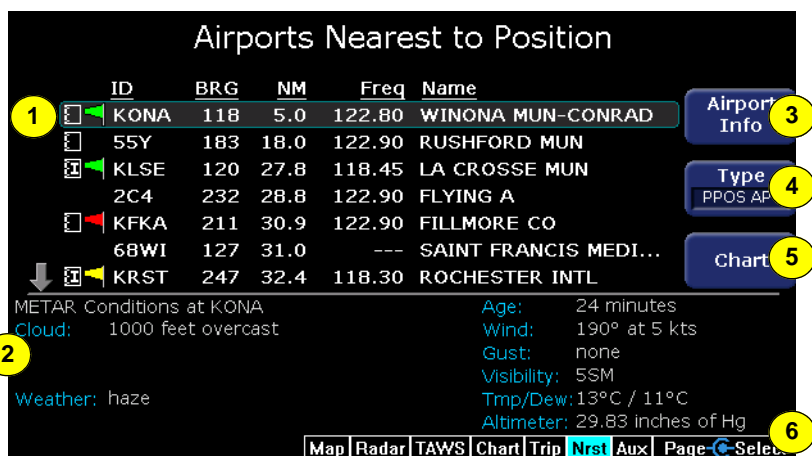
Figure 8.1 Nearest Page

1) **Airport details** - By default, the display shows the following details about the airports nearest to your current location:

   ■ **METAR and Chart Symbols** - Waypoints with METAR reporting stations display a color-coded METAR flag when Datalink is active. If CMax approach charts are installed, a chart icon is displayed next to any METAR reporting station for which an Instrument Procedure chart is available. An "I" on the icon indicates that at least one ILS approach chart is available. See *Chart*, below, for more information.

- **ID** - Airport identifier of the airport.

- **BRG** - Bearing to the airport.

- **NM** - Distance to the airport.

- **Freq** - Radio frequency to contact this airport.

- **Name** - Airport common name.

2) **METAR Conditions** - Displays the decoded text METAR for the selected airport when Datalink is enabled and a METAR is available. If the METAR cannot be decoded, the raw text of the METAR is displayed.

Note: The units for the Decoded METAR text can be selected on the Trip page. See "Units Key" on Page 76.

---

3) *Airport* **Info** - Provides quick access to airport information for the airport highlighted. Airport Info displays a page similar to Figure 8.2 on page 81.

4) **TYPE** - Selects between lists of up to 50 objects within a 100nm radius, sorted by distance. Except for Airports Nearest to Destination, all data is shown from your present position. Press *Type* to toggle through the following selections:

- **PPOS APT (Airports Nearest to Present Position)** - Graphical METARs, airport identifier, bearing, distance from the aircraft present position, frequency, and airport name.

- **DEST APT (Airports Nearest to Destination)** - Graphical METARs, airport identifier, bearing, distance from the last flight plan waypoint, frequency, and airport name.

- **VORs** - Identifier, bearing, distance, frequency and name.

- **NDBs** - Identifier, bearing, distance, frequency and name.

- **Intersections** - Identifier, bearing, distance, frequency and name.

- **Obstacles** - MSL (and AGL) height, bearing and distance.

Note: Both types of Nearest Airport displays can be tailored by using the Airport Filter key on the Aux - System Setup page. For example, this allows you to limit the lists to only certain types of airports or to certain minimum runway lengths.

For the two types of Nearest Airport displays, graphical METAR flags representing the current weather will be displayed (if available).

If Datalink is installed, the lower portion of the screen will display the text METAR for any airport that displays a graphical METAR symbol. If you leave the Nearest page, the last type of nearest information that you selected is displayed when you return.

5) Chart - If CMax terminal charts are installed, a "chart" icon will be displayed, indicating the availability of CMax charts for any airport. An "I" inside the icon indicates the availability of at least one ILS approach to that airport.

6) Select knob - Moves the cursor to a specific airport or other data.

8.2   *Airport Information Page*
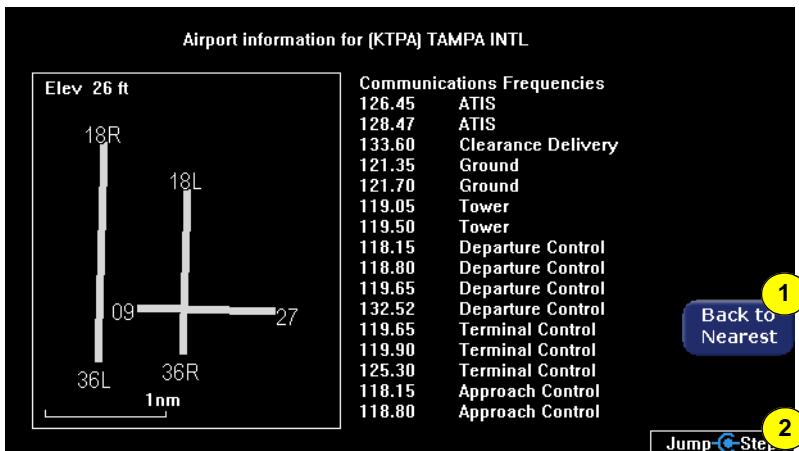

Figure 8.2 NRST Airport Information Page

1) Back to Nearest - Returns to the currently selected NRST page.

2) **Step and Jump knobs** - If the communications frequencies list is long enough so that it does not fit on a single page, the Step and Jump labels appear.

  ■ **Step** - Scrolls the page one line.

  ■ **Jump** - Scrolls an entire page (or to the end of the list).

9   Aux Page

This chapter describes the options on the EX500/EX600 Aux page and tells you how to configure them (see Figure 9.1). You also use the main Aux page to view informational messages (see call-out 6 in Figure 9.1.)

9.1   Aux Main Page

The options and features on the EX500/EX600 Aux page are identified by call out in Figure 9.1, and the list below the Figure describes each call out item.
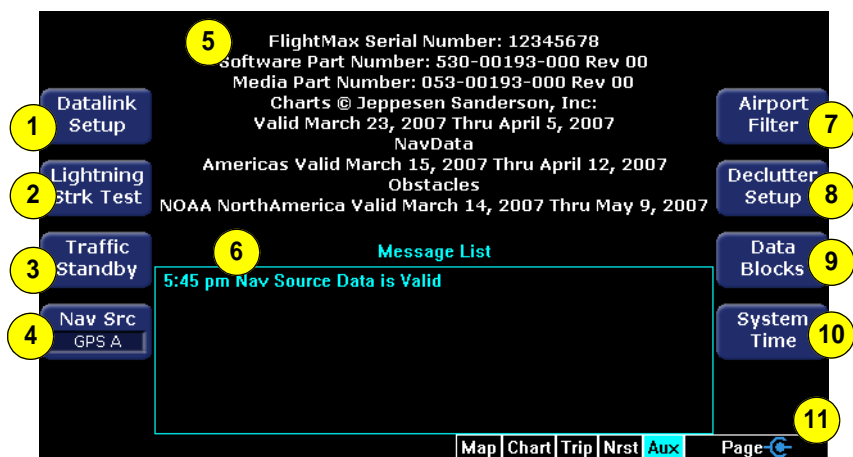
Figure 9.1 EX500 Aux Main Page

1) **Datalink Setup or Datalink** - This setup feature applies only to ORBCOMM. See the section, *Setting Up Datalink for ORBCOMM (Release 4.0 and earlier)* on page 113. (For MLX770 Datalink setup, see *Setting Up Datalink for Iridium* on page 103). Depending on your aircraft features:

■ If only 2-Way Datalink is installed, it displays as *Datalink Setup* and provides configuration options for 2-Way Datalink.

■ If both Broadcast and 2-Way Datalink systems are installed, it displays as *Datalink* and provides access to both Datalink Messaging and MultiLink setup options. For more information

about MultiLink, see *Setting Up Datalink for ORBCOMM (Release 4.0 and earlier)* on page 113.

- ■ If only Broadcast Datalink is installed, this key is not displayed. The EX500/EX600 will be configured for Broadcast Datalink by the installer.

2) **Lightning Strk Test** - Initiates a self test of the lightning sensor and switches to Map page for the display of test results.

3) **Traffic Standby** - Switches traffic sensor into standby mode (only while on the ground). To re-enable the display of traffic data while on the ground, press the Traffic key on the Map page.

4) **Nav Src** - Selects GPS A or GPS B input source (if dual GPS's are installed and wired to the EX500/EX600).

5) **Displays** - Software part number, hardware serial number, media part number, and the effective dates of navigation and chart databases.

6) **Message List** (including sensor status) - This display area is for system informational messages on the EX500/EX600. This list is not chronological—each type of sensor is assigned to a position in the list for its related messages.

7) **Airport Filter** - Provides options for selecting the types of airports that will be displayed on the Map and NRST pages.

8) **Declutter Setup** - Provides options for selecting the amount of data that will be displayed at various Zoom and Declutter levels on the Map page.

9) **Data Blocks** - Allows you to tailor the type of information displayed in the data blocks on the upper right-hand corner of the Map page.

10) **System Time** - Provides options for setting the system date and time and for tailoring the behavior of the menu key time-outs.

11) **Scroll knob** - Controls the cursor to allow you to review all the messages in the message list.

9.2 Airport Filter Setup

The Airport Filter page allows you to set the criteria for limiting the airports that are displayed on the Map page and Nearest page.

Figure 9.2 EX500 Airport Filter Setup

1) **Airport Type** - Selects the display of Towered, Non-Towered, or both.

2) **Surface** - Selects the display of hard, soft and/or water surfaces.

3) **Minimum Runway Length** - Selects the minimum runway length in hundreds of feet (from 2,000 to 7,000) or selects all runway lengths.

9.3 Declutter Setup

The Declutter Setup page enables you to select navigation symbols and display their settings. You can select individual items for display, or you can select a predefined group of items by choosing VFR or IFR defaults. The Declutter Setup page lists items in order of their importance from top to bottom.
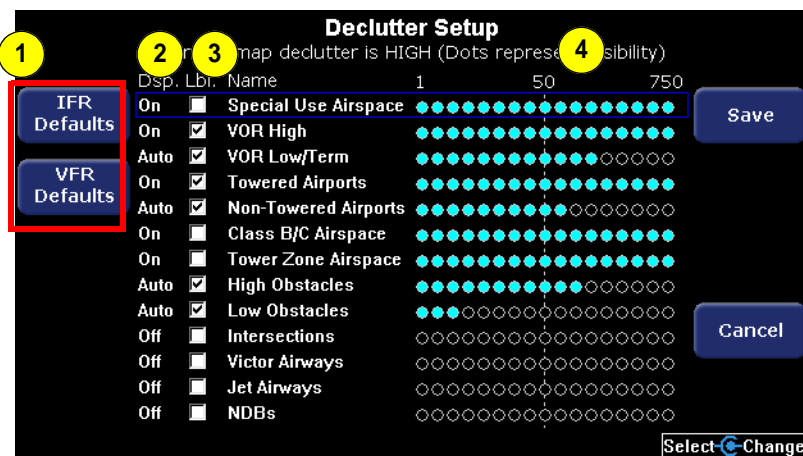
Figure 9.3 Declutter Setup Page

1) **IFR & VFR Defaults** - Sets the declutter settings to predefined factory settings based on typical usage.

2) **Display** - Each symbol type has three possible display settings:

   ■ **On** - The symbol is displayed unless obscured by a higher-priority item.

   ■ **Auto** - The symbol is displayed based on the symbol density and priority at a given range.

   ■ **Off** - The symbol is never displayed.

Note: The EX500/EX600 may limit the number of symbols displayed based on the total symbol density.

3) **Label** - Checking the label box displays the navaid label along with the symbol. The labels show associated Navaid name or

altitude as appropriate. Tower Zone (Class D) airspace labels are never displayed, even if selected.

Note: You cannot select Tower Zone (Class D) Airspace labels.

4) **Range Dots** - The dots represent the available map scales. A blue dot indicates that the object is displayed at that range. The vertical dash line indicates the map current scale.

9.4 Data Block Setup

You can change the data blocks in the upper right-hand corner of the Map page to display information from the list of available data types.
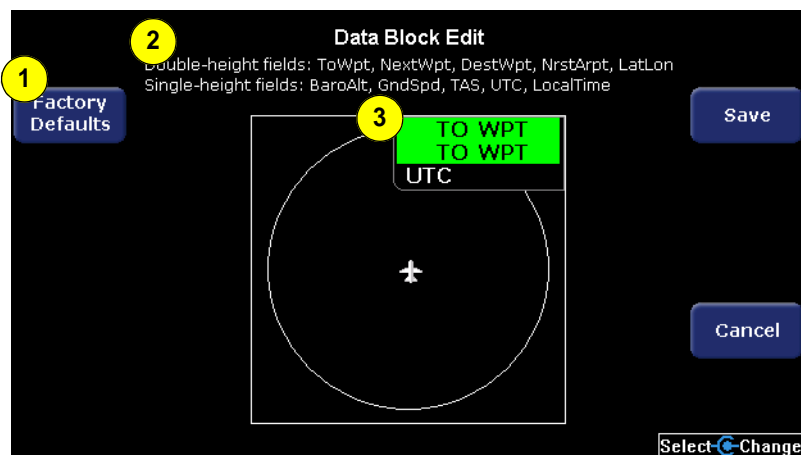
Figure 9.4 Data Block Edit

1) **Factory Defaults key** - Resets the data block display to its original view.

2) **Data Choices** - Double- and single-height field data choices are listed in the page title block. See *Data Block Information* on page 148 for a full description of Navigation data available for display in Data Blocks.

3) **Data Block** - Allows up to 3 lines of data for display. The data block resizes automatically based on the number of lines selected. The data block is not displayed if all the lines are set to "-Blank-."

9.5 System Time Setup

The System Time page allows you to adjust the system time.

> ⚠️ Before conducting flight operations, verify that time and date settings are correct and in GMT (UTC). It is critical that you set the time to GMT to display Datalink weather accurately.

System Time
Set UTC Date/Time, time zone offset and menu timeout
Menu Timeouts apply only to Map page

1 Time Source: GPS   Save

2 UTC Year: 2007   Month: 03   Day: 14
UTC Hour: 4 PM   Minute: 21   Second: 51

3 Time Zone: **UTC - 4 Hours**

4
```
GPS:    Wed, 03/14/07  16:21:54
DL:     Time Not Available
Local:  Wed, 03/14/07  12:21:51
UTC:    Wed, 03/14/07  16:21:51
```
Cancel

5 Menu Timeout: Never

Select⚫Change

Figure 9.5 System Time Edit

1) **Time Source** - Selects the source of the system time setting. Possible values:

   ■ **Manual Set** - Allows you to manually set the date and time fields below.

   ■ **Datalink** - The system automatically sets the time based on the UTC time reported by the 2-Way Datalink system. Requires 2-Way Datalink.

   ■ **GPS** - The system automatically sets the time based on input from the GPS.

Note: Most RS232 GPS interfaces do not provide time data.

   ■ **Auto** - The system tries to set the time automatically by obtaining data first from the GPS and then from the 2-Way Datalink system, if installed.

2) **Time and Date** - *The current date and time in Greenwich Mean Time or Universal Time Coordinated (UTC, GMT, or Zulu time).* It is critical that these fields not be set to local time – they *must* reflect UTC. Proper Datalink performance depends on accurate setting of UTC time in these fields.

3) **Time Zone** - Selects your local offset from Greenwich Mean Time. For example, in the eastern US you would select either "UTC – 4 Hours" during Daylight Savings Time, or "UTC – 5 Hours" during Standard Time.

4) **Current Time and Date settings** - Displays the time/date values currently being reported by the GPS and Datalink as well as the Local and UTC values that are currently set in the EX500/EX600.

Note: You cannot change Local time directly – you must first set the GMT time correctly and then choose the correct Time Zone.

---

5) **Menu Timeout** - Sets the amount of time that the key labels are displayed from the following choices (in seconds): Never, 2, 5, 10, 20, 30, 40, 50, 60. If "Never" is selected, the key labels do not time out.

10 Datalink (Optional)

Datalink services allow you to view weather and other data on the EX500/EX600 Map and Trip pages. Avidyne offers the following Datalink services for the EX500/EX600:

● Broadcast Datalink

● Two-Way Datalink

● Multilink

For most operations, the EX500/EX600 weather data display is the same regardless of which Datalink system is in use.

10.1 Broadcast Datalink

The EX500/EX600 supports an optional Broadcast Datalink receiver, either:

● An MLB700 that supports WSI/Sirius

● An XM receiver that supports XM WX.

XMD076 for XM Broadcast Reception

Or

EX500 MFD

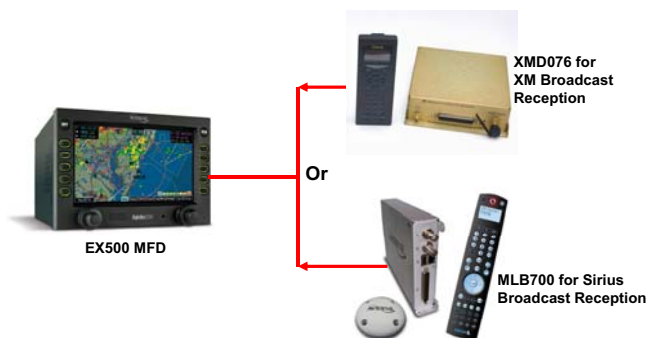**MLB700 for Sirius Broadcast Reception**

Figure 10.1 Broadcast Receiver Options

Both receivers receive a constant stream of weather data. Broadcast Datalink requires a fixed monthly subscription.

WSI provides US and Canadian Radar, METARS, TAFs, and Mexican and Caribbean METARS and TAFs.

XM provides US and Canadian Radar, METARS, and TAFs.

10.1.1   Using Broadcast Datalink in Flight

The Broadcast Datalink receiver receives weather data continuously. It is not necessary to enable or disable the receipt of individual types of data. You can select Datalink data products to display on the Map, Trip, or NRST pages.

Note: The boundary of the available datalink radar data is shown by an area with diagonal stripes. In normal operation, this boundary follows the outline of CONUS if US RDR is selected, or the extent of Canadian Radar if CAN RDR is selected. If, however, datalink radar is unavailable in a particular area for any reason, the hatched lines appear in

that area. In the mountains and off the coast, hatched lines may represent no coverage below 10,000 feet. If there are radar returns in that region above FL100, the returns will be displayed as "islands of precipitation" surrounded by the hatched lines.

10.2 Two-Way Datalink

The EX500/EX600 supports an optional 2-Way Datalink transceiver which may be:

● The MLX770 provides worldwide access via the Iridium satellite constellation.

● The Orbcomm receiver provides North American access (Release 4.0 and earlier). Due to variability in the Orbcomm satellite signal, weather update rates may be unpredictable with the ORBCOMM system.

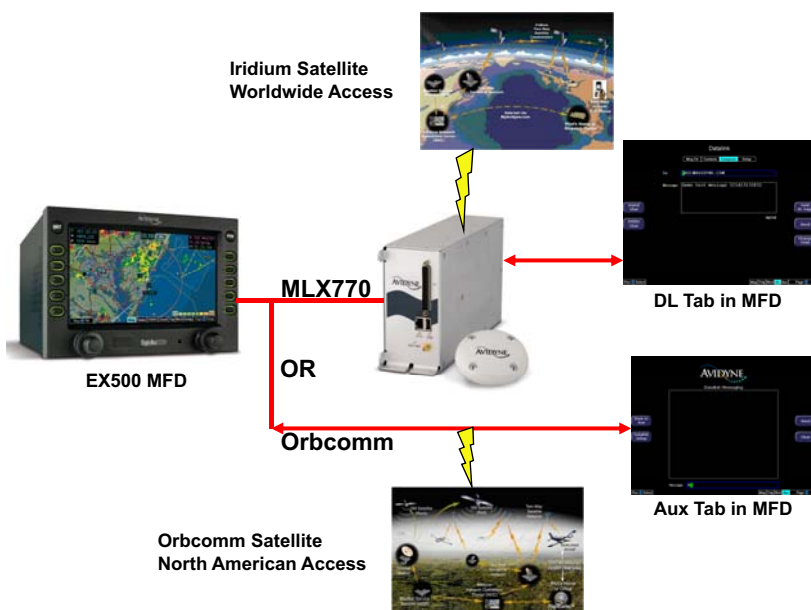**Figure 10.2 Two-Way Datalink**

The 2-Way Datalink transceiver sends your flight plan to the Avidyne Network Operations Center (NOC), which then sends you only the data pertinent to your flight. Two-Way Datalink can provide the lowest-cost datalink by charging only for the data used.

Note: If you have both 2-Way Datalink and Broadcast Datalink, you can use Avidyne's MultiLink feature.

10.2.1   Flight Tracking

Regular automatic aircraft position reporting is available with both
Iridium and ORBCOMM 2-way datalink systems. Your login page at
www.MyAvidyne.com provides a list of past flights from which you
can view a map showing departure and destination airports and
approximate route of flight. In addition, the website password you
create will allow others to view a similar map of a flight in progress.

Note: At the date of this publication, flight tracking is available in the
US only. Flight tracking will expand to include other regions of
the world.

Once Datalink is enabled and your account is set up, both Datalink
Messaging and Flight Tracking will be available. No weather data
types need be selected for these services to work.

10.2.2   Using 2-Way Datalink in Flight

When you turn on the EX500/EX600, it begins sending position data
to tell the satellite network where you are and that you are about to
begin a flight. Weather data is transmitted to your airplane based on
your user preferences - no action is required to begin receiving
weather data if 2-Way Datalink (narrowcast) and multicast are
enabled and user preferences are set to receive weather products.

Note: To function correctly, the satellite receiver must have a clear
view of the sky and, generally, will not work inside a hangar.

When you enter a flight plan or a direct-to waypoint, the EX500/
EX600 automatically downloads the weather for your route of flight.
Additional updates are provided in-flight, based on the settings that
you selected online or on the EX500/EX600's Datalink Setup page.

The boundary of available datalink radar data is shown by an area
with diagonal stripes (hatched). The hatched areas depict areas
without radar or Sat IR coverage, distinguishing them from areas that
have radar coverage but no radar returns.

Note: 2-Way Datalink satellites may occasionally be out of view,
which may delay Datalink transmissions.

Iridium Coverage Areas

If the aircraft is equipped with the MLX770 Iridium transceiver, METARs and TAFs are available worldwide. See http://www.avidyne.com/products/mlx/coverage/ for the latest coverage information for all other 2-Way Datalink products.

ORBCOMM Coverage Areas

If the aircraft is equipped with the Quake SC internal transceiver, two-Way Datalink provides datalink radar data within the contiguous United States (CONUS) as well as portions of Canada and Mexico. ORBCOMM coverage is bounded by the following limits:

● **North**: 52 degrees N

● **West**: 127 degrees W

● **South**: 22 degrees N

● **East**:   63 degrees W

Figure 10.3 Orbcomm Datalink Radar Coverage

METARs, however, are provided for CONUS, all of Canada, Mexico and the Caribbean.

10.2.3   Loss of Satellite Coverage

For normal atmospheric causes and for occasional satellite maintenance periods, the satellite and/or Network Operations Center might be inoperative for some period of time. If this occurs during your flight, revert to traditional methods of gathering weather data. The loss of satellite coverage for your Datalink function will not adversely affect the remaining navigation, map, radar, etc. functions of your EX500/EX600. If installation problems and/or satellite network problems do occur, you will be able to determine this by observing:

● That you are no longer receiving any weather or TFR data.

● Your Satellite in view data field on the **Trip** page indicates **"NONE"** (this is normal for brief periods during normal operations—usually no more than 5 minutes).

● All signal strength indicators are dashed ("- - -").

There is no action that you can take to re-acquire a satellite signal in the event of satellite and/or network problems. The EX500/EX600 will continue to try to acquire satellites as long as Datalink is enabled. Normal operation resumes automatically when a satellite is re-acquired.

10.3 MultiLink

MultiLink is a combination of 2-way datalink and broadcast datalink. If your aircraft has 2-Way Datalink and Broadcast Datalink systems installed and enabled, MultiLink provides expanded coverage areas. For example, if you have an Iridium subscription and a broadcast weather service such as WSI or XM, and you are flying a route that takes you out of North America, for example to South America, when you leave the North American broadcast reception area, Multilink will automatically engage 2-way datalink to receive weather services.

With Multilink, you can select either 2-Way or Broadcast Datalink radar data on the Map page using the **WX Ovly** key. See "Map Page Controls" on page 7.

Also, with two Datalink methods, you are more likely to have weather data available. If you lose broadcast datalink reception, 2-Way Datalink will provide the data.

Iridium Satellite

MLX770

2-Way Datalink

DL Tab in MFD

EX500 MFD

MLB700

**Sirius
(See Broadcast diagram)**

Figure 10.4 MultiLink

All weather data (Datalink Radar, Text and Graphical METARs, AIRMETs, SIGMETs and TFRs) are depicted as usual whether received from Broadcast or from 2-Way Datalink. No specific action is required to choose between Datalink systems for this data.

> ⚠️ Datalink does not qualify as (and is not intended to replace) an FAA-approved weather briefing. Do not rely on Datalink to replace pre-flight or in-flight briefings and other sources.

> ⚠️ Use Datalink weather only for strategic planning purposes. Do not use the EX500/EX600 to penetrate severe weather, thunderstorms, cells or lines of cells. Always refer to current aeronautical charts for appropriate terrain and obstacle information.

Note: In the MFD status message:
Narrowcast refers to the use of 2-way datalink to send weather data from the Avidyne NOC based on position and flight plan data.
Broadcast refers to the external Sirius or XM satellite weather receiver. *Datalink* refers to the 2-Way Datalink system.

10.4 Overview of Datalink Weather

For most operations, the EX500/EX600 displays weather the same way regardless of which Datalink system is used.

Two-Way Datalink and Broadcast systems can provide the following:

● **Datalink Radar** - A composite image depicting precipitation as seen by multiple ground-based weather radar sites. The image is color-coded to show both intensity levels and precipitation types. The WX OVLY key on the Map page cycles between on-board radar, 2-Way Datalink RADAR and Datalink RADAR, as available.
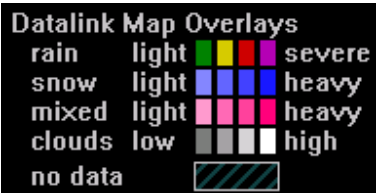

Figure 10.5 Datalink Radar Color Legend.

For Datalink RADAR, small areas of high-intensity Datalink Radar data might not be displayed on the EX500/EX600 at high range settings. Instead, larger areas of surrounding lower-intensity returns may obstruct indications of severe precipitation at Map ranges higher than 250 nm. Avoid using Map ranges greater than 250 nm when Datalink Radar echoes are shown in the vicinity of the aircraft.

Before conducting flight operations, be sure to verify that time and date settings on the System Time Setup page are correct and in GMT (UTC). It is critical that the time be set to GMT to provide accurate display of Datalink weather. See Chapter 9 "Aux Page" for more information.

● **Sat IR (Infrared Satellite)** - (Release 4.1 and later) A grayscale image representing the temperature of cloud tops or ground as observed from a series of satellites. Observed temperatures above approximately 0 deg C are not shown. Lighter shades of gray indicate colder, generally higher clouds, while darker shakes

of gray indicate warmer, generally lower clouds. Sat IR is only available through the Iridium 2-Way Datalink and not through Broadcast Datalink.

Note: Occasionally, warm clouds may not be visible on the Sat IR display. Additionally, very cold terrain may be displayed as clouds when no clouds actually exist.

● **Lightning -** Depending on your Broadcast Datalink subscription, Broadcast Datalink can provide lightning strike data, allowing the Map page to add "Datalink" as a source of strike data that is controlled by the *Lightning* key. Lightning data is also available through Iridium 2-Way Datalink (Release 4.1 and later). The actual weather products delivered depend on your satellite weather subscription plan and your region of the world

● **Winds/Temps Aloft -** Winds Aloft are available through Iridium Two-Way Datalink (Release 4.1 and later) and Broadcast Datalink systems. Temps Aloft are available through Iridium 2-Way Datalink (Release 4.1 and later) and MLB Broadcast Datalink. For XM Broadcast Datalink, only the freezing level is available. The Winds/Temps Aloft data appear on the Trip page.

● **Text METARs** - The full text of recent surface weather observations. Text METARs appear on the Trip page, and with Broadcast Datalink, they also appear on the following Nearest Airport pages: Nearest to Position and Nearest to Destination.

● **Graphical METARs** - Color-coded flag symbols that summarize

Figure 10.6 Graphical METAR Symbols

a recent surface weather observation. Graphical METARs appear on the Map page, Trip page, and on both types of Nearest Airport pages. They allow a "big-picture" view of general weather conditions in an area. The presence of a graphical METAR does not necessarily mean that the corresponding Text METAR is viewable.

● **AIRMETs and SIGMETs** (US Only) - Areas for which the National Weather Service has issued advisories for various types of hazardous weather. These areas are depicted on the Map page along with an abbreviated description of the hazard, such as "ICE" (icing), "MTN" (mountain obscuration), or "IFR" (instrument flight conditions).

● **TFRs** (US Only) - Temporary Flight Restrictions are areas depicted on the Map page for which the FAA has issued some type of flight restriction. Contact a local Flight Service Station (FSS) for information. The EX500/EX600 does not display any details of the flight restriction.

> ⚠️ Do not rely on the EX500/EX600 as your sole source for TFRs. Before conducting a flight, always confirm the state of TFRs with Flight Service.

10.5 Setting Up Datalink for Iridium

The Datalink **Setup** page enables you to change datalink settings, including enabling Iridium 2-Way Datalink.

To access the Datalink Setup page, Rotate the left knob to select the **DL** tab. On the DL tab, press **Next DL Page** until the *Datalink Setup* page opens.

Figure 10.7 Datalink Setup Page

Use the **Select** key (2-knob EX500) or **Select** knob (4-knob EX500/EX600) to move from field to field and rotate the **Change** knob to select choices for an option. Press **Save** to save changes.

The Datalink Setup page contains the following keys:

● **Datalink Defaults** - Changes all fields to their default value. To undo, press **Cancel**. The default values are:

   ■ **Coverage Area** - Flight Plan

   ■ **Coverage Radius** - 400 NM

- ■ **Datalink Radar Resolution** - High

- ■ **DL RDR Resolution** - High

- ■ **Request Interval** - High Rate

- ■ **Text METARS** - ON

- ■ **METAR Symbols** - ON

- ■ **TAFs** - ON

- ■ **Lightning** - ON (Release 4.1 and later)

- ■ **AIR/SIGMETS (USA Only)** - OFF

- ■ **TFRs (USA Only)** - OFF

- ■ **Winds & Temps** - ON (Release 4.1 and later)

- ■ **Sat IR** - ON (Release 4.1 and later)

- ● **Next DL Page** - Opens the Message Center page.

- ● **Select** - Scrolls through fields and selects a field to edit. Rotate the Change knob to change the setting in the selected field.

- ● **Save** - Saves the current settings. The new saved settings are sent to the NOC and the stream of data being sent to the aircraft will be affected from that point forward.

- ● **Cancel** - Cancels changes made to this page and returns the settings to the previous settings. Pressing Cancel cannot undo Saved changes.

The Datalink Setup page contains the following fields:

- ● **Narrowcast Enabled** or **Multilink Enabled** - Enables Iridium 2-Way Datalink. Check this box if an MLX770 Iridium Transceiver is installed in the aircraft. If Broadcast is enabled, Multilink Enabled is shown, otherwise Narrowcast Enabled will be shown.

- ● **Coverage Area** - Specifies the type of coverage being requested: (Also see *Optimizing MultiLink for ORBCOMM (Release 4.0 and earlier)* on page 116)

  - ■ **Flight Plan** - Requests weather information for a corridor along the entire current flight plan, with the specified Coverage Radius to either side of the flight plan route. The boundary of the datalink radar coverage area is shown by an outline with diagonal stripes.

- ■ **Current Position** - Requests weather information within the specified Coverage Radius of the aircraft position, regardless of flight plan.

- ● **Coverage Radius (NM)** - Select 50, 100, 200, 300 or 400 nautical mile radius around the aircraft or flight plan as the display area for depicting weather.

- ● **Datalink Radar Resolution** - Select High, Medium, or Low Datalink Radar resolution. The "Low" setting uses the least message units and most likely will provide the fastest updates. Increasing this setting provides improved Datalink Radar details, but, in turn, increasing the message units can decrease the actual update rate.

- ● **Request Interval** - Select the frequency of weather updates. The update frequency varies per region depending on how often weather data is updated. Also, changing satellite and network conditions can affect the update rate. The intervals are:

  - ■ **Maximum Rate** - Weather data is updated as soon as updated weather is available.

  - ■ **High Rate** - Data is updated typically every 10 minutes (up to 6 updates per hour).

  - ■ **Medium Rate** - Data is updated typically every 20 minutes (up to 3 updates per hour).

  - ■ **Low Rate** - Data is updated typically once per hour.

Note: Satellite visibility and network traffic may cause an additional missed update.

Note: Faster rates for request intervals consume significantly more message units.

Weather Types - The Weather Type fields enable you to select the type of weather data to receive. To enable a weather type, check the checkbox for that weather. The following weather data subscriptions can be enabled or disabled:

- ● **Text METARs** - Text METARs
- ● **METAR Symbols** - Graphical METAR flag symbols

- **AIRMETs / SIGMETs (USA Only)** - AIRMET/SIGMET

- **TAFs** - Terminal Area Forecasts

- **Lightning** - Lighting data from a series of ground-based lightning detectors (Release 4.1 and later)

- **Winds/Temps** - Winds and Temperature aloft data (Release 4.1 and later)

- **Sat IR** - Infrared Satellite cloud information (Release 4.1 and later)

- **TFRs (USA Only)** - Temporary Flight Restrictions (TFRs). TFRs are not contained in the Nav database and are depicted only when received via Datalink.

> ⚠️ Do not rely on the EX500/EX600 as your sole source for TFRs. The status of TFRs may change or may be unavailable. Before conducting a flight, always confirm the state of TFRs with FAA Flight Service.

10.6 Iridium Text Messaging

With an MLX770 transceiver installed in the aircraft, Iridium provides a text messaging interface that enables you to conduct two way text messaging. A **DL** (Datalink) tab appears between the Nrst and AUX tabs. The DL tab controls all of the text messaging functions.

Map | Trip | Nrst | DL | Aux | Page

Figure 10.8 Two-Way Datalink DL tab

Datalink

Msg Ctr | Contacts | Compose | Setup

Figure 10.9 Two-Way Datalink Option menu

The DL tab has four options as shown in Figure 10.9.

⚠️ Due to the unpredictable nature of the speed of delivery, do not rely on Datalink Messaging for delivering critical messages.

Only use Datalink Messaging during low workload situations. Do not use Datalink Messaging in terminal or high traffic areas.

You can address messages to either a phone number that supports text messaging or to an e-mail address.

Note: Avidyne strongly recommends using e-mail addresses since text messages over Iridium are much more reliable when sent to e-mail addresses as opposed to phone numbers.

You can also receive messages. In order for a ground based device to contact the aircraft, only the MLX770 device identification number needs to be known and then the text message is routed by Iridium to the aircraft.

10.6.1   Managing Messages

The Message Center provides a central location for incoming and outgoing message headers to be stored. The arrow on the left side indicates whether the message was incoming or outgoing and whether it was accepted by Iridium (Table 10.1). The message center is also where you select and read new messages. Message headers in this page will be lost when the avionics is powered down.
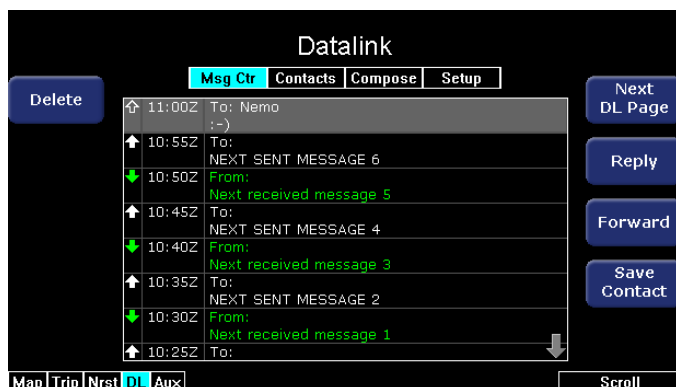

Figure 10.10 Message Center Page

The Message Center page contains the following keys:

● **Delete** - Deletes the currently-selected message. You will not be prompted to confirm the deletion. You cannot undo a delete; deleted messages cannot be retrieved.

● **Next DL Page** - Opens the Contacts page.

● **Reply** - Goes to the Compose page with the sender address of the currently-selected message in the message center to be copied to the To header in the new message. The message body is not copied. You can then key in the new message using the rotary knobs.

● **Forward** - Goes to the Contacts page where you can select a contact to forward the message to.

● **Save Contact** - Saves the address in the header in the Contacts list. Goes to the Contacts page and allows you to enter the contact information (name, e-mail address, or phone number).

Table 10.1   Message Status

Indicator	Meaning	Description
⬆	Successfully sent	A solid white arrow indicates a message that was successfully sent from the EX500/EX600
⇧	Pending transmission	A hollow white arrow indicates a message entered on the EX500/EX600 but still pending transmission
⬇	Message received from Flight Center	A solid green arrow indicates a message received from your Flight Center via MyAvidyne.com
⬇	Message received from Avidyne NOC	A solid blue arrow indicates a message received from the Avidyne Network Operations Center (NOC)

10.6.2   Managing Contacts

This page enables you to create, edit, and delete contacts. Valid contact info is retained even after turning the power off.

Figure 10.11 Contacts Page

The Contacts page contains the following keys:

- **New Contact** - Adds a new contact to the Contacts list. You can add an unlimited number of contacts as memory permits.

- **Delete Contact** - Deletes the currently-selected contact. You will not be prompted to confirm the deletion; once deleted, this action cannot be undone.

- **Next DL Page** - Opens the Compose page.

- **Compose** - Goes to the Compose page with the contact's address inserted in the To: field, and the message body ready to enter a message.

- **Edit** - Opens a selected contact so that you can make changes to the contact information.

10.6.3   Composing an Iridium Text Message

The Compose page enables you to create a new message. There are
a total of 130 characters available for the message including the
messaging header containing the address e-mail or SMS phone
number. A counter is provided to help you know when you are
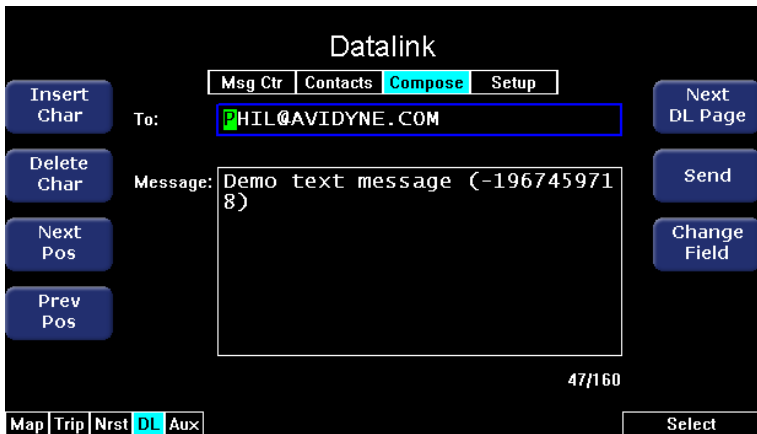reaching the 130 character limit.

Figure 10.12 Compose Page

This Compose page contains the following keys:

● **Insert Character** - This allows you to insert blank characters
after the current cursor position and edit either the address in the
To: field or the message. The message size limit is 130
characters. Blank characters are counted like other characters.

● **Delete Character** - Deletes currently-selected character. Once a
character is deleted, it cannot be recovered.

● **Next Position** - Moves the cursor to the right.

● **Previous Position** - Moves the cursor to the left.

● **Next DL Page** - Opens the Setup page.

● **Send** - Sends the message.

● **Change Field** - Moves the cursor back and forth between the To:
field and the Message: field.

● **Select knob** - Depending on the type of MFD you have, enter the message text on the Compose page as follows:

- **2-Knob**:

  ◆ **Select Character** - Use the **Select** knob to select letters from an alphanumeric set (A-Z, 0-9, and punctuation).

  ◆ **Position Cursor** - Use the **Next Pos** and **Prev Pos** keys to change position.

- **4-Knob**:

  ◆ **Select Character** - Turn the inner **Select** knob to select letters from an alphanumeric set (A-Z, punctuation, 0-9, and space).

  ◆ **Position Cursor** - Turn the outer ring of the **Pos** knob to move the cursor position within the Compose text box.

10.7 Setting Up Datalink for ORBCOMM (Release 4.0 and earlier)

The Datalink Configuration page enables you to set Datalink options, including enabling MultiLink. MultiLink services are available when both 2-Way Datalink and Broadcast Datalink are installed and active, as described in *Activating a 2-Way Datalink Account* on page 130. To access the Datalink Configuration page, on the Aux Main page, press *Datalink*.

- If Broadcast Datalink is installed, the Datalink Messaging page is displayed. From the Datalink Messaging page, press *Datalink Setup* to configure MultiLink.

- If Broadcast Datalink is not installed, the Datalink Configuration page is displayed directly.

Figure 10.13 Datalink Configuration Page

1) Datalink Defaults - Press *Datalink Defaults* to reset the Datalink Setup options to the following default values:

- **Coverage area**—Flight Plan

- **Coverage Area**—200 NM

- **NEXRAD Resolution**—Medium

- **Request Interval**—Normal Mode

- **METARS and AIRMETS/SIGMETS** —ON

- ■ **SUA Status/TFRs**—ON

2) **MultiLink Enabled** - If both Broadcast Datalink and 2-Way Datalink are installed, check this box to enable the MultiLink system.

   If Broadcast Datalink is not installed, this setting is labeled *Narrowcast Enabled*. Check this box to enable 2-Way Datalink.

   If this box is not checked, subsequent flights will *not* be shown on your account page at www.MyAvidyne.com.

   > Note: If the Broadcast Datalink is unavailable, weather data is received by 2-Way Datalink. For Broadcast Datalink, the Trip page indicates the time since the last data was received ("time since reception"). There is a time delay between the creation and reception of weather data.

3) **Coverage Area** - Specifies the type of coverage being requested: (Also see *Optimizing MultiLink for ORBCOMM (Release 4.0 and earlier)* on page 116)

   - ■ **Current Position** - Requests weather information within the specified Coverage Radius of the aircraft position, regardless of flight plan.

   - ■ **Flight Plan** - Requests weather information for a corridor along the entire current flight plan, with the specified Coverage Radius to either side of the flight plan route. The boundary of the datalink radar coverage area is shown by an outline with diagonal stripes.

4) **Coverage Radius (NM)** - Select 50, 100, 200, 300 or 400 nautical mile radius around the aircraft or flightplan as the display area for depicting weather. Also see *Optimizing MultiLink for ORBCOMM (Release 4.0 and earlier)* on page 116.

5) **Datalink Radar Resolution** - Select High, Medium, or Low Datalink Radar resolution. The "Low" setting uses the least message units and most likely will provide the fastest updates. Increasing this setting provides improved Datalink Radar details, but, in turn, increasing the message units can decrease the actual update rate.

6) Request Interval - Select the requested time between weather updates. Due to changing satellite and network conditions, the actual update rate can vary considerably:

- **Maximum Rate** - Receives data as soon as new updates arrive at the NOC, Normally 4 – 12 updates per hour.

- **High Rate** - data is queued for delivery at a high rate, up to 6 updates per hour (normally 2 – 6 updates an hour).

- **Normal Rate** - data is queued for delivery at a rate of up to 3 updates per hour (normally 1 – 3 updates an hour).

- **Hourly Rate** - data is queued for delivery approximately once per hour.

Note: Faster rates for request intervals consume significantly more message units.

7) Weather Types - Allows you to enable/disable the type of weather information you want to receive. When each box is enabled, the following data is requested:

- **Text METARs** - Text METARs

- **METAR Symbols** - Graphical METAR flag symbols

- **AIRMETs / SIGMETs** - AIRMET/SIGMET

- **SUA Status** - Special Use Airspace (SUA) status.

Note: The Avidyne NOC does not support SUA Status.

Note: Some data types do not change often during the day and will therefore be updated only when they change.

- **TFR Status** - Temporary Flight Restrictions (TFRs). TFRs are not contained in the Nav database and are depicted only when received via Datalink.

8) Save - Saves any changes made and return to the Aux page.

9) Cancel - Returns to the Main page *without* accepting changes.

10.8 Optimizing MultiLink for ORBCOMM (Release 4.0 and earlier)

Your MultiLink setup can be fine-tuned to provide the MultiLink features you desire. In general, 2-Way Datalink provides the best performance when you request the smallest necessary amount of data. Also, remember that your 2-Way Datalink account is charged for all weather data sent, even if it is redundant data that has already been received via the Broadcast system.

Note: Be sure to select the appropriate Coverage Area.
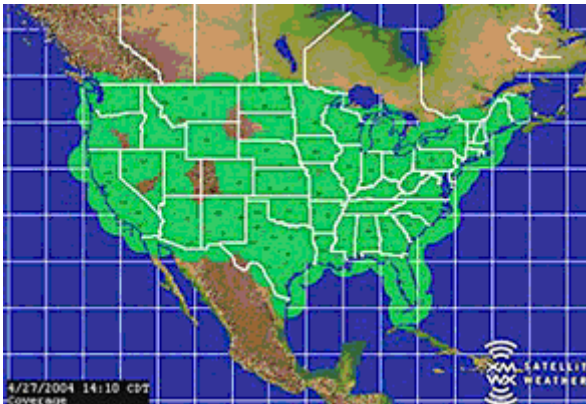
Figure 10.14 Coverage area for Broadcast weather

Canadian radar stations can include parts of CONUS. If you are in flight, and the coverage area you have selected intersects with a Canadian station, you will be charged for this data. For example, consider a flight from Norfolk, VA to Frederick, MD. If the Coverage Area settings are "Flight Plan" and "400 nm" with all weather types

selected, the MultiLink system will attempt to send complete 2-Way Datalink weather coverage for the route.

The reason is that Frederick is only 396 NM from Montreal! In this case, the "400 NM" setting causes the NOC to determine that the flight extends outside of CONUS, and it initiates full weather service via 2-Way Datalink. For this flight, it would be better to set the Coverage Area to "Current Position" and "200 nm". With these values, the NOC will not send 2-Way Datalink weather data for this flight unless the Broadcast system fails.

Use the following guidelines as a starting point, and as you gain familiarity with the system, you can strike your own balance between 2-Way Datalink usage and data availability:

● **Expanded Coverage** - If you regularly fly outside of CONUS and plan to use MultiLink for expanded data coverage, consider setting the coverage area to "Flight Plan" and "200 NM."

● **Backup** - If you plan to use MultiLink mainly as an active backup for Broadcast, consider setting the coverage area to "Current Position" and "200 NM" or even "100 NM" if you regularly fly in the northeastern United States. Remember that in the Boston area, for example, a setting of "200 NM" puts the Coverage Area outside of CONUS and will cause the NOC to send 2-Way Datalink data for every flight.

● **Datalink Messaging & Flight Tracking Only** - If you plan to enable MultiLink weather only when specifically needed and want to have Datalink Messaging and Flight Tracking available on all flights, you can de-select all weather types but leave MultiLink enabled. This will cause the system to use a minimum of 2-Way Datalink data on each flight for session management and position reporting.

10.9 Orbcomm Text Messaging (Release 4.0 and earlier)

The MultiLink system provides the ability to send and receive simple text messages between the aircraft and the ground. Messages sent from the cockpit can be up to 30 characters in length, while messages sent from the ground can be approximately 200 characters in length. Transmission times will vary and might be as short as a minute or two, but in general, messages will be delivered within 20 minutes, approximately, if there is a satellite in view and message quality and strength are good.

On the ground side, messages are sent and viewed via a password-protected web page. By logging in to a Flight Center account on www.MyAvidyne.com, a user on the ground can exchange messages with your aircraft and track your flight progress. Any number of people may log on simultaneously. See www.MyAvidyne.com for complete details.

> ⚠️ Due to the unpredictable nature of the speed of delivery, do not rely on Datalink Messaging for delivering critical messages.
>
> Only use Datalink Messaging during low workload situations. Do not use Datalink Messaging in terminal or high traffic areas.

To access the Datalink Messaging page, press the **Datalink Setup** key on the Aux page.

Note: Avidyne cannot guarantee the privacy of your Datalink Messaging communications. For more information, see the Avidyne Privacy Policy on www.MyAvidyne.com.

The Datalink Messaging page consists of a message display area, a text entry box and several keys. For information about composing a message, see *Composing and Sending a Message* on page 121.
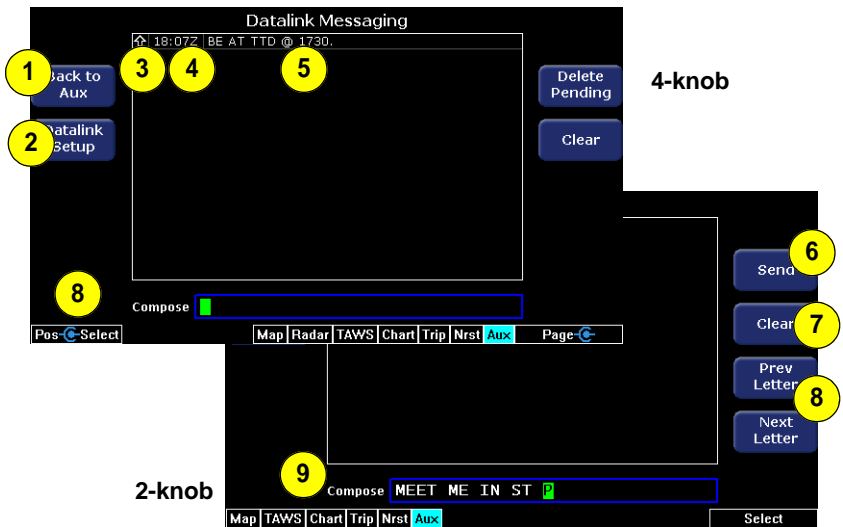
Figure 10.15 Datalink Messaging Page

1) **Back to Aux** - Returns to the previous Aux page.

2) **Datalink Setup** - Displays the Datalink Configuration page, which provides MultiLink options.

3) **Message Status Indicator** - Indicates the status of the message. These are the following possible states and arrows. See Table 10.1 Message Status on page 109.

4) **Message Timestamp** - The time stamp (Zulu) shows the *time of reception* for received messages, and the *time of entry* (queuing for transmission) for transmitted messages.

5) **Message Text** - The text of the message. Text color indicates the source of the message as follows:

Color	Heading
Green	Messages received from the ground.
White	Messages entered into the EX500/EX600 for transmission.
Blue	Messages received from the Avidyne NOC.

6) **Send (or Delete Pending) key**:

- ■ **Send** becomes available when you begin typing in the Compose box. Press *Send* to move the text in the Compose box to the message display area and queue it for transmission. Note that only one message at a time can be in the queue.

- ■ **Delete Pending** becomes available when there is a message queued for transmission. Press *Delete Pending* to remove the waiting message from the transmission queue and from the display.

7) **Clear key** - Clears the text in the Compose box. The cursor moves to the first position in the box. To delete just the last character in the message, use the *Prev Letter* key or *Pos* knob.

8) **Cursor Position** - Depending on the type of MFD you have, enter text in the Compose box as follows:

- ■ **2-Knob**:
  - ◆ **Select Character** - Use the *Select* knob to select letters from an alphanumeric set (A-Z, 0-9, and punctuation).
  - ◆ **Position Cursor** - Use the Prev Letter/Next Letter keys to change position.

- ■ **4-Knob**:
  - ◆ **Select Character** - Turn the inner *Select* knob to select letters from an alphanumeric set (A-Z, 0-9, and punctuation).
  - ◆ **Position Cursor** - Turn the outer ring of the *Pos* knob to move the cursor position within the Compose text box.

9) **Compose Box** - Displays the text of an outgoing message as it is being composed.

10) **Scroll Up / Scroll Down (Not shown)** - These keys appear if the message display area is full and new messages are sent or received. Press either key to scroll the message display area up or down by one full message.

10.9.1   Composing and Sending a Message

To compose and send a message:

1)   Use the knobs and keys to enter the message, as follows

- ■ **2-knob** - Use the Select knob to scroll through the alphabet, numbers, and symbols. Then use the *Next Letter* and *Prev Letter* keys to move the cursor to the next (or previous) letter).

- ■ **4-knob** - Use the dual concentric *Pos* and *Select* knobs (left-hand knob) to position the cursor in the Compose box and to select letters and punctuation.

- ■ Press **Clear** to clear the text entry box and start over, if desired.

2)   Press **Send** when you are ready to transmit your message. The Send key displays as soon as you enter text in the Compose box.

When sent, the text appears in the message display area, with a white arrow indicating that the transmission is pending. The Send key changes to **Delete Pending**.

You can delete a pending message by pressing **Delete Pending**. This deletes the pending message completely from both the transmission queue and the message display area.

Only one Datalink message may be pending for transmission at any time. If an outgoing message is pending, you can enter text for the next message, but the key will continue to display *Delete Pending* until the pending message is delivered or deleted.

Note: Messages sent from the ground to the airplane will be re-attempted for 24 hours. It is possible to miss a message that was sent after landing, and receive it the next day.

10.9.2   Receiving a Message

An "Incoming Mail" message pops up at the lower right corner of the screen when an incoming Datalink Message has been received. The message includes the first few words of the new message.

1) Press the bottom right bezel key to acknowledge this message. The current page selection does not change.

Figure 10.16 Incoming Message Alert

2) To view the new message, turn to the *Aux page* and select *Datalink*. The full text of the new message is displayed in the message display area.

11   Reference

This section contains the following information:

11.1 Activating Broadcast Datalink Accounts

If you have a Broadcast Datalink receiver installed, you must log in to MyAvidyne.com or contact XM to activate service from either:

● Avidyne for WSI weather

● XM Radio for XM WX Satellite Weather. To activate your XM subscription, contact XM Satellite Radio's Listener Care Center at 1-800-985-9200 and speak with an XM Satellite Radio representative.

For Sirius audio, contact Sirius.

Have the following information available when you contact Avidyne or XM Radio:

● Your name

● The weather service package. See the appropriate website to select the subscription service:

   For the WSI weather or Sirius audio, go to,

   www.avidyne.com/products/mlb700/subscriptions.asp.

   For XM weather, go to,

   www.xmwxweather.com.

● Broadcast Radio Serial Number (ID Number)

   To obtain the ID of the Broadcast receiver installed in your aircraft, open the EX500/EX600 Trip page. Press the *Display* key until "↓ **Status**" (Broadcast Datalink status) is shown, and carefully enter your Radio Serial Number.

Note: XM Radio does not use the characters: I (India), O (Oscar), S or F.

● Credit Card Information

For Avidyne (WSI weather or Sirius audio), you also need:

● EX500/EX600 serial number
● Aircraft make/model
● Aircraft tail number

What is Next?

For WSI Broadcast Weather, go to *Completing the WSI Weather Activation* on page 125.

For XM Broadcast Weather, go to *Activating XM WX Satellite Weather* on page 128.

For Sirius audio, go to *Activating Sirius Audio* on page 126.

11.1.1   Completing the WSI Weather Activation

To complete the activation:

1) Move your aircraft outside to an area with a clear view of the sky.

2) Power up both the EX500/EX600 and the Broadcast receiver and wait at least 30 minutes to allow the MLB700 to receive the activation signal.

3) When the activation code from Sirius is received, the EX500/EX600 will display information on the following EX500/EX600 pages:

- ■ **Trip** page - displays textual METARS and TAFS, Winds Aloft, Temperatures Aloft, and time elapsed since the last weather data was received.

- ■ **Map** page - displays datalink radar data, AIRMETs/SIGMETs, TFRs, graphical METARs, and storm cells.

- ■ **Nearest** page - displays METARS.

Note: Weather products displayed depend on subscription level.

Note: If you are planning to enable MultiLink, leave the EX500/EX600 and Broadcast receiver powered on for at least an hour. This ensures that the Broadcast activation is recorded by the Avidyne Network Operations Center (NOC). If 24 hours pass before you can get to your aircraft, contact Avidyne to have another test signal sent to your aircraft.

Note: The EX500/EX600's Service Level indication might take several flights to synchronize to the correct level, but you will still receive and see the weather products you have purchased.

11.1.2   Activating Sirius Audio

Setting up a Sirius Audio Account

If you have an MLB700 Broadcast Datalink receiver with audio capability installed, and you have registered the product on www.myavidyne.com, you will need to contact Sirius at 1-888-539-7474 to activate the audio subscription.

Note: You must provide the audio ESN when you activate the audio. Providing a data ESN for audio activation can disable your data activation.

You will be required to provide the following:

● Your name

● The Audio Package you want (details available at www.sirius.com). Choose the Audio service you want based on the channels that you would like to receive.

● Audio s/n - Power up your Avidyne Remote Control. The s/n is located on the first screen.

● Credit Card Information

Verifying Sirius Activation

To verify that your receiver is activated, do the following:

1)   Move your aircraft outside to an area with a clear view of the sky.

2)   Power up both the EX500/EX600 and the Broadcast receiver.

3)   Wait 20 minutes. After waiting 20 minutes, turn MLB700 power off for 3 seconds and back on. This is most easily done with the MLB or WX circuit breaker.

4) Wait 3 minutes for the MLB to fully power up. Then recycle power one more time to the MLB700.

5) After the second power cycle, when your receiver receives the activation code, music can be heard through the pilot's audio panel.

Note: There is no interface between EX500/EX600 and the Sirius Audio receiver.

11.1.3 Activating XM WX Satellite Weather

To activate your XM subscription, contact XM Satellite Radio's Listener Care Center at 1-800-985-9200 and speak with an XM Satellite Radio representative.

XM WX Satellite Weather will activate your receiver by sending a unique activation code to your receiver. This code is valid for 24 hours after your call.

To verify that your receiver is activated:

1) Move your aircraft outside to an area with a clear view of the sky.

2) Power up both the EX500/EX600 and the Broadcast receiver and wait at least an hour to allow the receiver to receive the activation signal.

3) When your receiver receives the activation code from XM, the EX500/EX600 will display information on the following EX500/EX600 pages:

- ■ **Trip** page - will display METARS, TAFS, Winds Aloft, freezing level forecast, and time since reception for all weather products.

- ■ **Map** page - will display weather, including datalink radar data, satellite-provided lightning, storm cells, and METARs through the use of the METAR symbology

- ■ **Nearest** page - will display METARS through the use of the METAR symbology

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Note: If you are planning to enable MultiLink, leave the EX500/EX600 and Broadcast receiver powered on for at least an hour. This   ensures that the Broadcast activation is recorded by the Avidyne Network Operations Center (NOC).

Note: If 24 hours pass before you can get to your aircraft, contact XM Satellite Radio's Listener Care Center again or visit www.xmradio.com/activation to enter your receiver ID number to enable the activation code for your receiver for an additional 24 hours.

Note: The EX500/EX600's Service Level indication may take several flights to synchronize to the correct level but you will still receive and see the weather products you have purchased.

Note: Contact Heads Up Technologies for problems relating to your receiver or assistance with service.
e-mail: service@heads-up.com
Phone: (972) 980-4890 Ext. 142

11.2 Activating a 2-Way Datalink Account

If your MFD is equipped with an internal Quake Satellite Communicator (Quake SC) transceiver and antenna or the external MLX770 transceiver and its antenna, then you can use 2-Way Datalink as described in this section.

To activate and use 2-Way Datalink, visit www.MyAvidyne.com and follow the account setup instructions to activate your system. Several different price plans are available, including a no-minimum, pay-as-you-go, and a flat-rate unlimited usage plan. You will need to provide the appropriate serial number (Write down the number for future reference):

● MLX770 serial number, displayed as *MLX s/n* on the Datalink Setup page (Figure 10.5 on page 103).

● Datalink subscriber communicator (SC) serial number, displayed as *SC s/n* on the EX500/EX600 Datalink Configuration page (Figure 10.7 on page 113).

Your account on www.MyAvidyne.com provides access to your billing and usage statements. You can set your 2-Way Datalink user preferences online prior to your flight. The preferences will be downloaded to your EX500/EX600 via satellite the next time you fly.

11.3 Setting Up MultiLink

For the most part, you will have already performed the steps required to set up MultiLink when you set up datalink as follows:

● Broadcast datalink as described in *This section contains the following information:* on page 123.

● Iridium 2-way datalink as described in *Setting Up Datalink for Iridium* on page 103.

● ORBCOMM 2-way datalink as described in *Setting Up Datalink for ORBCOMM (Release 4.0 and earlier)* on page 113.

After you have activated the Broadcast receiver, log in to your account on www.MyAvidyne.com and click on *Flight Center* to set up your MultiLink account.

Note: After enabling Multilink and the desired weather services, you might be charged for the 2-Way Datalink services.
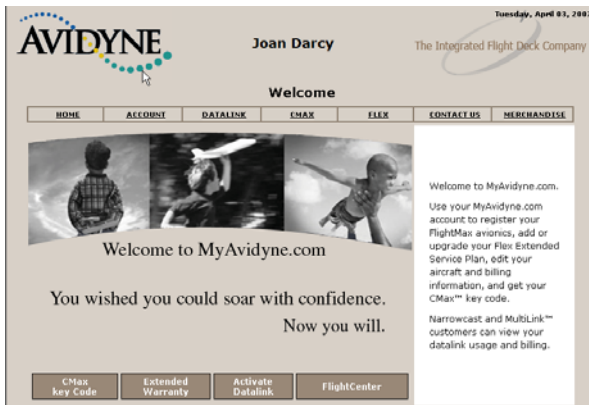
Figure 11.1 MyAvidyne Page

Note: If the **Flight Center** key is not displayed on your MyAvidyne page, the NOC has not yet detected the Broadcast receiver. Try activating the Broadcast receiver again as described in *What is Next?* on page 125.

11.4 Cleaning the EX500/EX600 Screen

If your EX500/EX600 screen becomes dirty due to fingerprints or dust, clean the screen using the following materials and methods:

● A clean, soft lint free cloth such as 3M Ultra-Brite Cloth # 2011 or similar.

● A cleaning solution composed of de-ionized water or isopropyl alcohol (IPA).

The EX500/EX600 screen is made of a plastic film that is vulnerable to scratches, damage by a sharp articles or improper cleaners. Use care when cleaning. Always apply the cleaning solution directly onto the cloth. Never spray a cleaner directly onto the screen.

.

	Use caution when using IPA as it is flammable. Use of any other chemicals or materials voids the warranty.

11.5 Updating Your Databases

11.5.1　Types of Databases

The EX500/EX600 can contain up to four separate databases. They are:

- CMax™ Chart Data is an optional Avidyne feature that allows you to view JeppView Charts on your EX500/EX600.
- NavData is used for the Map page. Avidyne uses NavData from Jeppesen Sanderson, Inc. which includes airports, navaids, airways, navigational fixes, special-use airspace and obstacles. It is your duty as pilot in command to ensure that the data you fly with remains up to date.

> ⚠️ It is critical that you update the Jeppesen database regularly and prior to conducting flight operations to insure accurate data. **Use of an outdated database is entirely at your own risk.**

- NOAA Obstacle data is provided by Avidyne but distributed by Jeppesen as part of their NavData update service for the EX500/EX600. The Obstacle database is automatically updated when a NavData update is performed and is not available separately.
- Terrain is pre-loaded at the factory for Region I or Region II. To change the terrain data region, contact an Avidyne Authorized Flightmax Service Center.

NavData updates are available directly from Jeppesen. Avidyne strongly recommends that you keep your NavData database updated. To order Jeppesen NavData database updates or to enroll in a subscription service, please contact Jeppesen Sanderson directly at 1-800-621-5377 or 303-799-9090 or go to the website at www.jeppesen.com.

> ⚠ Do not rely on any one database as your sole source of navigation and terrain awareness data. As pilot in command, it is your duty to have multiple sources of information available.

11.5.2   About Portable USB Devices

You can use a portable USB device (either a Zip Drive or a USB Flash Memory Drive) to move data between your PC and the EX500/EX600. For more information about the databases and about loading data from your PC to a portable USB device, see the *Avidyne Data Update Guide (*P/N 600-00148-000).

USB Flash Memory Drives come in many sizes and configurations. A sample USB Flash Memory Drive is shown below.

Note: Many USB Flash Memory Drives are now delivered with U3 Launchpad installed. This application, from U3, prevents any Jeppesen data (NavData or CMax Charts) from loading.

If your USB Flash Memory Drive has US Launchpad, you must uninstall it. For information about uninstalling U3 Launchpad, see www.u3.com/support/.

Note: The USB Flash Memory Drive MUST be formatted "FAT" and 2 GB or less in size. See the *Avidyne Data Update Guide* for more information.

This section describes how to move data from a portable USB device (a 250MB Zip Drive or USB Flash Memory Drive) to the EX500/EX600.

> **If using a Zip Drive Dataloader**:
>
> • Do not let the portable Zip Drive dangle by the cable. It can result in damage to your MFD or the Drive, as well as a dataload failure.
>
> • Do not insert the Zip disk into the Zip Drive until the FlightMax logo screen is displayed on the MFD. The disk may be damaged if it is already in the Zip Drive when power is applied.
>
> • After loading the CMax data into your MFD, wait until the disk is ejected from the drive before unplugging the Drive, or powering off the MFD. Unplugging the Zip Drive with the disk still engaged may cause damage to the disk.

> **If using USB Flash Memory**:
>
> • Avidyne strongly suggests that, to avoid confusion, you reserve a USB Flash Memory Drive solely for EX500 database transfers. If you use both NavData and CMax, keep two USB Flash Memory Drives, one for each update.
>
> • After uploading data, do not remove the USB Flash Memory Drive until you see and acknowledge the regular EX500 Startup screen. A system reboot may occur if you remove the USB flash drive before the startup screen is displayed.

Note: When removing the cap from the data port, pull the cap gently **from the right** until it pops out. Make sure the cap is all the way out before plugging anything into the USB port.

Do not pull too hard on the tab that attaches the plug to the EX500/EX600, as this could separate the plug from the EX500/EX600 bezel.

11.5.3   Loading NavData (the Navigation Database)

Your new EX500/EX600 will be loaded with an up-to-date navigation database. Updates to the EX500/EX600 NavData database are available from Jeppesen Sanderson, Inc. every 28 days.

Once you have downloaded the Nav from your PC to either a Zip Disk Dataloader or USB Flash Memory Drive, as described in the *Avidyne Data Update Guide*, you will need to upload the data to your EX500/EX600.

To load NavData to your EX500/EX600, do the following:

1)   Bring your portable USB device to the EX500/EX600 at the aircraft.

2)   Ensure that the EX500/EX600 power is OFF.

3)   Connect the device to the EX500/EX600:

- ■   If you are using a USB Flash Memory Drive, plug it into the data port on the front of the EX500/EX600.

- ■   If you are using a Zip Drive Dataloader, connect one end of the cable to the Zip Drive and the other end to the EX500/EX600 data port. Do not insert the Zip disk into the Zip Drive until you have turned ON the MFD (in step 4).

   Ensure that the Zip Drive is supported and not dangling by the cable. Letting the Zip Drive dangle can cause permanent damage to the data port. It can also cause an intermittent connection, which will result in an unsuccessful data update.

4)   Turn on the EX500/EX600. If you are using a Zip Drive, insert the Zip disk into the Zip Drive when the initial FlightMax logo screen is displayed.

Note: If the message, "Press any Bezel Key" is displayed, the EX500/EX600 did not detect the portable USB device. This can be caused by:

   1. The connections were not detected by the EX500/EX600. Check all the connections and try again.

> 2. For a Zip Drive, there is no disk or the disk was not found.
>
> 3. The Zip Disk is incorrectly formatted.

5) Press *Proceed* to start the update. Do not turn off the EX500/ EX600 or disconnect the cable during a data load.The data load is complete when the, "Press Any Bezel Key" message is displayed.

6) After this message is displayed, turn off power to the EX500/ EX600, remove your portable USB device, and then turn the EX500/EX600 power back ON.

This step ensures that all data has been checked in self-test and the MFD is ready for use.

7) Store the portable USB devices in a safe place.

Note: If the database update process fails for any reason, all subsequent power-up screens display the message, "NavData: Not installed." If this occurs, the Map page will not contain any obstacles, airports, navaids, intersections, airways or special use airspace (including Prohibited and Restricted areas.)

Sensor data such as radar, TAWS, traffic, lightning and datalink weather will be displayed normally. In addition, the map terrain (including Interstate highways) will continue to be displayed normally.

If repeated attempts to update the database fail, please contact Avidyne Technical Support or your avionics dealer before your next flight.

11.5.4   Loading CMax Chart Data

Once you have downloaded the CMax data from your PC to an Avidyne-approved portable USB device, as described in the *Avidyne Data Update Guide*, you will need to upload the data to your EX500/ EX600.

To load CMax Data to your EX500/EX600:

1) Ensure the power to the EX500/EX600 is OFF. Connect the portable USB device to the EX500/EX600:

- ■ If you are using a USB Flash Memory Drive, plug it into the data port on the front of the EX500/EX600.

- ■ For the Zip Drive Dataloader, connect one end of the cable to the Zip Drive and the other end to the EX500/EX600 data port. Do not insert the Zip disk into the Zip Drive until you have turned ON the MFD (in step 2).

Note: If you are using a Zip Drive, ensure that it is supported and not dangling by the cable. Letting the Zip Drive dangle can cause permanent damage to the data port. It can also cause an intermittent connection, which will result in an unsuccessful data update.

2) Turn ON the EX500/EX600. If you are using a Zip Drive, insert the Zip disk into the Zip Drive when the initial FlightMax logo screen is displayed.

3) The Dataloader page is displayed.

Note: If this is the first time that you have ever updated the data, you might see a warning that you are about to load older data than the MFD already contains. Since the pre-loaded demo charts expire in the year 2020, this warning message is normal.

Note: If the, "Press any Bezel Key" message is displayed, the EX500/EX600 did not detect the portable USB device. This can be caused by one of the following:

1. The connections were not detected by the EX500/EX600. Check all the connections and try again.

2. For a Zip Drive, there is no disk or the disk was not found.

3. The Zip Disk is incorrectly formatted.

4) Press *Proceed* to start the update. Do not turn OFF the EX500/EX600 or disconnect the cable during a data load.The data load

is complete when the, "Press Any Bezel Key" message is displayed.

5) The Dataloader page shows the progress as it loads the data into the MFD. After loading the data, the Dataloader performs an integrity check on the data and, if all data is valid, displays a successful data load message.

6) When the operation has been completed, the EX500/EX600 will display the, "Press any Bezel Key" message.

7) At this point, turn OFF power to the EX500/EX600, remove your portable USB device, and then turn the EX500/EX600 power back on.

   This step ensures that all data has been checked in self-test and the MFD is ready for use.

8) Confirm the valid dates of the Chart data as reported on the Startup Screen.

9) Go to the Chart page and select a chart from an airport that is known to be in your subscription coverage area. Confirm that the chart is available.

10) Store the portable USB devices in a safe place.

11.6 TAWS Display Color Coding

Table 11.1   EGPWS Display Color Formats

Color		Meaning
Solid Red		Terrain/Obstacle threat area, a warning is generated.
Solid Yellow		Terrain/Obstacle threat area, a caution is generated.
50% Red Dots		Terrain/Obstacle that is more than 2,000 feet above aircraft.
50% Yellow Dots		Terrain/Obstacle that is between 1,000 and 2,000 feet above aircraft.
25% Yellow Dots		Terrain/Obstacle that is 500 (250 with gear down) feet below to 1,000 feet above aircraft altitude.
Solid Green		**Peaks only.** Shown only when no Red or Yellow Terrain/ Obstacle areas are within range on the display. Highest Terrain/Obstacle not within 500 (250 with gear down) feet of aircraft altitude.
50% Green Dots		Terrain/Obstacle that is 500 (250 with gear down) feet below to 1,000 feet below aircraft altitude.
50% Green Dots		**Peaks only.** Terrain/Obstacle that is the middle elevation band when there is no Red or Yellow terrain areas within range on the display.
16% Green Dots		Terrain/Obstacle that is 1,000 to 2,000 feet below aircraft altitude.
16% Green Dots		**Peaks only.** Terrain/Obstacle that is the lower elevation band when there is no Red or Yellow terrain areas within range on the display.
Black		No significant terrain/obstacle.
16% Blue		**Peaks only.** Water at sea level elevation (0 feet MSL).
Magenta Dots		Unknown terrain. No terrain data in the data base for the magenta area shown.

11.7 Terrain Display Color Coding

Table 11.2   Terrain Scale Colors

		Elevation range (ft.)
White		>=15,000 and <30,000
Darkest Brown		>=12,000 and <15,000
Darker Brown		>=9,000 and <12,000
Brown		>=7,000 and <9,000
Lighter Brown		>=5,000 and <7,000
Lightest Brown		>=3,000 and <5,000
Yellow		>=2,500 and <3,000
Darkest Green		>=2,000 and <2,500
Darker Green		>=1,500 and <2,000
Greens		>=1,000 and <1,500
Greens		>=500 and <1,000
Lighter Green		>=0 and <500
Lightest Green		<0

11.8 Sensor Status Block Symbols
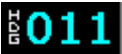
Table 11.3   Sensor Status Block Symbols

Symbol	Type	Status
	Traffic	A solid cyan symbol indicates that the sensor system is reporting a healthy status and is being displayed in the mode listed in the sensor status block.
	Lightning	
	Broadcast Datalink Weather Overlay	
	2-Way Datalink Weather Overlay	
	Traffic	A hollow cyan symbol indicates that the function is reporting a healthy status, but is turned off for display on the Map page.
	Lightning	
	Broadcast Datalink Weather Overlay	
	2-Way Datalink Weather Overlay	
	Traffic	A solid yellow symbol indicates that the EX500/EX600 is unable to display data from that particular sensor. This may be due to a communication error, the sensor is not healthy, or there is a configuration problem.
	Lightning	
	Broadcast Datalink Weather Overlay	
	2-Way Datalink Weather Overlay	
	Traffic	A hollow yellow symbol indicates that the function is not able to display data due to the same reasons as above, and is turned off from display on the map page.
	Lightning	
	Broadcast Datalink Weather Overlay	
	2-Way Datalink Weather Overlay	

11.9 Map Symbols

11.9.1   Heading, Track, and Map Orientation

Table 11.4   Track Indicator Graphics

Heading		Track		Map Orientation	
011	Heading	▼	Desired Track	🧭N	North Up
193	Track	▲	Heading	🧭	Heading Up
		▲	Actual Track	🧭T	Track Up

The Heading/Track (H/T) Block provides digital readout of the current heading, or actual track. Three triangles around the compass range ring provide actual track, desired track, and heading indications. The Map orientation is indicated in the triangle to the right of the H/T Block.

11.9.2   Map Symbols—Navigational Fixes

The EX500/EX600 can display the following database items:

● Airports

● Navaids (VORs, NDBs and Waypoints)

● Airways (Victor and jet)

● Intersections, waypoints and other named fixes

● Class B and Class C controlled airspace

● Tower Zone (Class D) Airspace

● Obstacles (>200' AGL)

● Certain classes of special use airspace (Prohibited, Restricted, Warning, Alert and Military Operating Areas)

Navigational symbols used by Map are shown in the following three tables:

Table 11.5   Map Symbols—Navaids

Symbol	Item	Heading
	NDB	All NDBs
	VOR	All VORs
	Intersection	Terminal, Jet, and Victor airway waypoints (intersections)

Table 11.6   Map Symbols—Airports

Surface			Airport Type
Hard	Soft	Water	
			Towered
			Towered
			Non-Towered
			Non-Towered

Table 11.7   Map Symbols—Other

Symbol	Item	Symbol	Item
▬▬▬	Flight Plan (inactive leg)*	⌂	Single Low Obstacle >= 200' AGL < 1000' AGL
▬▬▬	Flight Plan (active leg)	⌂⌂	Low Obstacles within 1NM of each other >= 200' AGL < 1000' AGL
▲N	Map Orientation	⌂	Single Obstacle >= 1000' AGL
✈	Ownship Symbol	⌂⌂	Obstacles within 1NM of each other >= 1000' AGL
✧	Flight Plan, Course Waypoints		

Note: If all the legs are shown in white, the GPS is not reporting the active leg of the flight plan.

11.9.3   Map Symbols—Line Styles

Table 11.8   Airspace and Airways Lines

Item	Color	Line	Label
Class B	Blue		Elevation
Class C	Magenta		Elevation
Tower Zone (Class D) Airspace	Dashed Blue		None
Victor Airways	Dark Yellow		ID Label
Jet Airways	Dark Yellow		ID Label
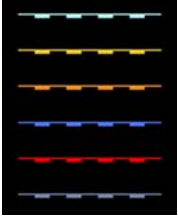
Table 11.9   SUA and TFR Lines

Region Type	Color	Line	Label
Prohibited, Restricted	Red		ID Label
Warning, Alert, MOA, SFRA	Yellow		ID Label
TFR	Red		ID Label

> ⚠ For adjacent or overlaying types of Special Use Airspace (e.g., Restricted Areas or Prohibited Areas within larger MOAs), some masking of the border lines might occur. As pilot in command, you must reference current aeronautical charts for accurate boundaries.

Table 11.10 AIRMET and SIGMET Boundary Lines

Line Color		Type	Label
	Bright blue	Mountain AIRMET	MTN
	Dark yellow	IFR AIRMET	IFR
	Orange	Turbulence AIRMET	TURB
	Blue	Icing AIRMET	ICE
	Dark Red	SIGMET AIRMET	SIG
	Blue grey	Convective SIGMET	CSIG

11.10 Data Block Information

Table 11.11 Information from Data Block

Name	Description	Range
TO WPT	Name of bearing and distance to the "To" waypoint in the active flight plan. The bearing is from your present position directly to the fix. If you are off course, it will differ from your planned course. Distance is measured direct. Also, displays ETE (Estimated Time En route).	5 characters (Name) 1 to 360 degrees 0.0 unlimited NM. HH:MM:SS
NEXT WPT	Name of bearing and distance to the "To" waypoint in the active flight plan. Also displays ETE (Estimated Time Enroute)	5 characters (Name) 1 to 360 degrees 0.0 unlimited NM. HH:MM:SS
DEST WPT	Name of and distance to the final destination waypoint in system distance units. Distance is measured along planned route	5 characters 0.0 unlimited NM
NRST ARPT	Identifier of, bearing and distance to the nearest airport.	5 characters (Name)
LAT/LON	Current latitude and longitude in degrees and decimal minutes.	N/S 0 to 90° 0' E/W 0 to 180° 0'
BARO ALT	Barometric Altitude	Based on data from FMS (if available) or GPS (see Note)
GND SPD	Current ground speed in system speed units.	0.0 to 999.9 knots
TAS	True Airspeed—(TAS not available from most panel-mounted GPS systems)	From FMS
UTC TIME	UTC (or GMT or "Zulu") time	0 to 23h 59m 59s
LOCAL TIME	Local data and time. Derived from UTC time with time zone setting applied.	0 to 23h 59m 59s
Blank	Blank space	

⚠️ The Baro Altitude may be received from the FMS or GPS (via 429). The FMS/GPS calculates the altitude based on the barometric pressure entered into the FMS by the pilot. Use this display to verify what has been put into the FMS/GPS. Do not rely on the BARO ALT Data Blocks for terrain separation. Use your altimeter or other instrument.

11.11 Nav Messages

Table 11.12 Nav Messages

NAV Messages and Colors		Meaning	Recommended Pilot Action
Nav Source Data is valid		GPS/FMS indicates that the computed position data is valid.	Acknowledge
Nav Source Data is NOT valid (err=x)		Your GPS/FMS has not computed a valid position or is not supplying valid data. Flight Plan will not be presented on the Radar display.	Check GPS for valid position. Have maintenance check GPS/FMS and installation
Nav Source: Can't Open Port		The GPS/FMS interface cannot open the assigned port. Generally indicates a configuration error.	Have maintenance check configuration and installation
Nav Source Reconnecting…		EX500 is attempting to reconnect to the port that is connected to the GPS/FMS.	Acknowledge
Nav Source is Not Communicating		EX500 does not detect any data being sent from the GPS/FMS.	Have maintenance check configuration and installation
Nav Source Data Format Error		Invalid data is coming from your GPS/FMS. If persistent, generally indicates a configuration error.	Have maintenance check configuration and installation
Heading Data is NOT Valid		GPS/FMS is configured as the Map heading source and that data ceases to be available or becomes invalid.	Have maintenance check configuration and installation
Heading Data is Valid		GPS navigator is configured as the Map heading source and that data becomes valid following an acknowledgement of an invalid message.	Acknowledge

11.12 Traffic Messages

Table 11.13 Traffic Messages

Traffic Messages & Colors		Meaning	Recommended Pilot Action
Traffic Sensor is Operating Normally		Traffic sensor is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge
Traffic <Bearing> / <Distance > / <Relative Altitude>		Traffic Advisory	Acknowledge to go to dedicated Traffic page and begin looking for traffic.
Traffic <Distance> / <Relative Altitude>		Traffic Advisories with no bearing information.	Acknowledge to go to dedicated Traffic page to looking for traffic.
Traffic <Bearing> / <Distance>		Traffic Advisories with no relative altitude information.	Acknowledge to go to dedicated Traffic page to looking for traffic.
Traffic <Distance>		Traffic Advisories with no bearing and no relative altitude information.	Acknowledge to go to dedicated Traffic page and begin looking for traffic.
Traffic Sensor is in Stand- By		MFD receives a "Stand-By" transmission from the traffic sensor. Press "Traffic" key to select a traffic mode.	Have maintenance check configuration and installation if message persists.
Traffic Sensor is in Self-Test		Traffic sensor is in self test mode.	Acknowledge
Traffic Sensor is Not Communicating		Traffic sensor is not transmitting data.	Have maintenance check configuration and installation
TCAD Altitude Unavailable		TCAD sensor is not receiving altitude information.	Have maintenance check configuration and installation
Traffic Heading Source Failed		TAS/ TCAS is configured as the Map Heading source and a "fatal heading fault" is received.	Have maintenance check configuration and installation
Traffic Heading Source is Valid		Traffic sensor is configured as the Map Heading source and is valid.	Acknowledge

11.13 Lightning Messages

Table 11.14 Lightning Messages

Lightning Messages & Colors	Meaning	Recommended Pilot Action
Lightning Sensor is Operating Normally	Lightning source is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
Lightning Sensor is in Noise- Monitor Mode	Lightning source is in Noise- Monitor Mode.	Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Sensor is in Demo Mode	Lightning source is in Demo Mode.	Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Sensor is in Test Mode	Lightning sensor in a self-test mode.	Acknowledge.
Lightning Sensor ERROR	EX500/EX600 receives a "recoverable fault" notification.	Cycle sensor power. Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Sensor has FAILED	EX500/EX600 receives a "fatal fault" notification.	Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Sensor is Not Communicating	EX500/EX600 receiving no data from the lightning sensor.	Check that sensor is on. Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Ahead (WX-500 only)	Stormscope is indicating discharge activity horizontally within ± 22 ° of the aircraft nose and within 75nm.	Determine location of lightning and avoid.

Table 11.14 Lightning Messages (Continued)

Lightning Messages & Colors	Meaning	Recommended Pilot Action
Lightning Heading Source Failed	Stormscope is configured as a heading source and a "fatal heading fault" is received.	Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Heading Source OK	Stormscope is configured with heading input.	Acknowledge.
Lightning Antenna Location Changed (WX-500 only)	Stormscope antenna location disagrees with EX500/EX600 setting.	Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Position Source Failed (TWX670 only)	The position reporting source (GPS or FMS) connected to the TWX670 has encountered a fatal fault.	Have configuration checked at an Avidyne Authorized Entegra Service Center.
Lightning Position Source OK (TWX670 only)	The position reporting source (GPS or FMS) connected to the TWX670 has returned to normal operation.	Acknowledge.
Noise Present (TWX670 only)	The TWX670 has detected excessive noise in the system. Accuracy and efficiency of the lightning sensor may be negatively affected.	Have configuration check at an Avidyne Authorized Entegra Service Center.
Stuck MK (TWX670 only)	Microphone PTT switch is stuck open. Lightning strikes will be not be displayed until the problem is fixed.	Check the aircraft PTT switches. If the problem persists, have the aircraft checked at an Avidyne Authorized Entegra Service Center.

Table 11.14 Lightning Messages (Continued)

Lightning Messages & Colors		Meaning	Recommended Pilot Action
No Position Data (TWX670 only)		The position reporting source (GPS or FMS) connected to the TWX670 is not sending position data.	Cycle position sensor power. Have configuration checked at an Avidyne Authorized Entegra Service Center.

11.14 Two-Way Datalink Messages

Table 11.15 Two-Way Datalink Messages

Two-Way Datalink Messages & Colors		Meaning	Recommended Pilot Action
Datalink Sensor is Operating Normally		Satellite communicator is operating normally after a recoverable fault was previously acknowledged.	Acknowledge
Datalink Sensor is NOT Communicating		Satellite communicator has stopped communicating.	Restart system. If problem persists, contact Avidyne.
Datalink Sensor Configuration Error		COMM port is configured incorrectly.	Restart system. If problem persists, contact Avidyne.
Datalink Sensor Data is Invalid		EX500/EX600 receives a "recoverable fault" notification.	Have maintenance check configuration and installation.
Narrowcast METAR symbols > 90 minutes (Orbcomm Only)		METARs are older than 90 minutes from their time of reception.	Acknowledge
Narrowcast METAR symbols > 75 minutes (Iridium Only)		METARs are older than 75 minutes from their time of reception.	Acknowledge
Narrowcast AIRMETs/ SIGMETs > 90 minutes		AIRMETs/ SIGMETs are older than 90 minutes.	Acknowledge
Narrowcast TFRs > 90 minutes		TFR data are older than 90 minutes.	Acknowledge
Narrowcast TAFs > 90 minutes		TAF data are older than 90 minutes.	Acknowledge
Narrowcast Lightning > 20 minutes		Lightning information is older than 20 minutes.	Acknowledge
Narrowcast Data not yet received		Datalink is Enabled and no Datalink data has been received within 10 minutes of EX500/ EX600 initialization complete.	Acknowledge

Table 11.15 Two-Way Datalink Messages (Continued)

Two-Way Datalink Messages & Colors		Meaning	Recommended Pilot Action
Narrowcast Airmets/ Sigmets not yet received		AIRMETs/ SIGMETs are selected and they are not received within 15 minutes of the initial Datalink update.	Acknowledge
Narrowcast TFRs not yet received		UA Status/ TFRs are selected and TFRs are not received within 15 minutes of the initial Datalink update.	Acknowledge
Narrowcast METARs Symbols not yet received		METARs are selected and they are not received within 15 minutes of the initial Datalink update.	Acknowledge
Narrowcast TAFs not yet received		TAFs are selected and they are not received within 15 minutes of the initial Datalink update.	Acknowledge
Narrowcast Sat IR not yet received		Sat IR is selected and is not received within 15 minutes of the initial Datalink update.	Acknowledge
Narrowcast Winds/ Temps not yet received		Winds/Temps are selected and they are not received within 15 minutes of the initial Datalink update.	Acknowledge
Narrowcast Lightning not yet received		Lightning is selected and it is not received within 15 minutes of the initial Datalink update.	Acknowledge
Datalink: Idle		No data being sent or received.	None necessary.
NXR Invalid		Datalink Radar temporarily not able to be displayed.	Wait for next Datalink Radar update.

11.15 Broadcast Datalink Messages

Table 11.16 Broadcast Datalink Messages

Datalink Messages & Colors	Meaning	Recommended Pilot Action
Broadcast Receiver Not Communicating	EX500/EX600 has received no data from the broadcast receiver for 10 minutes	Have the wiring from the broadcast receiver to the EX500 inspected.
Broadcast Antenna is Disconnected	The Broadcast Datalink antenna or cable is not properly connected to the receiver.	Have the Broadcast antenna connection inspected
Broadcast Receiver is Operating Normally	The Broadcast receiver is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge
Broadcast Data not yet received	The EX500/EX600 did not receive Broadcast weather data within the first 10 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast RADAR not received	The EX500/EX600 did not receive RADAR data within the first 15 minutes of operation after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast METARs not received	The EX500/EX600 did not receive METAR data within the first 15 minutes of operation after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Storm Cells not yet received	The EX500/EX600 did not receive Storm Cell data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 11.16 Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast AIRMETs not received		The EX500/EX600 did not receive AIRMET data within the first 15 minutes of operation after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast SIGMETs not received		The EX500/EX600 did not receive SIGMET data within the first 15 minutes of operation after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TFRs not received		The EX500/EX600 did not receive TFR data within the first 15 minutes of operation after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Lightning not received		The EX500/EX600 did not receive Lightning data within the first 15 minutes of operation after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast NEXRAD > 75 min		Broadcast RADAR data age since creation is greater than 75 minutes. RADAR data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Canadian Radar > 75 min		Broadcast Canadian Radar data age since creation is greater than 75 minutes. RADAR data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast METARs > 120 min		Broadcast METAR data age since creation is greater than 120 minutes. METAR data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 11.16 Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast AIRMETs > 90 min		Broadcast AIRMET data age since creation is greater than 120 minutes. AIRMET data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast SIGMETs > 90 min		Broadcast SIGMET data age since creation is greater than 120 minutes. SIGMET data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TAFs > 90 min		Broadcast TAF data age since creation is greater than 120 minutes. TAF data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TFRs > 90 min		Broadcast TFR data age since creation is greater than 120 minutes. TFR data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

11.16 TAWS Messages

Table 11.17 TAWS Messages

TAWS Messages & Colors		Meaning	Recommended Pilot Action
Caution Obstacle		EGPWS Obstacle caution	Fly to avoid obstacle.
Caution Terrain		EGPWS Terrain caution	Fly to avoid terrain.
OBSTACLE AHEAD, PULL UP		EGPWS Obstacle Warning	Pull up to avoid obstacle.
TERRAIN AHEAD, PULL UP		EGPWS Terrain Warning	Pull up to avoid terrain.
TAWS Display Initializing		During its startup phase, this Message is displayed. While TAWS display is initializing, the TAWS page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY INITIALIZING.	The Message should clear spontaneously. If the test fails or does not terminate refer to the EGPWS pilot's guide.
TAWS Sensor Self Test		The EGPWS is performing a Self-Test. A distinctive color test pattern will be displayed. The large text annunciation, "TAWS SENSOR SELF-TEST" is presented over the test pattern. The text will remain until the self test is finished.	If the test fails or does not terminate refer to the EGPWS pilot's guide.
TAWS Display Inhibited		When you inhibit EGPWS alerts from the separate EGPWS control panel, the TAWS Display page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY INHIBITED.	Check to see if the control settings are correct. If the EGPWS is not inhibited and if this message persists, contact maintenance.

Table 11.17 TAWS Messages (Continued)

TAWS Messages & Colors	Meaning	Recommended Pilot Action
TAWS Display Unavailable	The EGPWS is unable to supply the EX500/EX600 with a reliable TAWS display, probably because one if its inputs from another device in the aircraft is incorrect or unreliable. When the TAWS Display is unavailable due to this condition, the TAWS Display page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY UNAVAILABLE.	Check to see that EGPWS is powered up. Have maintenance check configuration and installation.
TAWS Display Failed	Indicates a failure in either the EX500/EX600 or EGPWS. Whenever the condition occurs the TAWS page is painted with Magenta dots overlaid by the large text annunciation TAWS DISPLAY FAILED.	Execute a thorough EGPWS self test. Have maintenance check EGPWS configuration.
TAWS Not Communicating	Indicates that the EGPWS sensor is powered down or incorrectly attached to the EX500/EX600. Whenever the TAWS Display is unavailable due to this failure, the TAWS Display page is painted with magenta dots overlaid by the large text annunciation TAWS NOT COMMUNICATING.	Check to see that EGPWS is powered up. Have maintenance check configuration and installation.

11.17 Radar Messages

Table 11.18 Radar Messages

Radar Messages & Colors		Meaning	Recommended Pilot Action
Radar Echoes Ahead		Indicates presence of significant red and/or magenta echoes within the currently selected range, ±22⁰ of the aircraft heading, when Target is set to ON. Displayed only on pages other than Radar, and on Map only when Radar is not overlaid.	Locate source of echoes and avoid.
Heavy Radar Echoes Beyond XX nm		Indicates presence of heavy echoes from a distance of at least XX nautical miles (80nm for B/K/Honeywell, 60nm for Collins), possibly beyond the currently selected range, when Target is set to ON. Displayed only on pages other than Radar.	Select longer range on radar, locate source of echoes and avoid.
Below 20 kts - Turn Radar Off		Radar is ON (scanning) and reported ground speed has transitioned below 20 kts, suggesting that you have landed. Displayed only on pages other than Radar.	Turn Radar to Standby or OFF
Bad Groundspeed Input		Radar is turned on and FMS is not reporting valid ground speed. Displayed only when a page other than Radar is selected.	Take care to turn Radar OFF upon landing, as the "Speed below 20KT" caution will not be provided
Automatic Standby Disabled		Radar ON, Auto Standby is selected, and ground speed is invalid.	Take care to turn Radar OFF upon landing, as the "Speed below 20KT" caution will not be provided

Radar Messages & Colors		Meaning	Recommended Pilot Action
Loss of Radar Data		Communication with the Radar sensor has been lost. No data is available.	Momentarily select Standby, then reselect mode. Have maintenance check R/T.
Radar Error		An error has occurred in the Radar sensor system. R/T Fault (general).	Contact Maintenance.
Radar Error Cleared		The previously reported error in the Radar sensor system has been corrected.	Acknowledge
Radar Failure		The Radar system has failed. This error will not be cleared until the EX500/ EX600 is shut down and restarted.	Momentarily select Standby, then reselect mode. Have maintenance check R/T.

11.18 Abbreviations and Definitions

Table 11.19 lists the avionics abbreviations and definitions that are used in this manual.

Table 11.19 Avionics Abbreviations and Definitions

Abbreviation	Meaning
AGL	Above Ground Level
AIM	Aeronautical Information Manual
AIRMET	Airman's METeorological advisory
CDI	Course Deviation Indicator
CONUS	Continental United States
EGPWS	Enhanced Ground Proximity Warning System
GPS	Global Positioning System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
Jetways	Above 18000 ft MSL
METAR	Meteorological Aerodrome Report
MFD	Multi-Function Display
MSL	Mean Sea Level
NDB	Non-Directional Beacon
NM	Nautical Mile
NOTAM	NOTices to AirMen - Important information provided by the FAA or similar international organizations.
PFD	Primary Flight Display
Sat IR	Infrared Satellite
SIGMET	SIGnificant METeorological advisory
SUA	Special Use Airspace
TA	Traffic Advisory
TACAN	Tactical Air Navigation
TAF	Terminal Aerodrome Forecasts
TAS	Traffic Advisory System
TAS	True Air Speed
TAWS	Terrain Awareness and Warning System
TCAD	Traffic and Collision Alert Device
TCAS	Traffic Alert Collision Avoidance System
TFR	Temporary Flight Restrictions

Table 11.19 Avionics Abbreviations and Definitions (Continued)

Abbreviation	Meaning
UTC	Universal Coordinated Time (Zulu) (Greenwich Mean Time)
VFR	Visual Flight Rules
Victor Airways	Aerial highways that connect electronic navigation aids (more traffic). Victor Airways are 8 nautical miles wide (4 NM either side of the centerline)
VOR	VHF Omnidirectional Radio Beacon
WX	Weather

12 Using *EX500/EX600* Outside the US

When flying outside the United States, some features may either be unavailable or have limited availability. This section describes these differences.

> ⚠️ NOTAM information is subject to constant change. It is **extremely important** that you check with your local flight service or other official flight advisory service for applicable NOTAMs before EVERY flight.

12.1 Features Available in the US Only

The following features are generally not available on the Entegra EX500/EX600 when flying outside the United States.

● **Obstacle Display**—The obstacle database is valid only for the United States.

● **TIS Traffic**—TIS Traffic is only available in the US where Mode-S radar service is available. For more information about TIS sensors, see Section 1-3-5 of the Aeronautical Information Manual.

● **TFRs**—Temporary Flight Restrictions are displayed only within the United States when 2-Way Datalink is in use.

12.2 Features Available in North America

● **ORBCOMM Weather**—While ORBCOMM Satellites operate worldwide, Avidyne provides data only for North America (including the United States and Canada).

● **XM WX Weather**—XM WX Satellite Weather (Broadcast Datalink), and therefore the EX500/EX600 Datalink features, are not currently available outside North America.

● **WSI\SIRIUS Weather**—WSI\SIRIUS Satellite Weather (Broadcast Datalink), and therefore the EX500/EX600 Datalink features, are not currently available outside North America.

12.3 Features Available in Other Parts of the World

● **Iridium**—Iridium service is available worldwide, however, not all weather data is available worldwide. At the time of this printing, MLX770 supports worldwide METARs, TAFs, Sat IR and Lightning, along with North American, European, and Australian Radar, and selected products in other regions of the world. See http://www.avidyne.com/products/mlx/coverage/ for the latest coverage information for all Iridium Datalink products.

12.4 Features Specific to International Flight

● **CMax Chart Data**—Terminal procedure chart availability is determined by your CMax chart subscription coverage. For questions regarding your coverage area, contact Jeppesen at www.jeppesen.com, or by phone (for western hemisphere, including South America, call +1-303-799-9090, for eastern hemisphere, including Europe, call +49 6102 5070).

● **Terrain Data**—Avidyne provides terrain data for two areas: the Americas (North and South America), and International (excluding Americas). If you are flying in an area where your current terrain data is not supported, terrain will not display (similar to the Base view on the Map page).

An International Conversion Utility is available from Avidyne that changes the MFD terrain data between Americas and International. The utility can be installed in the field at an Authorized Avidyne distributor. For information about the International Conversion Utility, please contact Avidyne Sales at 800-284-3963.

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AVIDYNE CORPORATION
55 Old Bedford Road
Lincoln, MA 01773
Telephone: +1-781-402-7400
Toll Free (US): 800-AVIDYNE (800-284-3963)
FAX: +1-781-402-7599
www.avidyne.com