FlightBox Pro User Guide

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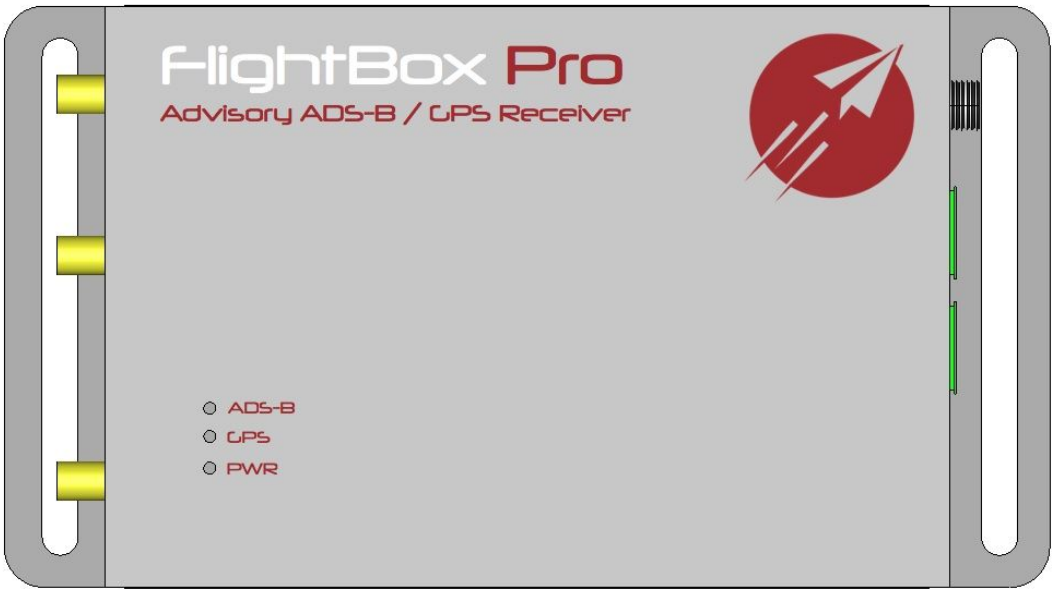

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Regulatory Notices

FCC Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FlightBox
FB1XP

Tested to comply With FCC Standards
Approved For Home Or Office Use

Contains FCC ID: 2ABCB-RPI32

FAA Notice

Pursuant to PS-AIR-21.8-1602, installation of the FlightBox Pro system is supplemental only; it is not intended as a replacement for or modification to an existing, approved, or required system.

Quick Start

FlightBox Pro is intended to operate seamlessly with EFB applications running on various smartphone and tablet platforms. Under most circumstances, FlightBox Pro will automatically power up and begin providing services as soon as the Avionics Master switch is turned on.

If correctly assembled and powered, FlightBox requires very little in the way of setup. To use your FlightBox:

1. Power the FlightBox Pro by turning on the Master and Avionics Master (if available) on your aircraft.
2. From your tablet or smartphone, connect to the wifi access point created by your FlightBox Pro. It will appear as “FlightBox-XXXXXXXXXX” (where the “XXXXXXX” value is the unique identifier for your system).
3. Launch your preferred EFB application.

Some EFB applications require no additional steps to enable ADS-B and GPS data from FlightBox. Others require some minimal configuration. Refer to the EFB-specific instructions below or to your EFB application vendor’s user guide or website for assistance. Note that the instructions may refer to either “FlightBox” or “Stratux” - either option will work.

Welcome To FlightBox

Thanks again for purchasing a FlightBox Pro ADS-B receiver. FlightBox is the value leader in ADS-B receivers and is currently being used by over 1500 pilots around the world. It is also the only ADS-B receiver built so that you can upgrade it as technology changes. We hope you enjoy using your FlightBox. If you have any questions, comments, or suggestions, please contact us.

How It Works

Step 1: FlightBox receives ADS-B data broadcasts from the network of FAA ground towers and from aircraft equipped with ADS-B Out.

Step 2: FlightBox converts the ADS-B data into an industry standard format called GDL-90 that virtually all Electronic Flight Bag (EFB) applications, Electronic Flight Information Systems (EFIS), and Multi-Function Displays (MFD) can understand and display.

Step 3: FlightBox forwards the data to your iPad or over a Wifi connection. (In the near future it will also be able to forward the data to EFIS / MFD devices over serial connections.)

There is very little setup to FlightBox. Just power it up, connect to it, and launch your EFB app.

Getting Help

If you find that you need help with your FlightBox, please start by reviewing the Frequently Asked Questions and Troubleshooting guides on our website.

Open Flight Solutions offers a growing library of video tutorials on our website. You can find them under Support.

For all technical support issues, please email: support@openflightsolutions.com. You may also call or text us at (816) 336-9447. Please note that email is generally the best option. When contacting support, please provide:

1. The version of the FlightBox software you are running. This is available from the web interface or from the mobile application.
2. The name and version of the EFB app or EFIS that you are using
3. The type and power rating of the power supply you are using
4. A detailed description of the issue you are experiencing

Most Important Things To Know

Here are a few things that you should know to get the most out of your FlightBox Pro:

1. You will not get weather data or other FIS-B services on the ground unless you happen to be very close (typically less than two miles) to an FAA ground tower. You will start to receive these services when your aircraft is high enough to establish a line-of-sight link to one or more FAA ground tower.
2. ADS-B traffic is advisory only and does not display 100% of the traffic in your vicinity. You are still responsible for seeing and avoiding traffic.
3. ADS-B weather is not truly “real-time” and can be delayed by as much as 15 minutes. Do not attempt to use ADS-B weather data for short term tactical decisions. In a rapidly changing weather scenario you could wind up in the wrong place at the wrong time.
4. Aviate. Navigate. Communicate. Then ADS-B. In that order.

Part 1: Using Your FlightBox

Overview

This section covers the basics of using your FlightBox Pro ADS-B receiver.

Requirements

To use FlightBox you will need the following:

- FlightBox ADS-B receiver
- Mobile device (tablet or smartphone)
- Electronic Flight Bag (EFB) application

Connecting To FlightBox

Tablets and smartphones connect with FlightBox using **Wifi**[1]. The FlightBox creates an access point (also known as a "hotspot") to which your mobile device connects. You will need to connect your device to the FlightBox network in the same way you connect with your home router or a coffee shop network.

> ✈ **PRO TIP:** FlightBox does *not* connect your mobile device to the Internet. If your device has a cellular data connection (3G / 4G / LTE) you will generally still be able to access websites and other Internet data while connected to the FlightBox wifi network. If it does not have cellular data service you will only be able to receive ADS-B data while connected to the FlightBox wifi network.

Connecting From iOS

1. Open the Settings application.
2. Select the Wifi option from the menu.
3. From the "Choose A New Network" list, select the FlightBox network.
4. Verify that the FlightBox-XXXXXXXX[2] network moves to the top and that there is a check mark next to the name.

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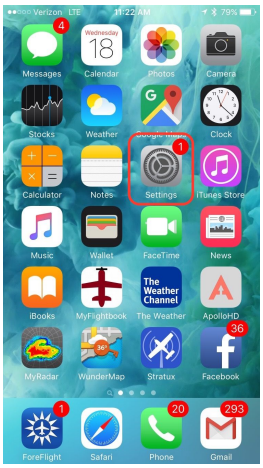
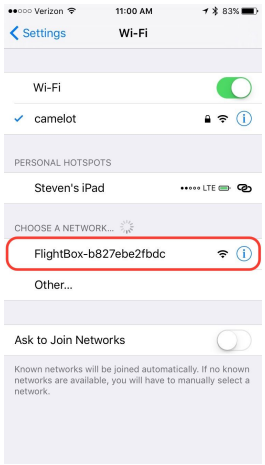
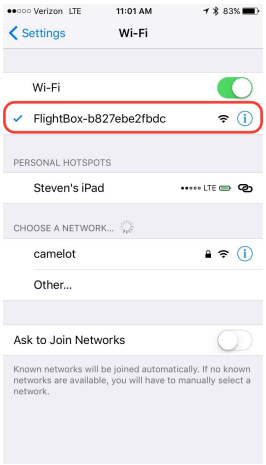
[1] FlightBox does not use Bluetooth.

[2] The SSID (wifi network name) will end in a 12 digit unique ID. If you purchased the assembled version of FlightBox this value will be printed on the bottom of your system.

Step 1	Step 2	Step 3	Step 4
			

Connecting From Android

1. Open the Settings application.
2. Select the Wifi option from the menu.
3. From the list of available networks, select the FlightBox-XXXXXXX network.
4. Confirm your selection by tapping “Connect” when prompted.
5. Verify that the FlightBox-XXXXXXX network moves to the top and is marked as “Connected”

Your mobile should now be connected to the FlightBox. In the next section you will verify that the connection is working properly.

> ✈ **PRO TIP:** Recent versions of iOS will display “No Internet Connection” while connected to the FlightBox network. This is normal. You will also not see the Wifi signal strength meter in the status-bar at the top of the screen. Also normal.

Verifying Connectivity

Before you begin using FlightBox with your EFB application, verify that a connection has been established between your mobile device and the FlightBox. (Note: You only need to do this the first time you use FlightBox.)

Verifying With The FlightBox Web Interface

FlightBox includes an onboard web server and web user interface that allows you to check the status of your system and to make changes to the configuration. Most users will not need to

access this interface unless they make a change to their system or need to check the system status for troubleshooting purposes.

To verify operation using the web interface, simply open the web browser on your mobile device and direct it to: 192.168.10.1

This will open the web interface's status page. If the page loads and shows Status as "Connected" then you are ready to begin using your FlightBox. If the page does not load or if the Status indicator shows "Disconnected" then you need to troubleshoot your connection.

For more information on the FlightBox web interface, please see Appendix D.

Troubleshooting Connection Issues

Here are a few things to try if you are not able to confirm connectivity:

- Check to make sure the FlightBox is powered on. The status indicator lights on the box should be on. If not, check your power supply. Remember: FlightBox requires a 2+ amp supply to operate.
- Check the wifi settings on your mobile device to make sure you are connected to the FlightBox wifi network. If you have turned the FlightBox off and back on, your mobile device may have re-connected with your home / office / airport wifi network.
- Try connecting from a different device. If the second device connects properly, try rebooting the first device.

AHRS Configuration / Calibration

To use the AHRS feature of FlightBox Pro you will need to set the system orientation. You may also need to adjust the "Level" point and / or calibrate the gyroscopes. The system orientation only needs to be set once. Level and gyro calibration may need to be done occasionally as the sensors are somewhat sensitive to changes in temperature and the center of gravity of your aircraft.

Configuring The System Orientation

Note: setting the system orientation requires you to rotate the FlightBox Pro so that the side of the box that faces "forward" (i.e. in the direction of flight) faces up. It is easiest to do this after wiring the FlightBox Pro into your electrical system but before securing it your airframe.

The AHRS feature of FlightBox Pro can be configured to provide an accurate attitude estimate as long as one axis of the unit is aligned squarely (within 1°) of either major axis of the aircraft.

You will need to set the orientation prior to using the AHRS feature for the first time. To set the orientation:

1. Use a piece of tape and a marker to indicate the direction of flight (the “forward” direction) on the FlightBox Pro.
2. Power up the system, connect to the Wifi network it creates using a computer or mobile device.
3. Open a web browser and direct it to “192.168.10.1” (do not enter the quotes in the address bar).
4. From the Status page, use the Menu option to navigate to the Settings page.
5. Click / tap the “Set AHRS Sensor Orientation” button.
6. Follow the directions provided and rotate the box so that the direction you marked as “Forward” in the first step is pointing up.
7. Click / tap the “Set Forward Direction” button.
8. Return the FlightBox Pro to its mounted configuration (so that the arrow is pointing forward) and click / tap the “Done” button.

Verify that the orientation is correct by using the Menu option to navigate to the “GPS / AHRS” display page. The attitude indicator display should be roughly “straight and level” (pitch may be off by several degrees). Move the box to simulate pitch and roll motions and verify that the attitude display matches the motion.

If the attitude display is incorrect, re-run the orientation process. For more information please see the video on setting the orientation on the Open Flight Solutions support page. Go to Support => FlightBox Video Tutorials => Setting the AHRS Orientation.

Adjusting The Level Point

To set or adjust the level point - best done in flight, as the “level” ground configuration often does not match the actual level attitude while in the air - do the following:

1. Power up the system, connect to the Wifi network it creates using a computer or mobile device.
2. Open a web browser and direct it to “192.168.10.1” (do not enter the quotes in the address bar).
3. From the Status page, use the Menu option to navigate to the “GPS / AHRS” page.
4. Establish a straight and level orientation.
5. Tap / click the “Reset / Level” button.

This will adjust the level point used by the AHRS system. Both the attitude display on the “GPS / AHRS” page and in your EFB application should immediately adjust to the new level point.

Repeat this process to adjust for changes in the level attitude of your aircraft - similar to adjusting the “lubber line” on a traditional attitude indicator. Note that some EFB applications

have their own level point - you typically want to adjust the level point in either the app or on the FlightBox. Adjusting both can result in unexpected results.

Calibrating The Gyroscopes

The microelectromechanical (MEMS) gyroscopes in the FlightBox Pro are sensitive to changes in the center of gravity of your aircraft. They can also be sensitive to changes in operating temperature as the system warms up. If you notice either “sag” or “float” in the attitude display, you may need to run the calibration routine.

1. Power up the system, connect to the Wifi network it creates using a computer or mobile device.
2. Open a web browser and direct it to “192.168.10.1” (do not enter the quotes in the address bar).
3. From the Status page, use the Menu option to navigate to the “Settings” page.
4. Tap / click the “Calibrate Gyros” button.
5. Establish a straight and level orientation.
6. Tap / click “Calibrate”.

Typically, this process needs to be run only once unless the CG of the aircraft changes significantly due to fuel or passenger load.

Using FlightBox With EFB Applications

FlightBox is compatible with many different EFB applications. This guide is intended to help you get FlightBox connected to your app. For detailed instructions on configuring various ADS-B-related features of the app, ***please see your EFB app developer’s documentation***.

> ✈ **PRO TIP:** If you have multiple EFB apps on one device and switch from one to another you may not receive ADS-B data on the second app. In some cases the ports used to transfer data are locked by the first application, making it impossible for the second app to access them. To fix this, force close / terminate the first app, then switch to the second.

Below are configuration tips for several of the more popular EFB applications. Please refer to your EFB vendor’s documentation for details. Please also see the Support section of the Open Flight Solutions web site for additional information.

Aerovie

Configuration

Aerovie (formerly Aerovie Reports) automatically recognizes the ADS-B data stream from FlightBox. No specific configuration actions are required.

Verifying Operation

When Aerovie detects ADS-B data input it adds a status icon to the top of the map. The icon looks like an antenna sending or receiving signal. Tap the icon and the ADS-B status overlay will appear. You should see some key stats on the main page. Tap the question mark icon for additional details.

If you do not see the ADS-B status icon, check your connection to the FlightBox wifi network. Also verify that you do not have any other EFB applications running in the background.

App-Specific Quirks

Aerovie gives you fine-grained control over the overlays which appear on the map. There are separate options for “Radar” (which is radar data received over the Internet from the Aerovie servers), “ADS-B Radar Local” (which is ADS-B data received from local / low-power towers), “ADS-B Radar National” (which is ADS-B data received from high-power towers). If you don’t see data you expect, you may need to enable the ADS-B-specific overlay.

App Settings

To display ADS-B information, tap the “Overlays” drop-down menu, then tap the “ADSB” sub-menu. Select the items you want to display on the map. Use the heart icons to add items to the Favorites menu.

Avare

Configuration

Before you will be able to use FlightBox with Avare, you will need to install the “Avare External I/O Plugin” from the Google Play store. This small app acts as a bridge between the FlightBox and Avare.

Once you have the External I/O Plugin installed, you will need to configure it:

1. Launch the Avare External I/O Plugin app.
2. From the connection type drop down (the down-arrow next to the word “Bluetooth” at the top of the screen), select “WIFI”.
3. Change the port value (the number) to 4000.
4. Check the “Listen” box.
5. Return to the home screen (leaving the plugin running) and launch Avare.

Note that you will need to do this every time you want to use Avare with FlightBox.

Verifying Operation

In the Avare External I/O Plugin, you should see incoming ADS-B messages in the black area below the Wifi configuration.

In Avare you should see ADS-B traffic.

App-Specific Quirks

The plugin is perhaps the biggest quirk. Remember to terminate it if you want to launch another EFB app, otherwise it will hold onto the port used for data, preventing the new app from receiving anything.

Droid EFB

Configuration

You will need to configure DroidEFB to recognize the SSID (network name) of your FlightBox. This allows the app to automatically listen for ADS-B data when it sees that the mobile device on which it is running is connected to that network. To configure this:

Tap the “more options” icon (three dots in a vertical line).
Select “Preferences” from the menu.
Select “Device Settings” from the main menu on the left-hand side of the screen.
Select “Stratux ADS-B SSID”
Tap “Current”
Tap “OK”
Use the “Back” button to return to the map display.

Verifying Operation

When it receives the ADS-B data stream, DroidEFB automatically displays the number of ADS-B traffic targets, the age of radar and other data at the top of the map. If your FlightBox has a GPS, DroidEFB will prompt you to select between the tablet’s internal GPS (if any) and the GPS data from “Stratux”.

ForeFlight

Please Note: Open Flight Solutions and FlightBox are not affiliated with or endorsed by ForeFlight. Interoperability has been independently confirmed by third party users of the software.

Configuration

ForeFlight automatically recognizes the ADS-B data stream from the FlightBox. No specific configuration actions are required.

Verifying Operation

You can verify that ForeFlight is receiving data from the FlightBox by selecting the “Devices” option from the menu. (Access the menu from the “More” tab in the bottom, right-hand corner on the iPad version or from the “Menu” button on the iPhone version.)

You should see a device called “ADS-B” with a status indicator reading “Connected”. If you do not see the “ADS-B” item or if it shows as “Disconnected”, follow the connectivity troubleshooting steps above.

If you tap on the “ADS-B” device, the app will display a status page that provides statistics about the connection.

App-Specific Quirks

You may notice that the Traffic Update (978/UAT) shows activity while the Traffic Update (1090) does not, even though you have a dual-band system and the FlightBox app or web interface shows 1090 traffic. *This is normal.* FlightBox passes data to ForeFlight using an interface that was originally created for a FreeFlight UAT receiver. As a result, ForeFlight thinks all data coming across that interface is UAT data. Rest assured that the FlightBox is forwarding all traffic to ForeFlight.

ForeFlight has two radar display formats: Composite and Lowest Tilt. Only the Composite layer is available over ADS-B. If you have Lowest Tilt selected you will not see radar updates received via ADS-B.

ForeFlight intermittently displays a label indicating the number of ADS-B towers available. The label, which appears in the upper left-hand corner of the map, appears and disappears in a seemingly random way. You can always find the number of available towers from the ADS-B status page under Devices.

The AHRS features of FlightBox Pro cannot be used to drive the Synthetic Vision feature of ForeFlight.

App Settings

To display various ADS-B information, use the map layer control to enable the various elements you want to see. Some of the more important layers include Traffic, Radar (Composite), TFRs, and AIRMETS/SIGMETS. (The last two are mutually exclusive - you have to pick one or the other.)

Selecting “Flight Category” in the layer list will enable METAR status display on airports that report METARs.

Winds and temps aloft are displayed in the “Winds” tab of various airport detail pages. You can also enable wind barbs on the map by selecting “Winds Aloft” from the layer list.

iFly GPS

Configuration

FlightBox works with the iFly apps for iOS and Android as well as the wifi-enabled iFly hardware devices (720, 740). Once you have the device connected to the FlightBox wifi network you will need to enable ADS-B reception. To do this:

1. Select “Menu” from the main screen.
2. Select “About” from the menu.
3. Select “Connected Devices” from the About menu.
4. Select “Stratux/FlightBox” from the Wireless Device Options menu.
5. The Connected Devices list should show “Stratux/FlightBox ADSB Receiver”
6. Click “Close” to return to the main screen.

Verifying Operation

Repeat the steps above to display the Connected Devices status box. (If you have multiple connected devices, select “Stratux/FlightBox ADSB Receiver” from the list of devices.) If the FlightBox is properly connected status window will show statistics for the connection. If you are on the ground and not receiving ADS-B signals, you should still see the “Heartbeat” counter incrementing.

App-Specific Quirks

By default, iFly hides traffic that is distant. If you want to see all traffic, regardless of its distance, you can enable it as follows:

1. Select the “Setup” option.
2. Select the “Alerts and Warnings” option from the Setup menu.
3. Select the “Traffic Alerts” option from the Alerts and Warnings menu.

You will need to go into both the “Distance Visibility” and “Altitude Visibility” options and select “Unlimited”

App Settings

To display various ADS-B information, use the “Map Mode” menu to enable data elements including METAR/TAF, NEXRAD, AIRMET/SIGMET, and Traffic.

Part 2: FlightBox and ADS-B

FlightBox receives weather, traffic and (optionally) location information and forwards that information to a tablet or smartphone application. Using FlightBox is very simple (see the quick start guide above). However, FlightBox is built on several key concepts which pilots should understand.

ADS-B Glossary

Here are a few of those key terms and concepts:

ADS-B - this refers to the FAA's "Automatic Dependent Surveillance - Broadcast", part of the NextGen™ airspace management program that the agency has been working to roll out since the beginning of the century. Its ultimate goal is to replace traditional radar with a more precise system that will allow for tighter separation between aircraft. FlightBox receives and processes ADS-B information into a format that your EFB application can use.

ADS-B In - equipment that receives, processes, and in some cases displays ADS-B data including weather (from FAA ground towers) and traffic (from FAA ground towers and directly from aircraft equipped with ADS-B Out). FlightBox is an ADS-B In system.

ADS-B Out - equipment installed in an airplane that transmits position information to Air Traffic Control (via receivers on FAA ground towers) and to nearby aircraft. ADS-B Out systems must meet FAA certification standards and must be permanently installed. FlightBox is *not* and ADS-B out system.

Wifi - a wireless networking technology supported by all modern computers and mobile devices. FlightBox creates a wifi network to which your tablet or smartphone connects. This is how the data is delivered to your device and EFB application. The FlightBox looks just like any other access point (also know as a "hot spot") to your mobile device.

Dual Band - this refers to ADS-B receivers built to receive from both of the two radio systems used for ADS-B in the United States. Dual band systems are able to receive weather and traffic information on the UAT network and additional traffic data information the 1090-ES network.

Single Band - refers to any ADS-B receiver which is only built to receive on one of the two ADS-B networks. In the United States, single band systems are built to receive on the UAT frequency. Outside of the United States, single band systems are built to receive 1090-ES data.

UAT - stands for "Universal Access Transceiver" - one of two ADS-B radio standards used in the United States. UAT data is sent on 978 MHz. FAA ground towers transmit weather and

some[3] traffic information over UAT. Light aircraft that operate below 18,000' may use UAT for ADS-B Out.

1090-ES - the second of two ADS-B radio standards. 1090-ES is the international standard and is used worldwide. In the United States it is required for aircraft that operate above 18,000' and those that travel internationally to destinations that require ADS-B. 1090-ES only provides traffic information.

FIS-B - stands for Flight Information Service - Broadcast. This is the collection of data uplink "products" sent over UAT by FAA ground towers. It includes a number of weather products (NEXRAD, METARs, TAFs, etc.), NOTAMs, and airspace usage data (TFRs, special use airspace updates).

TIS-B - stands for "Traffic Information Service - Broadcast". This service, available on both UAT and 1090-ES, transmits a subset of traffic targets observed by ATCs secondary surveillance radar (aka "transponder radar"). See the section on ADS-B Traffic for details on what is included in the TIS-B broadcast.

ADS-R - stands for "Automatic Dependent Surveillance - Rebroadcast". This service, available to aircraft equipped with ADS-B Out and either UAT or 1090-ES "In" provides traffic information from the "other" system - UAT In aircraft receive information about nearby traffic targets equipped with 1090-ES "Out", while 1090-ES "In" aircraft receive information about UAT "Out" targets.

WAAS - stands for "Wide Area Augmentation System", an enhancement to the Global Positioning System (GPS) which allows GPS receivers to correct for various errors resulting in a very precise position. WAAS-augmented GPS is currently the only acceptable position source for ADS-B Out.

USB - a popular standard for connecting and powering computing devices including tablets and smartphones. FlightBox uses USB power to operate. USB is always 5 volts, but the available amperage depends on the power source. FlightBox requires a USB power source that can provide at least 2 amps.

ADS-B Traffic Demystified

ADS-B weather (and other FIS-B products) are easy to understand: the FAA constantly broadcasts data from the network of ground towers and any receiver in range gets an accurate, up-to-date view of the local, regional and national conditions. ADS-B traffic, on the other hand,

[3] ADS-B traffic is complicated. See the section on traffic for a full explanation of its capabilities and limitations.

is more complicated. There are actually three kinds of ADS-B traffic: direct (ship-to-ship), TIS-B, and ADS-R.

Direct ADS-B Traffic

Direct, as you might guess, is received directly from other aircraft in the area. If you have a dual band receiver you will be able to receive traffic information from any aircraft equipped with ADS-B Out. Today that is a rather limited number of airplanes, but as we get closer to 2020 the number will increase dramatically. In the long run, direct ADS-B traffic will be the primary source of traffic information.

ADS-R Traffic

ADS-R is a bit of a compromise and is specific to the United States. When the FAA decided to offer two separate ADS-B systems, they needed a way to allow users of one system to view traffic data provided by users of the other system. To do this, they require each ADS-B Out message to indicate what (if any) ADS-B In capabilities the aircraft supports. If, for example, an aircraft only supports UAT for both In and Out, then the ground towers will relay 1090-ES traffic information over the UAT link.

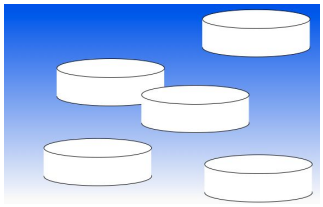
To receive ADS-R, you need to have ADS-B Out and you need to have your ADS-B transmitter configured to indicate that you only support ADS-B In on one of the two systems (UAT or 1090-ES). If your ADS-B Out messages indicate that you support ADS-B In on both systems, you will not receive ADS-R: the towers expect you to receive all ADS-B traffic information directly.

TIS-B Traffic

The TIS-B service broadcasts a subset of the traffic picked up by ATC radar. Here's where it gets complicated. The data broadcast by TIS-B is not simply a complete copy of the traffic in the neighborhood of a given ground tower. It is filtered and limited based on a number of factors. First, TIS-B does not include any traffic targets that are ADS-B Out equipped. Second, the broadcasts only include traffic operating inside the "hockey pucks" of aircraft equipped with ADS-B Out.

The software in the FAA ground towers automatically defines a puck for each "client" aircraft - each aircraft that is providing valid ADS-B position data. These pucks are 30 miles in diameter and 3,500 feet tall. The client aircraft is centered within the puck, and the software in the towers relays any Mode C (radar) targets visible within the volume of the puck.

In any given area there are likely multiple ADS-B Out "clients" which results in multiple pucks. Some of these overlap:



As a result of this selective process, the traffic data available to an aircraft that is not a client (i.e. not equipped with ADS-B Out) will not receive a complete view of TIS-B targets in their area. In fact, the view provided by their ADS-B In receiver may show irrelevant targets a long way off while not presenting a much closer target that presents a potential conflict.

ADS-B TRAFFIC IS ADVISORY ONLY - YOU MUST STILL SEE AND AVOID TRAFFIC

Even if your aircraft is equipped with ADS-B Out, you will not always receive a complete picture of traffic via ADS-B. ADS-B will not display any aircraft that are not either equipped with ADS-B Out or visible to ATC radar. Aircraft without electrical systems will not be displayed. Aircraft too low for ATC radar to receive will not be displayed.

Traffic Display

Each EFB application and/or EFIS displays traffic in a slightly different way. Most follow ICAO / FAA standards which use a set of

ADS-B Traffic Ghosts

It is common to receive “false positive” traffic alerts / targets which are caused by a limitation of the ADS-B system. These often appear suddenly, usually in very close proximity to your current position. This happens when the delay between the time you are picked up by ATC radar and the time the data arrives at your display app makes it difficult or impossible to positively filter out the “ownship” target.

In other words, the position for the target is just far enough away from your actual position that the software cannot be sure that it is you, so in an effort to err on the side of safety it displays the target and (often) an alert. If you see such a “ghost” image, do not panic but do not ignore it either. Take a moment to verify that there are no other aircraft in your immediate vicinity before disregarding the alert.

Appendix A: Troubleshooting

Please see the Troubleshooting page under “Support” on openflightsolutions.com. Please also review the Video Tutorials section for a walk-through of various FlightBox features and functions.

Appendix B: Warranty

Please see: https://www.openflightsolutions.com/warranty/