



SKYTRAX ADS-B RECEIVER

Pilot's Guide



Avidyne SkyTrax ADS-B Receiver Pilot Guide

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Revision History

Revision	Date of Release	Reason for Release
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1 System Overview

This manual assumes that the pilot is appropriately licensed, is proficient in operation of the aircraft and its equipment, and is in compliance with all Federal Aviation Regulations (FARs).

All images contained in this manual are for reference use only, and are subject to change.

Boxed areas marked as NOTE within this manual identify certain situations or areas of operation having heightened safety implications. While it is important for the operator to be familiar with all of the information in the manual, it is essential to the safe use of the SkyTrax that pilots give careful attention to the material contained within these NOTES.

The Avidyne SkyTrax system consists of a remote-mounted receiver and one external antenna. The SkyTrax provides ADS-B, ADS-R and TIS-B traffic information. SkyTrax models equipped with a UAT receiver are also capable of receiving FIS-B weather data. The SkyTrax does not provide ADS-B out functionality.

The SkyTrax may also be connected to the ARINC-429 traffic output from a TAS or TCAS I system. When connected, the SkyTrax will merge the TAS/TCAS traffic with the ADS-B traffic so that only the best source of data for each target is displayed.

Interfaces will be to existing compatible displays such as Avidyne Corporation's FlightMax EX600/EX500 Multifunction Display (MFD), Avidyne IFD4XX / IFD5XX Nav/Com/GPS/displays, and Avidyne Release 9 Integrated Cockpit system. Other compatible displays and display interfaces are described in the SkyTrax Installation Manual 600-00335-000. Operation of the displays including control of data products provided by the SkyTrax receiver will be described in the operating instructions for those separately approved displays.

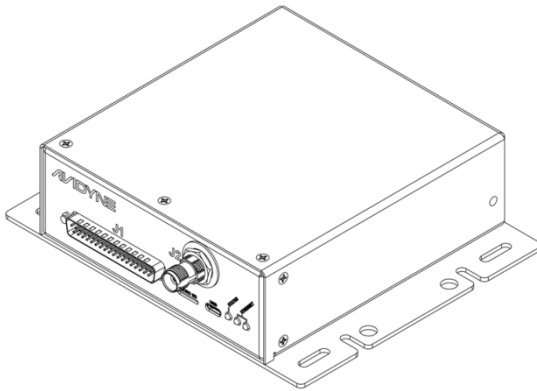
This installation is intended for aircraft listed in an Approved Model List, Avidyne document AVMLB-003.

Note that the AML for this STC is restricted to Part 23 Class I and Class II airplanes (aircraft under 6000 lbs).

EQUIPMENT DESCRIPTION

This SkyTrax receives ADS-B messages from other UAT and/or 1090ES equipped aircraft and receives TIS-B/ADS-R/FIS-B messages from ADS-B Ground Stations. Data received by the SkyTrax Receiver is output to a compatible display device.

SkyTrax Receiver



The SkyTrax performs the following functions:

- ADS-B In (978MHz and/or 1090MHz)
 - Receives ADS-B from target aircraft
 - Receives ADS-R and TIS-B from ground stations
- Receives FIS-B Weather (if equipped with 978MHz)
- Receives traffic from a connected TAS or TCAS-I
- Merges all traffic sources into a single combined view
- Outputs ADS-B Traffic over an ARINC-429 port
- Outputs ADS-B Traffic over an RS-232 port
- Outputs ADS-B Weather over an RS-232 port

OVERALL SPECIFICATIONS

This section includes the physical, electrical, performance and environmental specifications for the SkyTrax ADS-B Receiver.

PHYSICAL

Height	2.036 inches
Width	7.367 inches (includes mounting bracket)
Depth	6.812 inches
Weight	1.3 lbs (excluding cables)

ENVIRONMENTAL

Operating temperature	-55°C to +70°C
Storage temperature	-55°C to +85°C
Temperature variation	5°C per minute
Maximum continuous altitude	55,000 feet
External Cooling	Not required

ELECTRICAL

Voltage:	9-33VDC
Input Current (6W nominal)	Steady State: 0.5A @ 14VDC 0.26A @ 28VDC

UAT RECEIVER PERFORMANCE

This section only applies if the SkyTrax model is equipped with a 978MHz UAT receiver.

Frequency	978MHz
Tolerance	± 20ppm
Data Rate	1.04167 Mbps
Receiver Sensitivity	Exceeds 90%MSR@-93dBm
Equipment Class	A1S (single bottom UAT antenna)

1090ES RECEIVER PERFORMANCE

This section only applies if the SkyTrax model is equipped with a 1090MHz receiver.

Regulatory	RTCA/DO-260B
Frequency	1090MHz
Tolerance	± 5.5MHz
Data Rate	1 Mbps
Receiver Sensitivity	-72 dBm
Equipment Class	A0 (single bottom UAT antenna)

LATENCY TIMING PERFORMANCE

Traffic Latency	Maximum traffic latency within the ST100B/ST200 = 1.75 seconds
Ownship Position Latency	Maximum ownship position latency within the ST100B /ST200 = 1.75 seconds Maximum ownship position latency from the position source = 1.0 seconds
Display Latency	Maximum latency from receiving a complete update to a updated display to the pilot = 0.75 seconds

AVIONICS INTERFACES

Annunciator Outputs	Capable of sinking 500mA for turning on annunciator lamp
Control Port	RS232 asynchronous serial
Maintenance Port	USB asynchronous serial
External Position Input	RS232 asynchronous serial or ARINC743A GNSS sensor
Display/Control	RS232 asynchronous serial (Pass-through or Traffic Alert interfaces) ARINC735 Traffic interface

FUNCTIONAL OVERVIEW

The Avidyne SkyTrax supports the following functions by receiving and sending information to compatible, separately approved cockpit displays.

- Reception of UAT and/or 1090ES ADS-B In messages

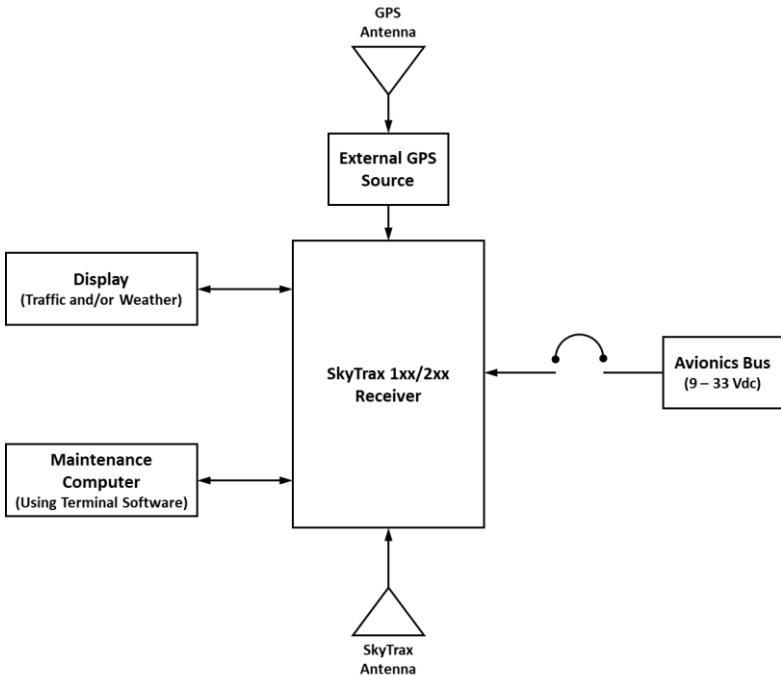
- Provide traffic information to the pilot via cockpit display.
 - Traffic information may be output to multiple displays simultaneously.
 - ADS-B (Information directly from another UAT equipped aircraft)
 - ADS-R (Rebroadcast of ADS-B data from a ground station)
 - TIS-B (Broadcast of secondary surveillance radar (SSR) traffic information from a ground station)

- FIS-B (if equipped with a 978MHz UAT receiver)
Reception of aviation data from ground stations.
 - FIS-B products include: NEXRAD, PIREPs, AIRMET/SIGMETs, METARs, TAFs, Winds Aloft, Aviation Data, TFRs and NOTAMs. The specific display will identify displayed products and formats. See display manufacturers approved data.
 - Provide FIS-B data via an optional separately approved compatible display. FIS-B data may be displayed on multiple displays.

SYSTEM CONFIGURATIONS

The SkyTrax Receiver may be configured with a GPS position source (required for traffic reception, but not required for FIS-B weather reception). The SkyTrax Receiver may also be configured with an indicator (e.g. IFD4XX, IFD5XX) to display ADS-B, ADS-R, TIS-B traffic and FIS-B weather. The following figure depicts the typical SkyTrax Receiver system configuration.

SkyTrax Receiver with External Compliant GPS



2 SkyTrax Operations

POWER CONTROL

The avionics master switch controls power to the SkyTrax. The dedicated circuit breaker should only be used to remove power to the unit in case of an emergency (e.g. smoke or loss of power generation).

CONTROL AND DISPLAY OVERVIEW

The control and display of SkyTrax data products will be described in the operator's information (Pilot's Guides, AFMS) for the separately approved displays.

This manual illustrates typical control and display features associated with the SkyTrax using Avidyne IFD4XX/IFD5XX series Nav/Com/GPS navigators as an example. For further details regarding operation of an IFD, see the Pilots Guide for that unit.

Consult information provided by the manufacturer of the interfaced display installed in your aircraft for specific operational information.

The SkyTrax also provides support for a traffic indicator and a status indicator. If installed, the traffic indicator will be illuminated if the system detects an advisory condition, and the status indicator will be illuminated if any system failure or caution conditions have been detected.

BEFORE TAKEOFF TECHNIQUES

In many cases traffic data will be available on the ground (ADS-B targets). FIS-B weather products may not be available on the ground even within published coverage areas due to proximity of a local ground station.

Avidyne recommends obtaining all required weather information from other sources before flight.

The SkyTrax will typically provide traffic indications on the ground of nearby ADS-B equipped aircraft; however, traffic data from ADS-B ground stations, especially for non-participating aircraft, may not be available while on the ground.

ADS-B WEATHER DISPLAY

The pilot can control display of the received data on moving map pages of a separately approved display. Approved displays will have unique means of displaying status and error conditions.

SkyTrax models equipped with a 978MHz UAT receiver can receive the following data products from the FIS-B ground station network:

- US RADAR
- Regional RADAR
- Storm Cells
- TFRs
- US METARs
- US Terminal Area Forecasts (TAF)
- US Winds Surface and Aloft
- US Temperatures Aloft
- US Icing
- US AIRMETS
- US SIGMETS
- US Lightning

The SkyTrax provides US, Canadian, Mexican, and Caribbean METARS and TAFs and US, Canadian and Puerto Rican radar as well as other information such as winds aloft, TFRs, lightning, etc. See the product details page on <http://www.avidyne.com/products/display/display-weather.html> for a complete list of supported weather products.

NOTE

SkyTrax Data Accuracy

Avidyne does not control, review, or edit the information made available by the datalink products, and is therefore not responsible for the accuracy or timeliness of that information.

NOTE

SkyTrax Data Intended to Aid Decision Making

Weather Datalink information is meant to aid pilot planning and near-term decisions focused on avoiding areas of inclement weather that are beyond visual range or where poor visibility precludes visual acquisition of inclement weather. The system is not designed for use for weather penetration and storm cell circumvention. The system lacks sufficient resolution and updating necessary for tactical maneuvering.

WEATHER OVERLAYS ON MAP

On the IFD4XX/IFD5XX, overlays are controlled using the "Wx Overlay" LSK on the Map page.

IFD Wx Overlay Selection



The Wx Overlay page is segmented into groupings of products. One selection per grouping can be made and products selected are indicated by a green lamp. The table below represents the possible set of products available. Products that are not available from the SkyTrax will not be displayed as selectable choices.

SkyTrax Receiver Products

Weather Product Grouping Title/Category	Possible Selections Within the Grouping
Weather Layers	Rgnl Wx Rdr US Wx Radar Other Wx Rdr Storm Cells Icing* Winds/Temps Aloft
Airport Reports	METARs TAFs TFRs
Weather Reports	AIR/SIGMETs
Lightning	Datalink






NOTE**SkyTrax ADS-B Data Product Display**

Familiarity with the interfaced display is required to control the display of listed products. See the display manufacturer's approved data for instruction on the display and control of ADS-B data products.

ADS-B METARS

METARs are available in both text and graphical formats and represent recent surface weather observations. On the IFD, textual METARs are presented on the “Info” tab of the “FMS” page. The graphical METARs are color-coded flag symbols that summarize a recent surface weather observation and can appear as overlays on the Map and embedded in the flight plan on the Flight Plan and Nearest tabs. These flags allow an overview of general weather conditions in an area.

IFD Graphical METAR Legend

METARs	
	VFR: >5SM & >3000 ft
	MVFR: 3-5SM or 1000-3000 ft
	IFR: 1-3SM or 500-1000 ft
	LIFR: 0.5-1SM or 200-500 ft
	CAT1: <0.5SM or <200 ft

ADS-B AIRMET/SIGMET

(US only) – These are areas where the National Weather Service has issued advisories for various types of hazardous weather. They 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). The ADS-B AIRMET/SIGMET Page shows a list of AIRMETs and SIGMETs that have been received over FIS-B. Selecting one of the AIRMETs or SIGMETs, will cause the ADS-B Product Text page (see page 2-18) to appear, showing the text for the selected report.

IFD ADS-B AIRMET/SIGMET Page



IFD AIRMETs and SIGMETs Detail MAP Page



ADS-B WEATHER RADAR

The SkyTrax radar is a composite image depicting precipitation as seen by multiple ground-based weather radar sites. The image is color-coded to FAA definitions to show intensity levels and precipitation types and is overlaid on top of any other map features.

IFD Map - SkyTrax Precipitation Example



IFD Weather Data Legend



At large map ranges beyond 250nm from the aircraft, small areas of high-intensity radar returns may not be displayed; instead, larger areas of surrounding lower-intensity radar returns will be shown.

Diagonal stripes show the SkyTrax radar data no coverage area. In normal operation, the boundary follows the outline of the Continental United States (CONUS). If, however, Datalink radar is unavailable in a particular area for any reason, 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 10,000 feet, the returns will be displayed as “islands of precipitation” surrounded by the hatched lines.

ADS-B (“FIS-B”) radar data coverage areas can be very irregular shaped areas – the geometry is dependent on how many transmission sites are in view and how much data has been received by the SkyTrax receiver.

IFD Map - No Coverage Area Hatched Lines



NOTE

ADS-B (FIS-B) US Weather Radar Data is Coarse
 When compared to subscription service data and even ADS-B Regional data, the CONUS weather radar data appears as a noticeably coarser depiction – this is a function of the supplied data.

ADS-B PRODUCT TEXT

The ADS-B Product Text page shows the detailed report for TFRs, SIGMETs, and AIRMETs. Unless one of those reports has been selected on either the ADS-B TFRs page or the ADS-B AIRMET/SIGMETs page, this page will not be populated, and will instead show "No Text Selected" at the top of the page. Once one of those reports has been selected, this page will continue to show that report until a different report is selected.

To return to the list page containing the corresponding report, touch the screen, press the right knob button, or press the ENTR button.

IFD ADS-B Product Text Page

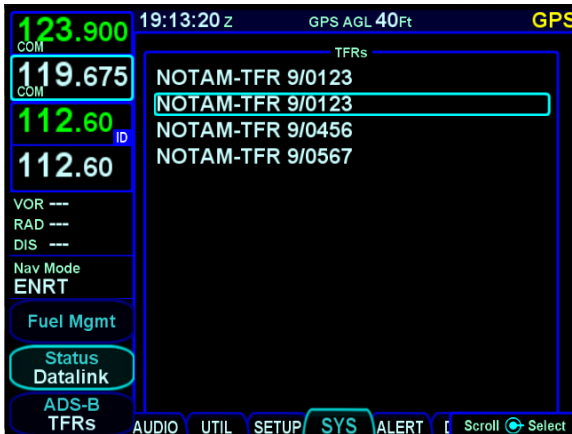
The screenshot displays the IFD ADS-B Product Text Page. At the top, it shows the time 19:15:19 z, GPS AGL 40Ft, and GPS. The left sidebar contains several menu items: 123.900 COM, 119.675 COM, 112.60 ID, 112.60, VOR ---, RAD ---, DIS ---, Nav Mode ENRT, Fuel Mgmt, Status Datalink, ADS-B, and Product Text. The main display area shows the text of a NOTAM: NOTAM-TFR 9/0123 111911 FLIGHT RESTRICTIONS IN THIS NOTAM COMPLY WITH STATUTORY MANDATES DETAILED IN SECTION 352 OF PUBLIC LAW 108-7 AS AMENDED BY SECTION 521 OF PUBLIC LAW 108-199. PURSUANT TO 49 USC 40103(B), THE FEDERAL AVIATION ADMINISTRATION (FAA) CLASSIFIES THE AIRSPACE DEFINED IN THIS NOTAM AS 'NATIONAL DEFENSE AIRSPACE'. ANY PERSON WHO KNOWINGLY OR WILLFULLY VIOLATES THE RULES PERTAINING TO OPERATIONS IN THIS AIRSPACE MAY BE SUBJECT TO CERTAIN CRIMINAL PENALTIES UNDER 49 USC 46307. PILOTS WHO DO NOT ADHERE TO THE FOLLOWING PROCEDURES MAY BE INTERCEPTED, DETAINED AND INTERVIEWED BY LAW ENFORCEMENT/SECURITY PERSONNEL. PURSUANT TO 14 CFR SECTION 99.7, SPECIAL SECURITY INSTRUCTIONS, ALL AIRCRAFT FLIGHT OPERATIONS INCLUDING UNMANNED AND REMOTE CONTROLLED AIRCRAFT, ARE PROHIBITED WITHIN A3 NMR OF 334805N/1175517W OR THE SLO66006.8 UP TO AND INCLUDING 3000FT AGL. 1410271500-PERM THE RESTRICTIONS DO NOT APPLY TO THOSE AIRCRAFT AUTHORIZED BY AND IN CONTACT WITH ATO FOR OPERATIONAL OR SAFETY OF FLIGHT PURPOSES, DEPARTMENT OF DEFENSE, LAW ENFORCEMENT, AND AIR AMBULANCE FLIGHT OPERATIONS. FLIGHTS CONDUCTED FOR OPERATIONAL PURPOSES OF ANY DISNEYLAND EVENT AND VENUE ARE AUTHORIZED WITH AN APPROVED WAIVER. AN FAA AIRSPACE WAIVER DOES NOT RELIEVE OPERATORS FROM OBTAINING ALL OTHER NECESSARY AUTHORIZATIONS AND COMPLYING WITH ALL APPLICABLE FEDERAL AVIATION REGULATIONS. ALL

At the bottom of the screen, there is a navigation bar with buttons for AUDIO, UTIL, SETUP, SYS, ALERT, and a Scroll/List button.

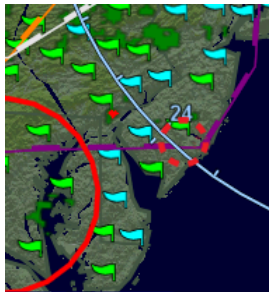
ADS-B TEMPORARY FLIGHT RESTRICTIONS (TFRS)

Two types of Temporary Flight Restrictions (TFRs) are depicted – active and pending. Active TFRs are depicted as solid red lines and Pending TFRs are depicted as dashed red lines, which become solid when the TFR transition time rolls from pending to active. TFR data cannot be turned off. The ADS-B TFRs page shows a list of TFRs that have been received over FIS-B. Using the right knob or the touchscreen, a cursor can be moved to surround each of the TFRs in the list. Selecting one of the TFRs, either by pressing the right knob button, pressing the ENTR button, or touching the TFR surrounded by the cursor, will cause the ADS-B Product Text page (see page 2-18) to appear, showing the text for the selected TFR.

IFD ADS-B TFRs Page



Active and Pending TFRs



ADS-B UNAVAILABLE PRODUCTS

The IFD ADS-B Unavailable Products Page shows the contents of the FIS-B Product Updates Unavailable Report. That report provides notification to users of outage of individual FIS-B product updates or the entire FIS-B service. If 20 minutes has elapsed since the display last received the FIS-B Product Updates Unavailable report, the report will be removed.

IFD ADS-B Unavailable Products Page



IFD DATALINK STATUS PAGE

This page has two distinct sections – the upper part displays the various weather products supported by the SkyTrax and subscription level with their age and receipt status; the lower part is a legend that defines the various symbols used in the datalink data depictions on the maps. Note that forecast products (e.g. winds aloft) display the forecast time, not the data receipt age. Dashed data is not authorized for that subscription level. A status of "Not Rcvd" indicates that the data has not been received. A status of "None Xpctd" indicates that not only has the data not been received, but also that none was expected to be received.

IFD Datalink Status Page

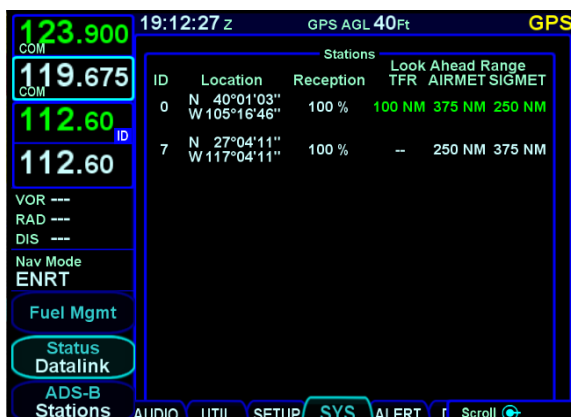


ADS-B STATIONS

This page shows the ID and location of each ADS-B station from which data is being received. For each station, the percentage of data that has been received is shown as well as the look ahead range for TFRs, AIRMETs, and SIGMETs from that station. The look ahead range is the radius for which a given product is provided from that station.

Each FIS-B station periodically broadcasts a "Current Report List" (CRL) that indicates whether the station is broadcasting TFRs, AIRMETs, and SIGMETs. Using that list, the display can determine whether it has received all of the reports that it is supposed to have received. When all of the expected data of a given type has been received, its look ahead range will be presented in green.

IFD ADS-B Stations Page



WIFI (NETWORK) OPERATIONS

Some displays capable of showing SkyTrax information are also capable of supporting WiFi connectivity with third party applications that are also capable of showing ADS-B information. This capability will have no effect on the SkyTrax function or performance.

INDICATIONS OF DATA AGE

The multiple products transmitted as part of the Broadcast Datalink service can arrive at different intervals. Two indicators at the bottom corners of each map provide an easy-to-use indication of data age. If a Datalink Icing product was selected for display via the “Wx Overlay” key, the radar age is replaced by the age of the icing altitude data currently being displayed; the icing altitude slice currently displayed is shown in the bottom right corner.

NOTE

SkyTrax Data Position

The ADS-B Wx radar display depicts where the weather WAS, not where it IS. The age indicator (if provided) does not show the age of the actual weather conditions but rather the age of the mosaic image. The actual weather conditions could be up to 15 to 20 minutes OLDER than the age indicated on the display. Pilots should consider this potential delay when using in-cockpit radar capabilities, as the movement and/or intensification of weather could adversely affect safety of flight.

IMPORTANT NOTE

When connected to SkyTrax...

Winds and temperatures aloft depicted are only displayed as a 6 hour forecast. It is strongly recommended for the pilot to obtain the latest information through other approved sources for their operation. The 12 and 24 winds aloft forecast will need to be obtained via other approved sources.

Data Age: RADAR and Icing



Product Age Messages

The following table describes the various FIS-B Weather product currency states that may be identified by an advisory message on the interfaced display:

SkyTrax	Message	Color
In Effect	Valid Thru <Month, Day, Year>	Light Green
Has Expired	Expired <Month, Day, Year>	Yellow
Not Yet Effective	Effective <Month, Day, Year>	Yellow

NOTE

Dissimilar Weather & Traffic Data Not Shared Between IFDs





Dissimilar weather data sources (e.g. GDL-69 data on one IFD and SkyTrax100b/200 data on the other IFD) will not be shared between IFDs. Each IFD will display its own weather data in this case.


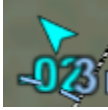

TRAFFIC DISPLAY

When integrated with an approved display, the display will typically show traffic information for sensed aircraft and provide visual alerting for traffic considered a threat. Approved displays will have some means of displaying status and error conditions.

On an IFD, Traffic data will always be displayed as an overlay on the map and can also be selected as a datablock option on the left or right side of the display. The center of the traffic symbology represents the horizontal position reference point of the traffic.

The following symbols for traffic systems are displayed both on the map (all views) and in the traffic thumbnail:

Traffic Symbol	Definition
	<p>TAS Traffic Alert (TA)</p> <p>Traffic that is within the alert zone defined by the traffic sensor. (yellow circle)</p>
	<p>TAS Proximate Traffic</p> <p>Traffic that is not within an alert zone, but is close to your position. (blue solid diamond)</p>
	<p>TAS Other Traffic</p> <p>Traffic that is detected by the traffic sensor, but determined not to be a current threat. (hollow blue diamond)</p>
	<p>TIS Traffic Alert (TA)</p> <p>Traffic radiated by a TIS ground station and includes 45° cardinal track pointers when available. (solid blue diamond with blue pointer barb)</p>

Traffic Symbol	Definition
	<p>TIS-B (ADS-B, ADS-R) Traffic Alert (TA)</p> <p>Traffic that is within the alert zone defined by the TIS-B traffic receiver and includes an arrow shaped symbol that indicate the target's track. (yellow arrow head inside a yellow circle with a 1 minute pointer barb)</p>
	<p>TIS-B (ADS-B, ADS-R) Proximate Traffic</p> <p>Traffic that is not within an alert zone, but is close to your position. (blue solid arrow head with a 1 minute pointer barb)</p>
	<p>TIS-B (ADS-B, ADS-R) Other Traffic</p> <p>Traffic that is detected by the TIS-B traffic receiver, but determined not to be a current threat. (blue hollow arrow head with a 1 minute pointer barb)</p>

Additional information is displayed adjacent to the traffic symbol to indicate relative altitude and vertical trend.

Additional Traffic Information



Traffic Thumbnail datablock data is a subset of the map overlay traffic. Trend vector, tail number and TIS track pointers are not displayed in the traffic thumbnail datablock for space reasons. While on the ground, TIS-B aircraft can also display a brown colored vehicle symbol.

TAS Traffic



TSAA Traffic



Traffic Thumbnails



For Mode-S equipped aircraft, the aircraft ID (e.g. tail number, call sign, etc) may also be displayed adjacent to the traffic symbol.



Traffic Advisories (TA) will also generate a CAS message. Most installations will ensure the SkyTrax is in Standby or Ground mode on the ground and will automatically toggle to one of the enroute altitude modes per the table below.

Traffic Altitude Mode	Relative Altitude Window
Below	-9900' to 2700'
Normal	-2700' to 2700'
Above	-2700' to 9900'
Unrestricted	All known traffic

Some installations, such as an IFD4XX/IFD5XX, support TIS capable transponders, including map depictions of the TIS track lines. These track “barbs” are only reported and indicated to 45° cardinal increments (e.g. 0°, 45°, 90°, 135°, etc.) and roughly point in the direction of sensed traffic direction.

TIS Track Pointer



Since TIS-B traffic data is re-transmitted data from FAA ground stations, there are a few additional possible states of the data beyond normal operating state. The non-normal TIS-B status states will be displayed in the traffic thumbnail and as CAS messages, as follows:

TIS Traffic Thumbnail Status	Definition
"Coasting"	TIS traffic communications have ceased for >6 seconds but <12 seconds
"Removed"	TIS traffic communications have ceased for >12 seconds
"Unavailable"	No TIS ground station is available or communications have ceased for >60 seconds
"Track Degraded"	The angular placement of intruders in the traffic thumbnail is not necessarily within 5 degrees of the nose. This indication is normal on the ground in aircraft without a heading source.
"Pos Degraded"	The ownship GPS position accuracy (HFOM, VFOM) is worse than the normal limits for accurate placement of intruders. This indication is normal on the ground until a good GPS signal is acquired.
"ADS-B Degraded"	Indicates the receiver has not yet gotten a good enough GPS lock to update its internal clock or there is a problem with the ADS-B receiver's GPS position.
"Maint Required"	Either there was an antenna loss or the GPS has not locked on soon enough during startup.

TIS Traffic Thumbnail Status	Definition
"No TIS-B"	Indicates the ground is not providing TIS-B or ADS-R services to your aircraft. The primary causes of this are: you are not in range of a ground station, OR, your aircraft is not providing qualifying ADS-B Out information OR, the ADS-B In device is not configured for the correct tail number. If you never get TIS-B service while in a known service area, it likely means there is a misconfiguration of your ADS-B Out or ADS-B In device.

TIS Coasting Indication



TIPS AND TECHNIQUES

Several Types of TIS-B Traffic

TIS-B traffic can come from several sources depending on ownship equipment type, target equipment type and proximity to TIS-B ground stations. ADS-B, ADS-R and TIS traffic can all co-exist within the TIS-B data stream.

If an individual intruder displays “DGRD” in yellow in the traffic thumbnail, then that intruder is reporting its own GPS position accuracy (HFOM, VFOM) as outside normal operating limits.

NOTE**Traffic Source Selection**

An individual IFD can only display TIS-B (e.g. SkyTrax) or active sensor traffic (e.g. TAS600, Skywatch, etc) traffic at any given time. The choice to select the source is made at time of installation in the setup pages.

TIPS AND TECHNIQUES**Traffic Overlays in Single IFD Operations**

For those installations with a single IFD and more than one type of traffic source (e.g. TAS and a TIS-B SkyTrax100b/200) in the aircraft, Avidyne recommends wiring both traffic sources to the IFD so that the higher priority traffic overlay can display on the IFD and the lower priority traffic data can be streamed out of the IFD via WiFi for display on a compatible tablet/wireless device application.

The current display priority is TAS/TCAD, Other ARINC429 Traffic sensor, ADS-B SkyTrax.

NOTE**Dissimilar Traffic Data Not Shared Between IFDs**

Dissimilar traffic data sources (e.g. TAS data on one IFD and SkyTrax data on the other IFD) will not be shared between IFDs. Each IFD will display its own traffic data in this case.

SYNTHETIC VISION (SVS)

Some displays will have the capability of showing ADS-B traffic in a synthetic vision view.

In the case of an IFD550, the traffic can be shown in either egocentric or exocentric views. Any traffic in the scene will cast a shadow on the ground to help with judging distance and relative closure rate.

3D Traffic Symbology in SynVis Scene



WARNING-CAUTION-ADVISORY MESSAGE BAR

Approved displays will have a means of displaying status and error conditions. Avidyne IFD4XX/IFD5XX Navigators have a system of Caution/Advisory System (CAS) Messages that show a color coded message in the lower right corner of the display.



IFD SKYTRAX RELATED CAUTIONS

<p>Traffic Sensor Fault</p>	<p>No communication with traffic sensor</p>
<p>Contact a local dealer for service</p>	
<p>Traffic Sensor Fault</p>	<p>Traffic sensor has failed</p>
<p>Contact a local dealer for service</p>	
<p>Traffic Low 2:00 3NM</p>	<p>Traffic 2:00 3NM 800FT</p>
<p>The above alert is just an example. After "Traffic" will be either "Low" or "High", then the bearing in clock direction, then the distance in nautical miles This is a traffic advisory with bearing information. Establish visual contact with conflicting traffic in order to facilitate avoidance maneuvers as necessary.</p>	

**Traffic
Low 4NM**

Traffic 4NM -200FT

The above alert is just an example. After "Traffic" will be either "Low" or "High", then the distance in nautical miles. This is a traffic advisory with no bearing information. Establish visual contact with conflicting traffic in order to facilitate avoidance maneuvers as necessary.

**Traffic
12:00 3NM**

Traffic 12:00 3NM

The above alert is just an example. After "Traffic" will be the bearing in clock direction, then the distance in nautical miles. This is a traffic advisory with no relative altitude information. Establish visual contact with conflicting traffic in order to facilitate avoidance maneuvers as necessary.

Traffic 2NM

Traffic 2NM

The above alert is just an example. After "Traffic" will be the distance in nautical miles. This is a traffic advisory with no relative altitude information and no bearing information. Establish visual contact with conflicting traffic in order to facilitate avoidance maneuvers as necessary.

IFD SKYTRAX RELATED ADVISORIES

Datalink Receiver Fault	Broadcast Datalink receiver failure
Weather datalink will be unavailable	
Datalink <p> Stale	Broadcast <p> Age is greater than <x> minutes
The datalink product <p> has not been received for <x> minutes and is now considered stale. "Stale" periods vary with weather product.	
Datalink Data Not Rcvd	No <p>
No <p> products have been received. Timeout periods vary with weather product.	
Traffic Sensor Fault	Traffic sensor failed to start self test
If the problem persists, contact a local dealer for service.	
Traffic Sensor Fault	Traffic sensor altitude unavailable
If the problem persists, contact a local dealer for service.	
ADS-R/TIS-B Unavailable	Traffic Information Incomplete
The aircraft is not in view of an ADS-B ground station for at least 40 seconds or an ADS-B ground station is in view and is specifically reporting that your ADS-B Out signal is non-compliant. The advisory may be normal when descending out of coverage. If the advisory never clears, the most likely cause is that the SkyTrax is either inoperative or misconfigured. The ADS-R/TIS-B Unavailable message is also displayed on the traffic thumbnail.	

SOFTWARE UPDATES

With very few exceptions, all software inside the SkyTrax is capable of being updated via the micro-SD slot on the unit. Avidyne's position is that any shop that holds a repair station certificate, an A&P, or an Experimental Aircraft owner with log book signoff authority can perform the update. The person performing the update must follow the provided Service Bulletin explicitly and mail/fax/email back in the completed update sheet that is part of the Service Bulletin but Avidyne does not restrict this to just Avidyne Service Centers.

DATALOGS DOWNLOAD

Extensive data logging may be performed on the SkyTrax if an appropriate micro-SD card is inserted in the slot on the front of the unit. Data logs are typically only used for system troubleshooting and should only be done in coordination with Avidyne dealer or Customer Service support.

NOTE

Datalogs Usable But Avidyne Property

The contents of the data logs and the storage devices that record and store data remain the property of Avidyne. However, you are free to download and use the data for your own training and safety improvement purposes.

Service Hotline A hotline has been established to service questions or issues regarding Avidyne products. The U.S. Toll Free number is 1-888-723-7592.

Email Customer/product support issues can be emailed as well at pilotsupport@avidyne.com

When calling or emailing for product-related help, please have the following information available, if able:

- Customer Name/Account Information
- Aircraft tail number, IFD serial number, and software versions.
- A good description of the problem or question.
- A copy of your data logs.

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FCC APPROVAL AND CAUTIONS: THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE CONDITION THAT THIS DEVICE DOES NOT CAUSE HARMFUL INTERFERENCE. THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER’S AUTHORITY TO OPERATE THE EQUIPMENT.



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