Sentry

Pilot's Guide

ForeFlight
A Boeing Company

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Received traffic information is to be used as an aid to situational awareness and is merely supplemental and advisory in nature.

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CONTENTS

WARRANTY INFORMATION 3
INTRODUCTION 6
Mounting Sentry 7
Connecting to Sentry 8
Local Network Setting 8
Firmware Updates 9
SENTRY 10
Power Button 11
LED Status 11
Connecting to Sentry 12
Sentry Network Name (SSID) 12
WPA2 Security 13
Battery 13
SENTRY MINI 14
Powering Sentry Mini 15
LED Status 15
Connecting to Sentry Mini 16
Sentry Mini Wireless Network 16
SENTRY PLUS 17
Sentry Plus Features 17
Power Button 18
LED Status 18
OLED Display 19
OLED Views 20
Battery 21
Universal USB-C Charging 21
Auto Power 21
Connectivity 22
Sentry Plus Network Name (SSID) 22
WPA2 Security 23
Wi-Fi Client Support 24
Simultaneous Data Feeds 25
Accelerometer (g-Load) 26
Flight Data Recorder 28
Manually Importing Track Logs 28
FLARM 32
ADS-B TRAFFIC 33
Traffic Icons 34
Traffic Alerts 35
Synthetic Vision 35
Hide Distant Traffic 36

Traffic Information Service Broadcast (TIS-B) 37
How TIS-B is received 38
ADS-B and TIS-B Differences 38
ADS-B Ownship 39
False Traffic Alerts 40
ADS-B WEATHER 41
ADS-B Ground Based Towers 41
Tower Location on Map 42
FIS-B Tower Tiers and Look-Ahead Range 42
Weather Replay 44
ADS-B Map Layers 44
ForeFlight Pack 45
Packing with Sentry 46
CONUS and Regional NEXRAD 47
Animated ADS-B Radar 48
Cloud Tops (ADS-B) 49
Icing (ADS-B) 50
Turbulence (ADS-B) 51
Freezing Lvls (ADS-B) 52
AIRMETs, SIGMETs, CWAs 53
PIREPs 54
Lightning 55
METARs 56
TAFs 56
SUA 57
NOTAMs 57
Winds & Temperatures Aloft 59
WAAS GPS 60
Sentry GPS Accuracy 60
Troubleshooting GPS 61
AHRS 62
Mounting Location 63
Calibrating AHRS 64
Automatically Calibrating AHRS 64
CARBON MONOXIDE 66
CO LEDs 66
ForeFlight Mobile Alerts 66
Alarms 67
CO Alarm Test 67
BAROMETER 68

INTRODUCTION

Sentry portable receivers are compact, powerful devices that deliver real-time weather, traffic, WAAS GPS, and more to ForeFlight Mobile. Sentry receivers work exclusively with ForeFlight Mobile on your iPad and iPhone and can connect to five devices simultaneously. For additional device details, refer to the table below.

Features	Sentry Mini	Sentry	Sentry Plus
Dual-band ADS-B Weather & Traffic	✓	✓	✓
WAAS GPS	✓	✓	✓
Weather Replay	✓	✓	✓
Internal Battery		✓	✓
Pitch and Roll Data (AHRS)		✓	✓
Barometer		✓	✓
CO Sensor		✓	✓
CO Alarm		✓	✓
Flight Data Recorder			✓
FLARM Receiver			✓
Wi-Fi Client Support			✓
Auto On/Off			✓
Accelerometer (g-Load)			✓
OLED Display			✓
Universal USB-C Charging			✓

Mounting Sentry

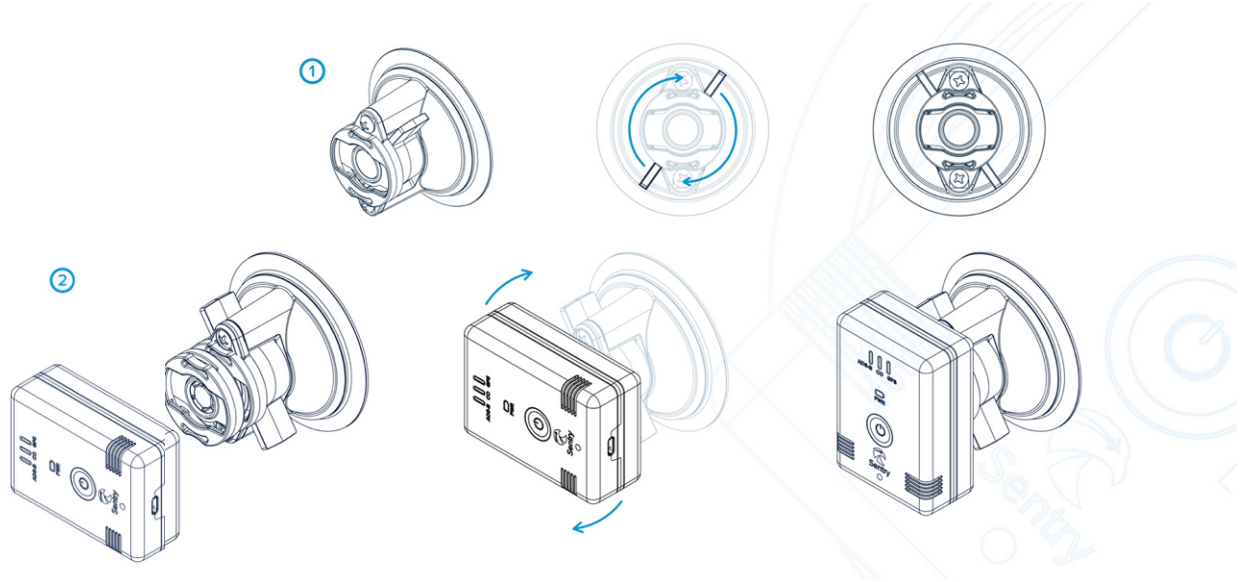
Sentry, Sentry Mini, and Sentry Plus can be mounted with the provided RAM mount. RAM mount includes a quick release that allows you to detach the receiver while leaving the mount in place. For best results, mount your receiver vertically on a side window where it can have an unobstructed view of nearby aircraft and ADS-B ground towers.

If no windows are available, place the receiver on a level, flat surface with the LED indicators facing towards the nose of the aircraft. Aircraft structure can block weather and traffic signals. If traffic targets are missing from ForeFlight or if you're unable to receive ADS-B weather, try moving the receiver in the cockpit to obtain a better signal.

Do not leave your receiver or the mount in an aircraft for extended periods of time when temperatures are expected to exceed 90º F.

To mount Sentry, Sentry Mini, or Sentry Plus,

1. Place the RAM mount on the window with the screws aligned vertically and rotate the tabs on opposite sides of the mount clockwise until they snap into place.
2. Attach Sentry to the RAM mount by aligning the quick release adapter on the rear of the unit with the slot in the RAM mount. Rotate the receiver clockwise until it snaps in place.



Mounting Sentry with included RAM Mount

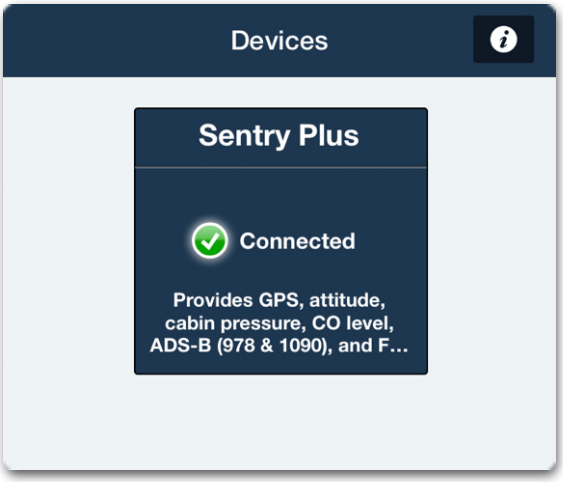
Connecting to Sentry

Whether you're connecting to Sentry, Sentry Mini, or Sentry Plus, start by powering the device on. Sentry and Sentry Plus can be powered on by holding the power button for approximately two seconds until the LEDs illuminate. Power Sentry Mini on by connecting the provided USB-C cable to a 5 volt, 2 amp power source.

Once powered on, Sentry receivers create their own wireless network. Open your iPad or iPhone **Settings** app and select **Wi-Fi**.

Locate Sentry's wireless network in the *Other Networks* section and tap to connect.

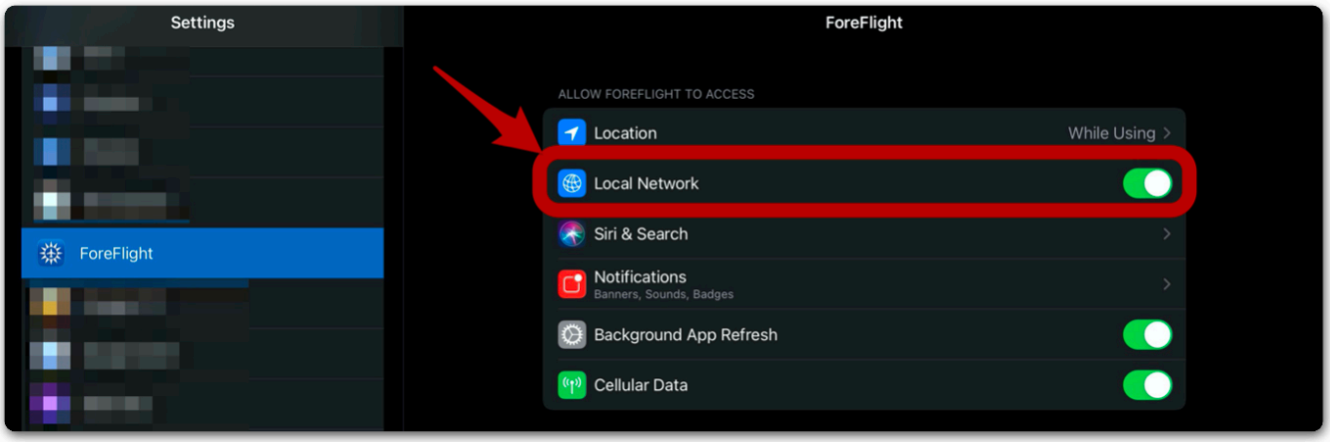
Once the iPad or iPhone is connected to Sentry, open ForeFlight Mobile and select **More** > **Devices** to ensure the Sentry tile appears. If the Sentry tile does not appear, verify the Wi-Fi connection and ensure Local Network settings are enabled.



Sentry Plus Device Tile

Local Network Setting

Devices with iOS 14 or later require special permission to connect to external devices like Sentry. If Sentry does not appear in ForeFlight, open the iPad/iPhone Settings app and select **ForeFlight** from your list of installed apps. Verify the **Local Network** Setting is enabled.

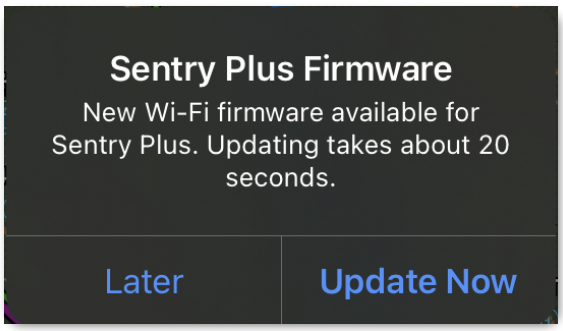


Local Network Setting must be enabled to use Sentry

Firmware Updates

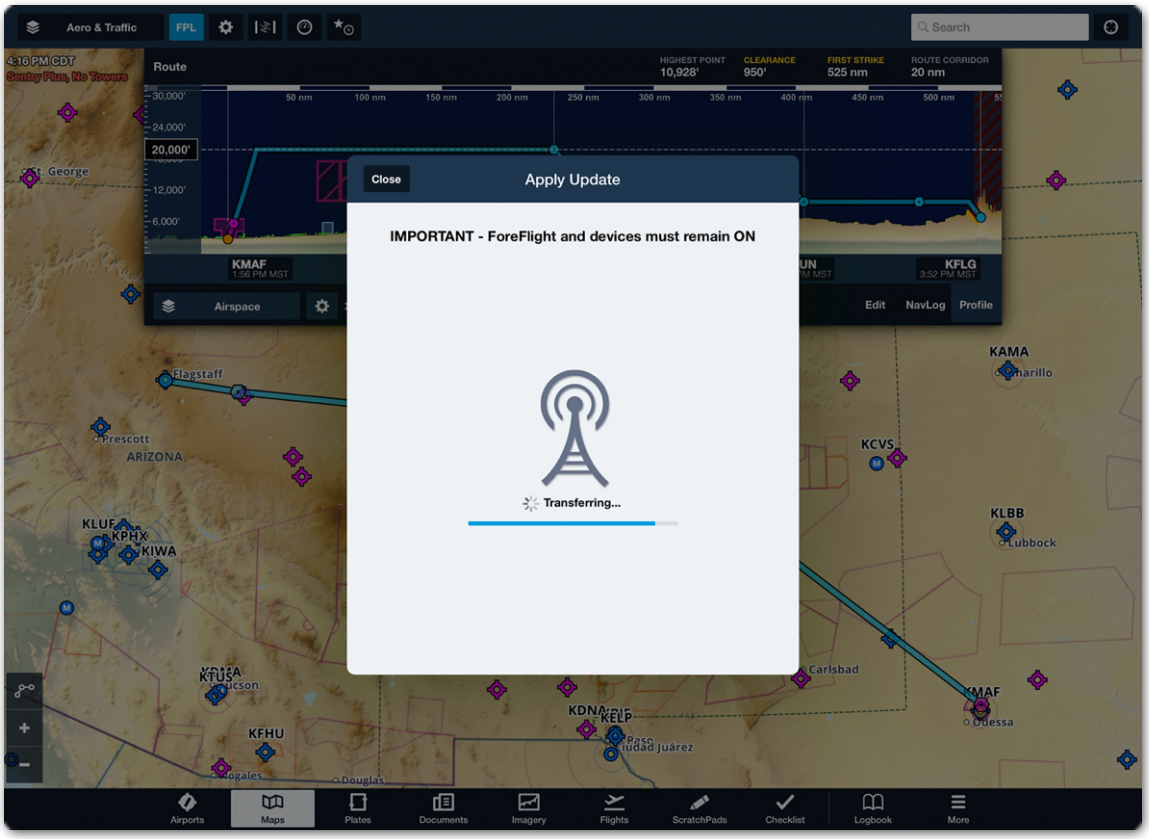
Sentry firmware updates are provided by ForeFlight. If updated firmware is available for your Sentry, Sentry Mini, or Sentry Plus, ForeFlight will prompt you to update the firmware. If you do not receive a prompt to update your firmware, ForeFlight has determined you already have the latest firmware installed.

If a firmware update is postponed, ForeFlight will *not* prompt you to update the next time you connect. Postponed firmware updates can be accessed from the Sentry Device page by selecting **More** > **Devices** and tapping the Sentry tile.



ForeFlight Mobile Firmware Update Prompt

Sentry and ForeFlight must remain on while firmware is updated. As firmware is being updated, ForeFlight displays a progress bar. Firmware update typically take less than a minute to install.



Firmware update being installed

SENTRY

Sentry is the original device designed for ForeFlight to deliver real-time weather, traffic, GPS, and more. Sentry is equipped with a built-in rechargeable battery capable of 12 hours of use. Sentry creates a wireless network to connect up to five devices simultaneously.

Sentry Features

Tap a Sentry feature to learn more.

- **Dual-Band ADS-B Traffic**
- **ADS-B Weather**
- **Weather Replay**
- **Carbon Monoxide (CO) Sensor**
- **Attitude Heading Reference System (AHRS)**
- **12 Hour Rechargeable Battery**
- **Barometer**

Power Button

Sentry has a single button located in the center of the device. Press and hold the button for approximately two seconds to power Sentry on or off. When powered on, the ADS-B, CO, GPS, and PWR LEDs are activated.

LED Status

Sentry has four LEDs. The ADS-B, CO, and GPS LEDs are activated when Sentry is powered on. The PWR LED is activated when Sentry is charging or powered on. LED brightness is controlled in Sentry settings by selecting **More** > **Devices** > **Sentry**.

Auto Brightness automatically adjusts LED brightness based on ambient light.

Sentry LEDs

NOTE: Any data received from an ADS-B tower (including tower information) is considered reception. A yellow or green ADS-B LED does not guarantee reception of FIS-B data.

Connecting to Sentry

To connect to Sentry, power the device on by holding the power button for approximately two seconds. When powered on, Sentry creates its own wireless network capable of connecting to five devices simultaneously.

With Sentry powered on, open the iPad/iPhone **Settings** app and select **Wi-Fi**. Locate Sentry's wireless network and tap to connect. Sentry's network name is "Sentry_" followed by a sequence of random letters and numbers (e.g. Sentry_AV53).

Once you connect to Sentry, your iPad and iPhone will automatically reconnect, provided the following conditions are met:

- Sentry is powered on.
- iPad/iPhone Wi-Fi is enabled.
- Sentry network name and password have not changed.
- iPad/iPhone is not already connected to another network.
- Auto-Join is enabled in iPad/iPhone Wi-Fi > Sentry settings.

Sentry Network Name (SSID)

The default Sentry network name is generic (e.g., Sentry_AV53). The network name can be changed if desired. Wireless network names must be unique and between 1 and 32 characters. The network name may contain only letters, numbers, spaces, and underscores.

How to change the network name

To change the wireless network name (SSID), select **More** > **Devices** > **Sentry** > **Sentry Network**. Tap the SSID field and enter a network name between 1 and 32 characters. Tap **Done** when complete. Once complete, reboot Sentry for the changes to take effect.

How to hide the SSID broadcast

If you don't want Sentry to broadcast its network for all devices to see, you can disable the SSID broadcast. Disabling the SSID broadcast hides the network from devices that have not yet connected to Sentry.

To hide the Sentry network, toggle the **SSID Broadcast** off in Sentry settings on the Devices view or Map Settings. Once your iOS device has connected to Sentry, it will automatically reconnect when the device is powered on, provided auto-join was enabled in Wi-Fi > Sentry settings. To connect a *new* device to Sentry with the SSID broadcast disabled

1. Open **Wi-Fi** settings on your iPad/iPhone.
2. Select **Other…** from the OTHER NETWORKS section.
3. Manually enter the Sentry network name (SSID) and password (if applicable).

WPA2 Security

Sentry does not have a passcode by default. A passcode can be assigned from the Maps Settings or Devices view. To assign a passcode,

1. Select **More** > **Devices** > **Sentry** > **Sentry Network**.
2. Tap the **WPA2 Security Enabled** toggle.
3. Tap **New Passcode...**
4. Enter a passcode between 8 and 63 characters. The WPA2 passcode may only contain letters, numbers, spaces, and underscores. WPA2 passcodes are case sensitive.
5. Tap **Done**.
6. Restart Sentry by holding the power button for two seconds to power it off.
7. Open the iPad/iPhone Settings app.
8. Select Wi-Fi settings and connect to Sentry using the new passcode.

Resetting a passcode (factory reset)

If you're unable to connect to Sentry with WPA2 security enabled, perform a *factory reset* to remove the passcode. To restore Sentry to factory settings,

1. Power Sentry on.
2. Press and hold the power button until the LEDs flash white (approximately ten seconds).
3. Power Sentry on.
4. Open the iPad/iPhone Wi-Fi settings and connect to Sentry.

Battery

Sentry is equipped with a single rechargeable battery. The battery is not designed to be removed or replaced. Sentry exclusively supports USB 5V (volt) 2A (amp) chargers. Sentry will not charge if connected to a charger that delivers more power than it is designed to accept.

When charging, the Sentry power light is blue. It can take up to 12 hours to charge a depleted Sentry battery. Sentry's battery percentage can be viewed in ForeFlight Mobile.

To check Sentry battery percentage

1. Connect your iPad/iPhone to Sentry.
2. Disconnect Sentry from the charger (if applicable).
3. Open ForeFlight Mobile > **More** > **Devices** > **Sentry.**
4. Scroll to the *Battery* field to view battery percentage.

SENTRY MINI

Sentry Mini is an entry-level, compact ADS-B receiver measuring 3.3 x 2.3 x 0.6 inches and weighing 44 grams. Sentry Mini provides real-time weather, traffic, and WAAS GPS to ForeFlight Mobile.

Sentry Mini does not have an internal battery. Power Sentry Mini on by connecting to a portable or aircraft panel 5-volt power source. Sentry Mini creates a wireless network that can connect up to five devices simultaneously. Sentry Mini requires ForeFlight Mobile version 11.5 or later.

Sentry Mini Features

Tap a Sentry Mini feature to learn more.

- **Dual-Band ADS-B Traffic**
- **ADS-B Weather**
- **WAAS GPS**
- **Weather Replay**

Powering Sentry Mini

Sentry Mini is not equipped with an internal battery. To power Sentry Mini, plug the provided USB-C cable into a portable or aircraft 5V (volt) 2A (amp) power source.

When Sentry Mini is powered on, the GPS and ADS-B LEDs illuminate and Sentry Mini creates a wireless network.

Sentry Mini USB-C Cable (included)

LED Status

Sentry Mini has two LEDs. The ADS-B and GPS LEDs are activated when Sentry Mini is powered on and will display red, yellow, or green as ADS-B and GPS reception change.

NOTE: Any data received from an ADS-B tower (including tower information) is considered reception. A yellow or green ADS-B LED does not guarantee reception of FIS-B data.

Connecting to Sentry Mini

To connect to Sentry Mini, power the device on by connecting a 5-volt 2 amp power source. When powered on, Sentry Mini creates its own wireless network capable of connecting five devices simultaneously.

With Sentry Mini powered on, open the iPad/iPhone **Settings** app and select **Wi-Fi**. Locate Sentry Mini's wireless network and tap to connect. Sentry Mini's network name is "SentryMini_" followed by a sequence of random letters and numbers (e.g., SentryMini_AV53).

Once you connect to Sentry Mini, your iPad and iPhone will automatically reconnect, provided the following conditions are met:

- Sentry Mini is powered on.
- iPad/iPhone Wi-Fi is enabled.
- iPad/iPhone is not already connected to another network.
- Auto-Join is enabled in iPad/iPhone Wi-Fi > SentryMini settings.

Sentry Mini Wireless Network

The default Sentry Mini network name is generic and can *not* be changed. Sentry Mini wireless network does not provide an option to require a passcode.

Sentry Mini Factory Restore

Sentry Mini does not have a method for restoring to factory defaults.

Sentry Plus is the latest, most capable Sentry receiver available for use with ForeFlight Mobile version 14.4 or later. Sentry Plus is a battery-powered device that delivers real-time weather, traffic, GPS, and more to ForeFlight Mobile.

Sentry Plus Features

Tap a Sentry Plus feature to learn more.

- **Dual-Band ADS-B Traffic**
- **ADS-B Weather Receiver**
- **Weather Replay**
- **FLARM Receiver**
- **Carbon Monoxide (CO) Sensor**
- **Pitch and Roll (AHRS)**
- **Accelerometer (g-Load)**
- **18 Hour Rechargeable Battery**
- **Flight Data Recorder**
- **OLED Display**
- **Barometer**
- **Advanced Wi-Fi Capability**

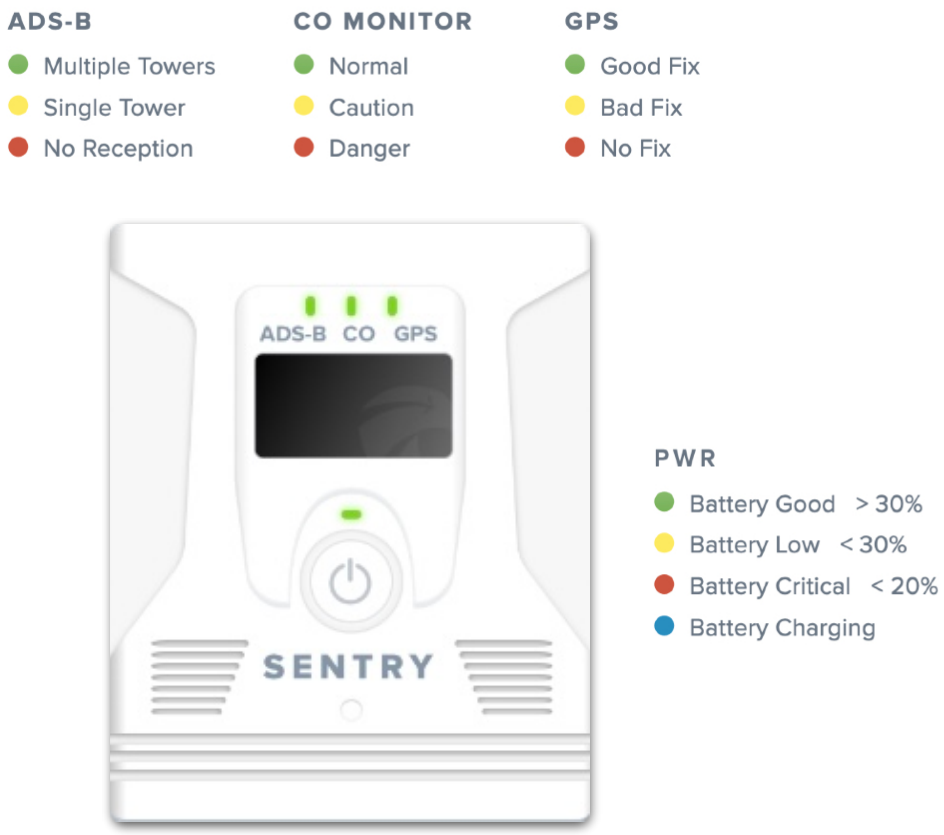
Power Button

Sentry Plus has a single button located below the OLED display. Press and hold the button for two seconds to power Sentry Plus on or off. When powered on, the OLED display, ADS-B, CO, GPS, and PWR LEDs are activated.

LED Status

Sentry Plus has four LEDs. The ADS-B, CO, and GPS LEDs are activated when Sentry Plus is powered on.

The PWR LED is activated when Sentry Plus is charging or powered on. LED brightness can be controlled in Sentry Plus settings by selecting **More** > **Devices** > **Sentry Plus**. **Auto Brightness** automatically adjusts LED brightness based on ambient light.



Sentry Plus LED Status

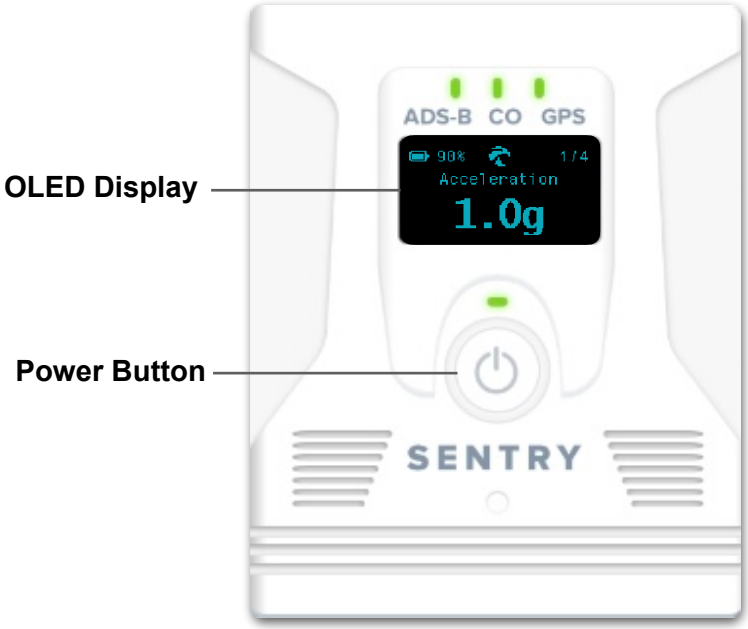
NOTE: Any data received from an ADS-B tower (including tower information) is considered reception. A yellow or green ADS-B LED does not guarantee reception of FIS-B data.

OLED Display

Sentry Plus is equipped with an OLED display. The display is automatically enabled when the device is powered on and remains on until the device is powered off. When Sentry Plus is initially powered on, a splash screen depicts the Sentry logo and installed firmware version. After the splash screen, Sentry Plus displays the first of four possible views.

As various actions occur, additional messages can appear on the OLED display. A list of possible OLED messages with definitions is found below.

- **Connected!** is displayed each time an iPad or iPhone connects to the Sentry Plus wireless network.
- **Disconnected** is displayed each time an iPad or iPhone disconnects from the Sentry Plus wireless network.
- **Connected to ForeFlight** is displayed when ForeFlight Mobile connects to Sentry Plus.
- **Log Download in Progress** displays as ForeFlight Mobile downloads Track Logs from Sentry Plus.
- **Looking for Network** is displayed when Sentry Plus is configured to join another network, and the network is not actively connected.
- **Connected to ….** is displayed when Sentry Plus connects to another network.
- **Firmware Updated Successfully** appears after Sentry Plus firmware has updated.



OLED Views

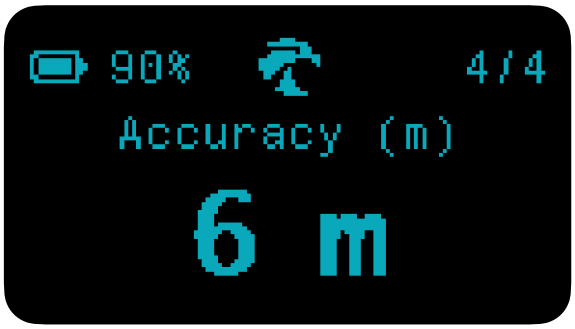
The Sentry Plus OLED display contains four views. Each view displays real-time information. The Sentry Plus log indicates Sentry Plus is connected to ForeFlight. Press the power button to cycle between the available views.

- **Acceleration** depicts real-time accelerometer data. Acceleration is measured on the pitch axis. While straight and level, the acceleration view indicates 1.0g.
- **CO Status** depicts carbon monoxide concentration. Elevated levels of CO are depicted as Caution or Danger. If Caution or Danger is displayed on the OLED screen, the concentration level (ppm) is displayed in a ForeFlight Mobile alert.
- **Speed** depicts ground speed in knots. If a groundspeed of seven knots or less is detected, Sentry Plus displays Speed (kts) < 7.
- **Accuracy** depicts the accuracy of the Sentry Plus integrated WAAS GPS. Accuracy is determined by the Sentry Plus GPS processor.

Acceleration (g-Load)

CO Status

Groundspeed (knots)



Accuracy (meters)

Battery

Sentry Plus is equipped with a rechargeable battery. The battery is designed to provide up to 18 hours of use on a full charge. The battery is not designed to be replaced.

When Sentry Plus is powered on, battery percentage is depicted in the top left corner of the OLED display. Battery percentage is also depicted in ForeFlight Mobile by selecting **More** > **Devices** > **Sentry Plus** or by selecting **Sentry Plus** from the Maps Settings menu.

When Sentry Plus is charging, the PWR LED is blue, and the battery percentage is replaced with a “CHRG” label. When powered on, the LED changes to green when fully charged. When powered off, the LED extinguishes when fully charged.

Universal USB-C Charging

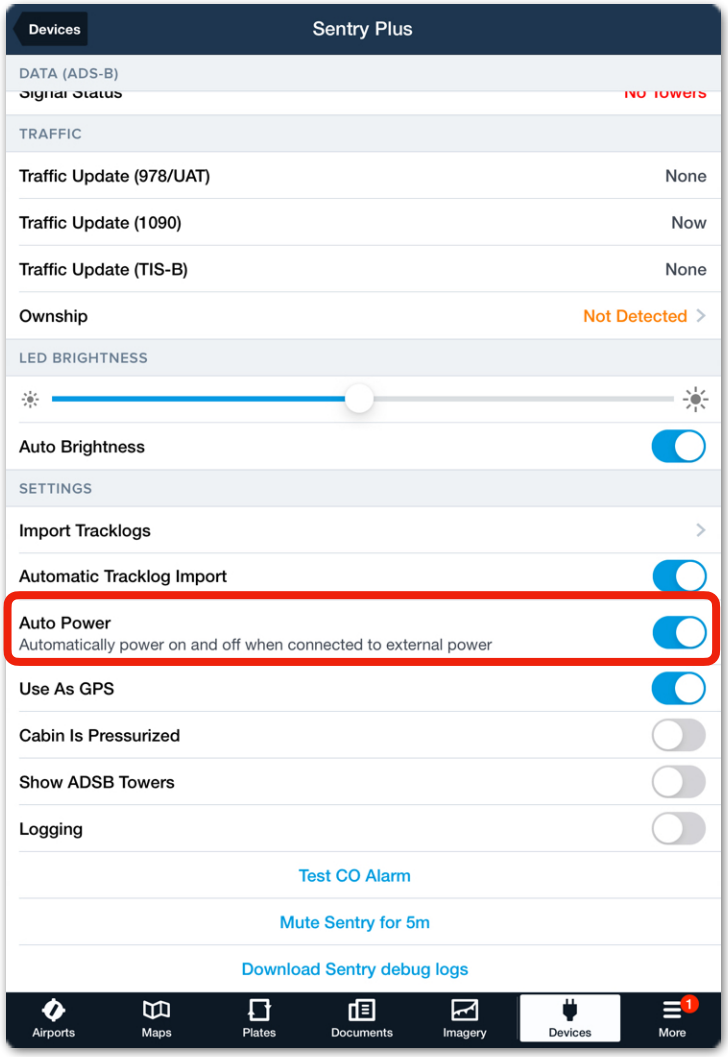
Sentry Plus can be charged with *any* USB-C charger. Sentry Plus can receive charge loads up to 240 watts over full-featured USB-C cables and connectors. The Sentry Plus battery module regulates charging voltage as needed.

Auto Power

Sentry Plus is equipped with an *Auto Power* option. If Auto Power is enabled, Sentry Plus automatically turns on when plugged in and turns off when the power source is removed with GPS ground speed less than 10 knots for 45 seconds.

Auto Power is disabled by default. Enable Auto Power in Sentry Plus settings by selecting **More** > **Devices** > **Sentry Plus** and scrolling to the bottom of the view.

When Auto Power is *enabled*, the power button can still be used to turn the device off. When Auto Power is *disabled*, use the power button on Sentry Plus to turn the unit on or off.



Sentry Plus Settings

Connectivity

When powered on, Sentry Plus automatically creates a wireless network which can connect up to five devices simultaneously. Sentry Plus does not have a wireless network password by default.

Connect to Sentry Plus by powering it on and selecting its wireless network from your iPad or iPhone Wi-Fi Settings. Once you connect to Sentry Plus, your iPad and iPhone will automatically reconnect, provided the following conditions are met:

- Sentry Plus is powered on.
- iPad/iPhone Wi-Fi is enabled.
- Sentry Plus network name and password have not changed.
- iPad/iPhone is not already connected to another network.
- Auto-Join is enabled in iPad/iPhone **Wi-Fi** > **SentryPlus** settings.

Sentry Plus Network Name (SSID)

The default Sentry Plus wireless network name is generic (e.g., SentryPlus_12AB) and can be changed as needed. Wireless network names must be unique and between 1 and 32 characters. The network name may contain only letters, numbers, spaces, and underscores.

How to customize the network name

To customize the wireless network name (SSID), select **More** > **Devices** > **Sentry Plus** > **Sentry Plus Network**. Tap the SSID field and enter a network name between 1 and 32 characters. Tap **Done** when complete. Once complete, reboot Sentry Plus for the changes to take effect.

How to hide the SSID broadcast

To prevent devices from seeing the Sentry Plus wireless network, you can disable the SSID broadcast. Disabling the SSID broadcast hides the network from devices that have *not yet* connected to Sentry Plus. To hide the Sentry Plus network, toggle the **SSID Broadcast** off in Sentry Plus settings on the Devices view or Map Settings. Once your iOS device has connected to Sentry Plus, it will automatically reconnect when powered on even if the network is hidden, provided the Wi-Fi > Sentry Plus Auto-Join setting is enabled.

To connect a *new device* to Sentry Plus with the SSID broadcast disabled

1. Open Wi-Fi settings on the iOS device.
2. Select **Other…** from the OTHER NETWORKS section.
3. Manually enter the Sentry Plus network name (SSID) and passcode (if applicable).

WPA2 Security

Sentry Plus does not have a passcode by default. A passcode can be assigned from the Maps or Devices view. To assign a passcode,

1. Select **More** > **Devices** > **Sentry Plus** > **Sentry Plus Network**.
2. Tap the **WPA2 Security Enabled** toggle.
3. Tap **New Passcode...**
4. Enter a passcode between 8 and 63 characters. The WPA2 passcode may only contain letters, numbers, spaces, and underscores. WPA2 passcodes are case-sensitive.
5. Tap **Done**.
6. Restart Sentry Plus.
7. Open the iOS device WiFi settings and connect to Sentry Plus using the new passcode.

NOTE: Sentry Plus network name and password are case sensitive.

Resetting a passcode (factory reset)

If you're unable to connect to Sentry Plus with WPA2 security enabled, perform a *factory reset* to remove WPA2 security. To restore Sentry Plus to factory settings,

1. Power Sentry Plus on.
2. Press and hold the power button until the LED lights extinguish (approximately ten seconds).
3. Power Sentry Plus on.
4. Open the iOS device WiFi settings and connect to Sentry Plus.

WARNING: Performing a factory reset on Sentry Plus will delete all Sentry Plus Track Logs. Once factory reset is performed, it is not possible to restore Sentry Plus Track Logs.

RECOMMENDED: Import all Track Logs with ForeFlight prior to performing a factory reset.

Wi-Fi Client Support

If your aircraft is equipped with a wireless network, Sentry Plus can join the network and provide its data through the aircraft's wireless network. Sentry Plus will remember the aircraft's wireless network and automatically join in the future when powered on. Connecting Sentry Plus to an aircraft network allows ForeFlight to receive data from Sentry Plus and the aircraft simultaneously.

Exclusions

- Capture portals are not supported.
- Wireless networks that restrict UDP traffic are not supported.
- Some weather data may not be available (see table on the following page).

Setup

To connect Sentry Plus to your aircraft's wireless network, your aircraft's wireless network must be enabled and within range of your iOS device and Sentry Plus. To add Sentry Plus to the aircraft wireless network,

1. **Connect** your iOS device to Sentry Plus.
2. Open ForeFlight Mobile.
3. Select **More** > **Devices** > **Sentry Plus**.
4. Select **Wi-Fi Client Network**.
5. Select your aircraft's network from the list (if the aircraft's network is hidden, select **Other...** to manually enter the aircraft's network name and password).
5. Enter a passcode if required.
6. Tap **Join Network**.
7. Sentry Plus will automatically reboot for the changes to take effect.
8. ForeFlight will re-establish communication with Sentry Plus to determine if the network change was successful.
9. Connect your iOS device to the aircraft's wireless network.
10. Open ForeFlight Mobile.

NOTE: For best results, disable the aircraft's wireless network **Auto-Join** option in iOS device Wi-Fi settings during setup.

Simultaneous Data Feeds

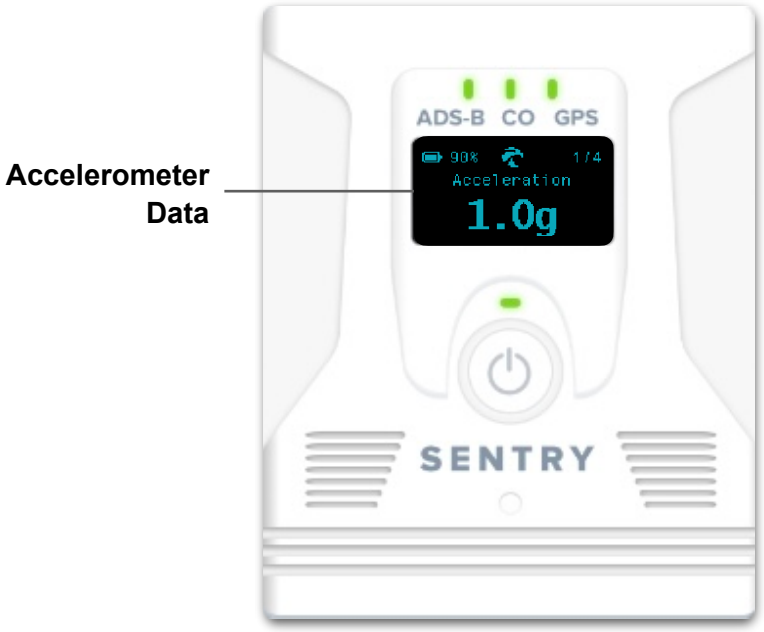
When Sentry Plus is connected to an aircraft's wireless network (e.g., Satcom Direct, GoGo), ForeFlight can receive data from Sentry Plus and the aircraft's WiFi network simultaneously. The data that ForeFlight is able to send or receive depends largely on the aircraft's network settings. In most cases, if ForeFlight can send or receive data via the aircraft's wireless network when Sentry Plus is not connected, ForeFlight will continue to be able to send and receive the same data once Sentry Plus is connected.

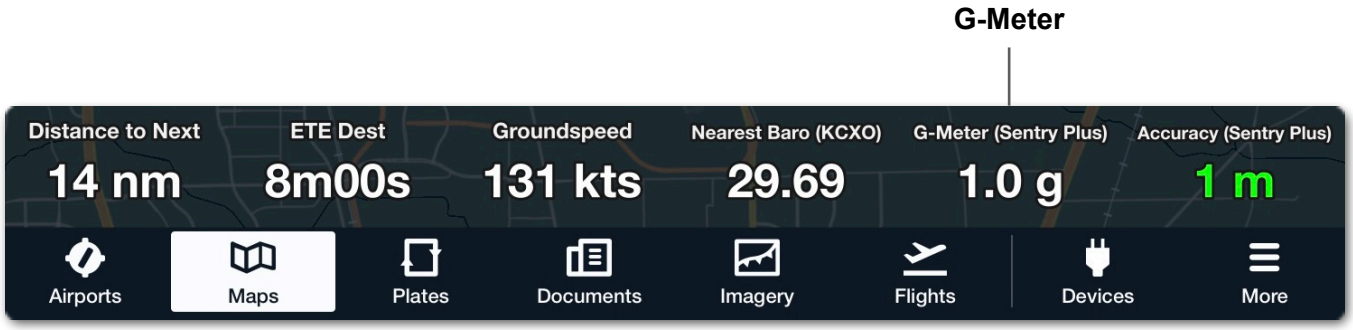
If the data you're attempting to view is provided by Sentry via ADS-B, it will not be possible to display the same data from your aircraft's wireless network. The table below depicts the exclusive data source for weather products when Sentry Plus is connected as a client.

Weather Product	GoGo / SDR	Sentry Plus
Traffic (ADS-B)		✓
Radar (Composite)		✓
Radar (Lowest Tilt)	N/A	
Cloud Tops (ADS-B)		✓
Enhanced Satellite	N/A	
Color IR Satellite	N/A	
Icing (ADS-B)		✓
Icing (US/Global)	✓	
Turbulence (ADS-B)		✓
Turbulence (US/Global)	✓	
Clouds	✓	
Surface Analysis	✓	
Freezing Lvls (ADS-B)		✓
Winds (Temps/Speeds)	✓	
AIR/SIGMET/CWAs		✓
PIREPs		✓
Lightning		✓
Digital ATIS (D-ATIS)	✓	
METARs/TAFs		✓
NOTAMs (Including TFRs)		✓

Accelerometer (g-Load)

Sentry Plus is equipped with an accelerometer. The accelerometer detects loads placed on the pitch axis during flight. Real-time accelerometer data can be displayed on the OLED display and on the ForeFlight Mobile instrument panel.



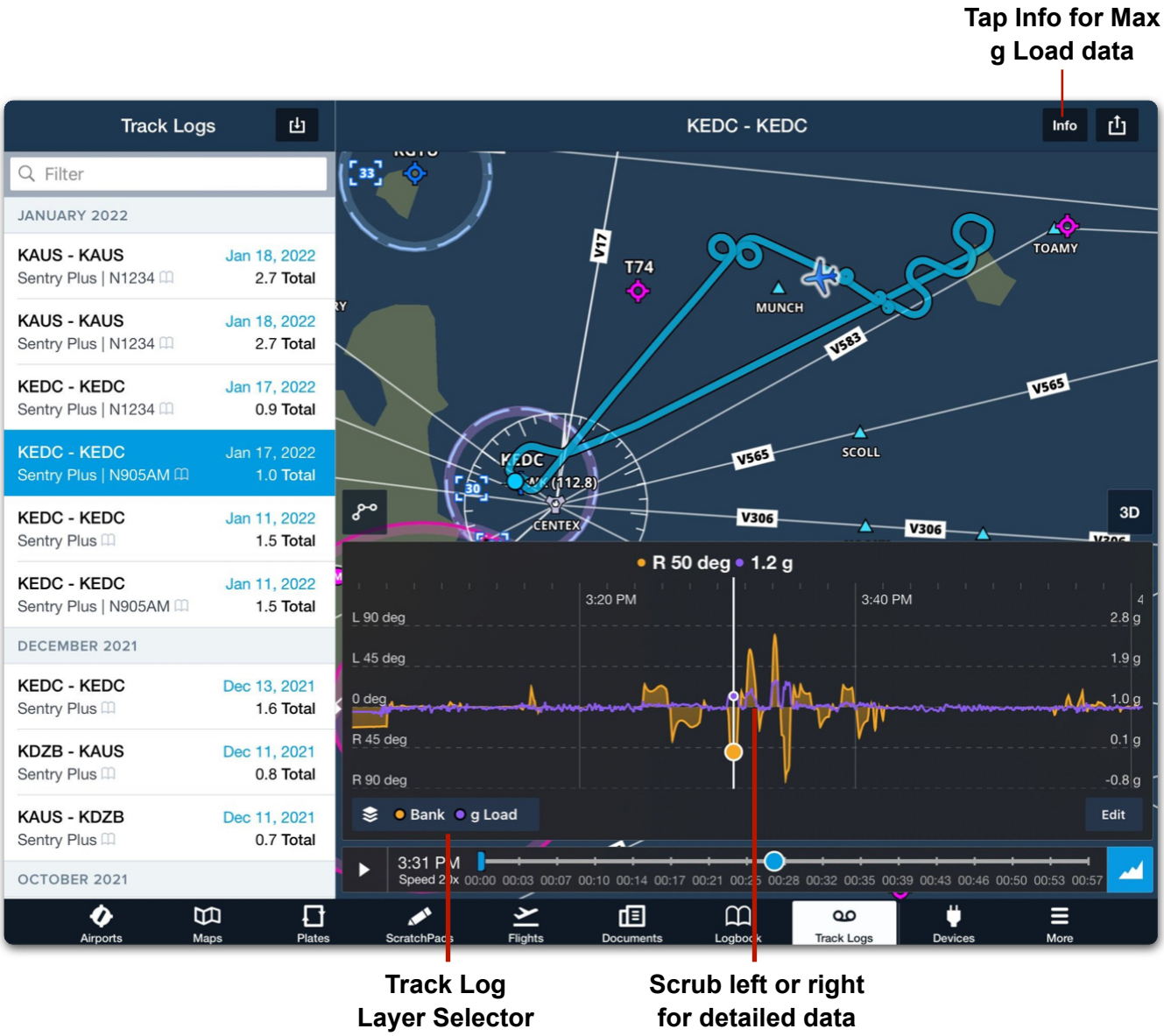


Instrument Panel

g-Load in Track Logs

Track Logs recorded with Sentry Plus or with ForeFlight Mobile while connected to Sentry Plus include g Load data. To display g-Load in Track Log, tap the Track Log Layer Selector and select **g Load**.

When g Load is selected, data from the accelerometer is displayed on the scale. Tap and hold a finger on the scale and scrub left or right to display the flight's metrics at that moment. To display the *maximum* g Load for a flight, select the Track Log **Info** button**.**



Flight Data Recorder

Sentry Plus is equipped with an integrated Flight Data Recorder. The Flight Data Recorder automatically captures track, altitude, attitude, groundspeed, and g-Load data from Sentry Plus for *every* flight.

The Flight Data Recorder automatically starts a Track Log each time Sentry Plus is powered on. There is no indication that a Sentry Plus Track Log recording has started. Sentry Plus automatically records Track Logs continuously until powered off.

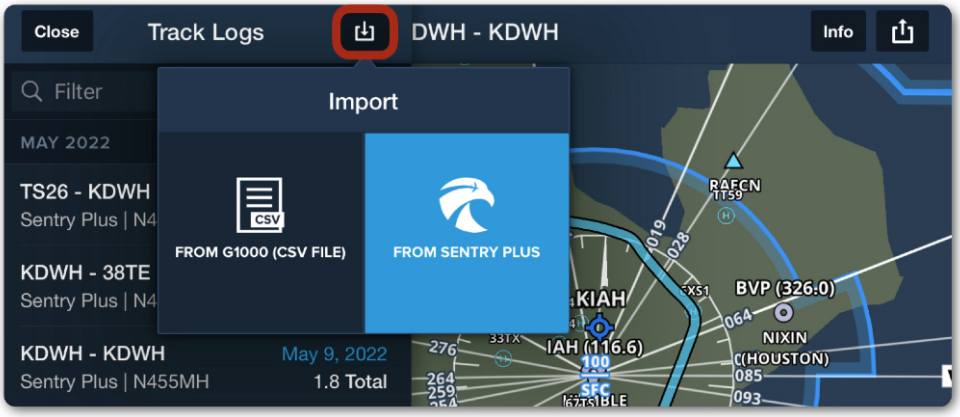
When Sentry Plus has recorded 16 Track Logs, the oldest Track Log is automatically overwritten with new Track Logs. Old Track Logs are overwritten even if they have not been imported.

Sentry Plus stores the last 16 flights on its internal memory. Track Logs stored on Sentry Plus can be imported in to ForeFlight for saving on your account.

Manually Importing Track Logs

To import a Track Log recorded with Sentry Plus:

1. Open ForeFlight while connected to Sentry Plus and select **More** > **Track Logs**.
2. Tap the **Import** button in the upper toolbar.
3. Tap **From Sentry Plus.**

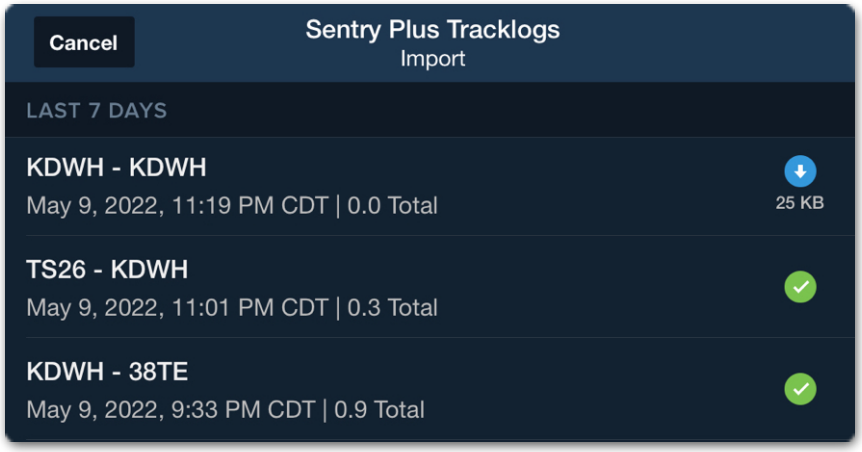


Manually Importing Sentry Plus Track Logs

NOTE: Track Logs can also be imported from **More** > **Devices** > **Sentry Plus** > **Import Track Logs**.

After selecting Import **From Sentry Plus**, ForeFlight displays up to 16 Track Logs stored on the Sentry Plus internal memory. Track Logs that have already been imported to ForeFlight display a green checkmark. Track Logs that have not been imported display a blue download button above the size of the individual Track Log. Sentry Plus Track Logs can be imported to multiple ForeFlight accounts.

The Sentry Plus Track Log Import menu displays the flight's departure and destination location, date, time, and total flight time.



Imported and Available Track Logs

Track Log Sync

If sync is enabled on your ForeFlight account (and each iOS device), Track Logs imported from Sentry Plus will automatically appear on the other devices signed into your account (internet connection required). The (green) imported checkmark and (blue) available for import buttons sync between the devices signed into your account. Importing a Track Log on one device results in a green checkmark on all devices signed into your account (internet connection required).

Automatic Track Log Importing

ForeFlight can automatically import Track Logs. Track Logs will automatically import when the following conditions are met:

- Sentry Plus is powered on
- Sentry Plus is connected to ForeFlight
- The **Automatic Track Log Import** setting is enabled
- Ground speed is less than ten knots.

When automatic track log import is enabled, Sentry Plus will finalize and import Track Logs into ForeFlight before powering off (provided the criteria above are met). If a Track Log is not imported before power off due to not meeting one of the conditions, the next time Sentry Plus is powered on, it will import the Track Log into ForeFlight as long as the conditions are met.

Automatic Track Log Import Setting

Automatic Track Log import can be enabled during initial configuration or later by selecting **More** > **Devices** > **Sentry Plus** > **Automatic Track Log Import**.

Setting Automatic Track Log Import on or off on one device does not cause the selection to sync between devices that connect to the same Sentry Plus. It is recommended that Automatic Track Log Import is only turned on for one device per account.

Auto Power Setting and Automatic Track Log Imports

If the Sentry Plus **Auto Power** setting is enabled, Sentry Plus will power on and start recording a Track Log when a power source is detected. When the power source is disconnected, Sentry Plus will automatically import the Track Log before shutting down (requires connection to ForeFlight and groundspeed of less than ten knots).

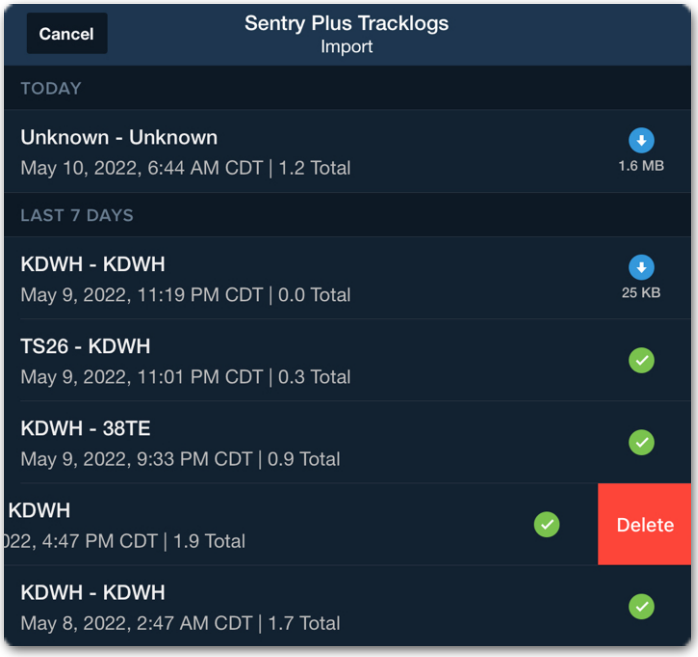
Deleting Track Logs

Track Logs can be deleted from ForeFlight and Sentry Plus.

To delete a Track Log from ForeFlight, select **More** > **Track Logs,** swipe from right to left, and tap **Delete**.

To delete a Track Log from Sentry Plus, select **More** > **Track Logs** **>** tap the Track Log import button and select **From Sentry Plus**. Swipe from right to left on the Track Log in the Sentry Plus Import menu and tap **Delete**.

Once a Track Log is deleted *from Sentry Plus*, it can *not* be restored. Track Logs deleted from Sentry Plus are *not* deleted from ForeFlight.



Sentry Plus Import Menu

NOTE: Sentry Plus Track Logs can also be deleted by selecting **More** > **Device** > **Import Track Logs**.

Deleting ForeFlight Track Log recorded with Sentry Plus

Deleting a Track Log from ForeFlight does *not* delete it from Sentry Plus. Track Logs recorded with Sentry Plus that are imported and later deleted from ForeFlight *can* be imported again (provided it has not been overwritten).

When a Sentry Plus Track Log is deleted in ForeFlight, the Track Log is removed from ForeFlight, and the green checkmark is replaced with the blue download button in the Sentry Plus Import menu (provided it has not been overwritten).

Deleting all Sentry Plus Track Logs

To delete all Track Logs from Sentry Plus, perform a factory reset on the device. Performing a factory reset will also remove the passcode (if applicable) and reset the network name (SSID) to factory settings. To restore Sentry Plus to factory settings

1. Power Sentry Plus on.
2. Press and hold the power button until the LED lights extinguish (approximately ten seconds).
3. Power Sentry Plus on.
4. Open the iOS device Wi-Fi settings and connect to Sentry Plus.

NOTE: ForeFlight will not import Track Logs that do not contain valid GPS points or that are shorter than five minutes.

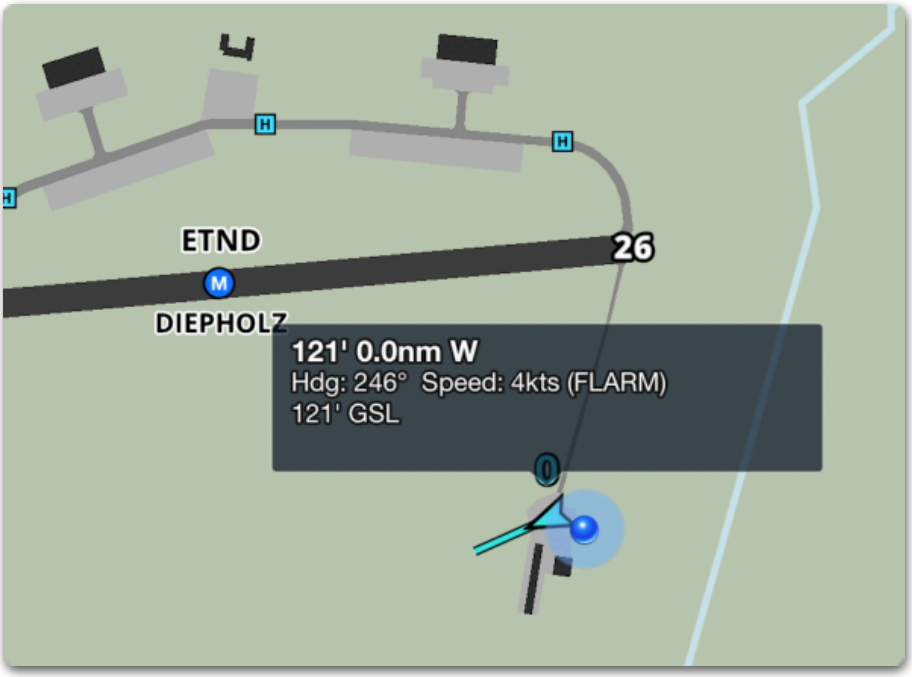
FLARM

FLARM is a collision avoidance technology popular in the glider pilot community (particularly in Europe). Sentry Plus is equipped with a FLARM receiver providing additional traffic awareness for general aviation and light aircraft.

FLARM operates on different frequencies in different regions of the world. The FLARM receiver in Sentry Plus operates on the European FLARM SRD860 frequency band (868.2 MHz to 868.4 MHz).

To enable FLARM traffic in ForeFlight Mobile, you *must* purchase a FLARM decoding license. A FLARM decoding license is associated with your ForeFlight account and can be purchased at **www.foreflight.com/buy**.

FLARM traffic targets can be viewed on the map with the **Traffic** layer enabled while connected to Sentry Plus.

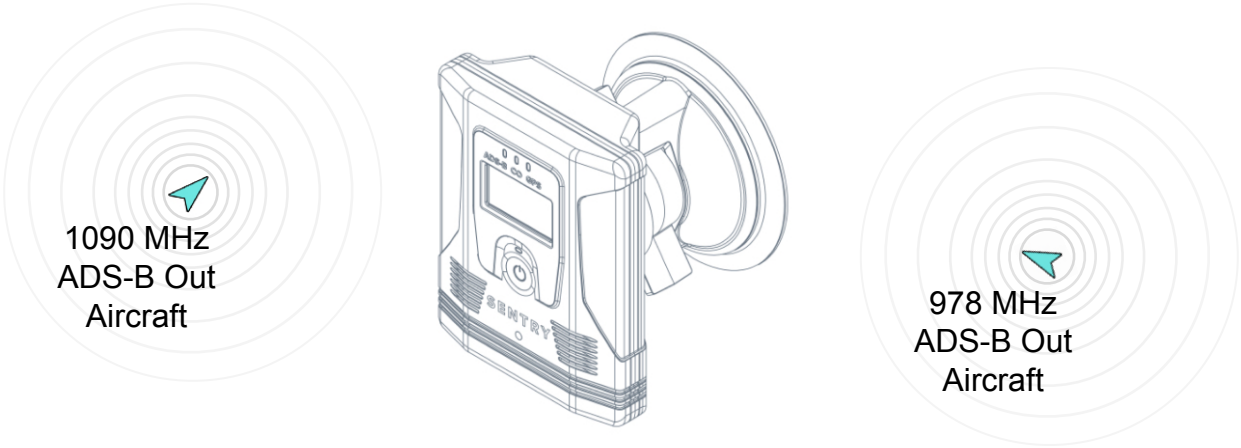


FLARM Traffic in ForeFlight

ADS-B TRAFFIC

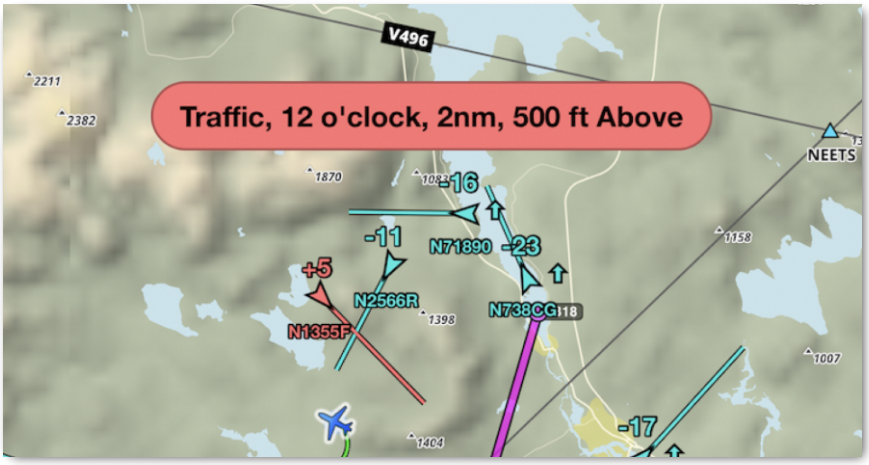
ADS-B data is broadcast on either the 978 MHz or 1090 MHz frequency (1090 MHz is required internationally and above FL180). Sentry, Sentry Mini, and Sentry Plus are dual-band receivers capable of detecting traffic on both ADS-B frequencies.

Aircraft do not need to be ADS-B Out equipped for Sentry to receive traffic. However, if your aircraft is not ADS-B Out equipped, ForeFlight may show significant *relative* altitude discrepancies. See **ADS-B Ownship** for additional information. Additionally, if your aircraft is not ADS-B Out equipped, ForeFlight may *not* display traffic detected from surveillance radar. See **Traffic Information Service Broadcast (TIS-B)** for additional information.



Sentry Plus Detecting ADS-B Traffic

Sentry receivers are able to receive ADS-B traffic without requiring additional equipment. All traffic detected by Sentry is displayed in ForeFlight when the **Traffic** map layer is selected.



ADS-B Traffic

Traffic Icons

Traffic icons are depicted in ForeFlight based on several variables. Moving targets are displayed as arrowheads pointing in the direction of travel. Stationary targets, or targets with no direction or speed information, are displayed as diamonds.

Airborne traffic targets are **cyan**. Surface targets are **brown**.

Traffic targets that are moving greater than 40 knots and are within 45 seconds of being within 2.0 nm and +/- 1,200’ of your position are depicted in yellow. Traffic targets that are within 25 seconds of being closer than 1.3 nm and +/- 1,200’ are depicted in **red**. Your ground speed must be greater than 40 knots for the traffic symbols to change colors and alerts to appear. Traffic targets remain highlighted for 15 seconds after they no longer exceed the thresholds.

Traffic Caution
within 2.0 nm and
+/- 1,200’ or will be
within 45 seconds

Traffic Warning
within 1.2 nm and
+/- 1,200’ or will be
within 25 seconds

A traffic target’s relative altitude is depicted with a plus **[+]** (height above you) or minus **[-]** symbol (height below you). Relative altitude is given in hundreds of feet. For example, a traffic target with a **+9** relative altitude is 900’ above you.

In front of the arrowhead is a TrafficTrend™ vector to indicate the target’s expected position in the next 60 seconds (longer vector = faster speed).

Up and down arrows next to a traffic target indicate that the traffic is climbing or descending greater than 500 feet per minute (fpm) relative to your altitude.

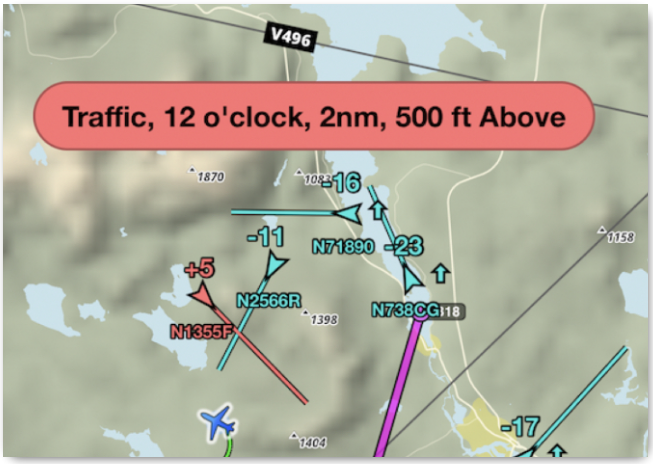
CAUTION: If your aircraft is not ADS-B Out equipped, ForeFlight may show significant *relative* altitude discrepancies. See **ADS-B Ownship** for additional information.

Traffic Alerts

Visual traffic alerts are enabled by default. Tap **More** > **Settings** > **Alerts** to review your selections.

When traffic is within 25 seconds of being less than 1.3 nm and +/- 1,200', the traffic target turns red, and a pop-up alert appears regardless of which ForeFlight view is active. Your groundspeed and the groundspeed of the traffic must be greater than 40 knots for alerts to activate.

Traffic alerts include direction and relative altitude. When ForeFlight detects that your aircraft is equipped with ADS-B Out, an *audio alert* will also be issued if the **Speak All Alerts** setting is enabled. If no ADS-B Out is detected, *you will not receive audio alerts.*



Traffic Alert

CAUTION: You should consider any target within 500' vertically as potentially being at the same altitude as your aircraft. Never use ADS-B traffic data from ForeFlight as the sole means of traffic avoidance. Always use See & Avoid or direct instructions from ATC.

Synthetic Vision

Traffic targets within 11nm of your current position are shown in the Synthetic Vision view with ForeFlight Mobile version 10.2 and later. As traffic moves more than 11nm from you, they fade out of the display. Traffic moving closer to you grows in size.

ADS-B traffic is depicted in the Synthetic Vision view. Tapping on a traffic target in Synthetic Vision does not display a traffic information pop-up.

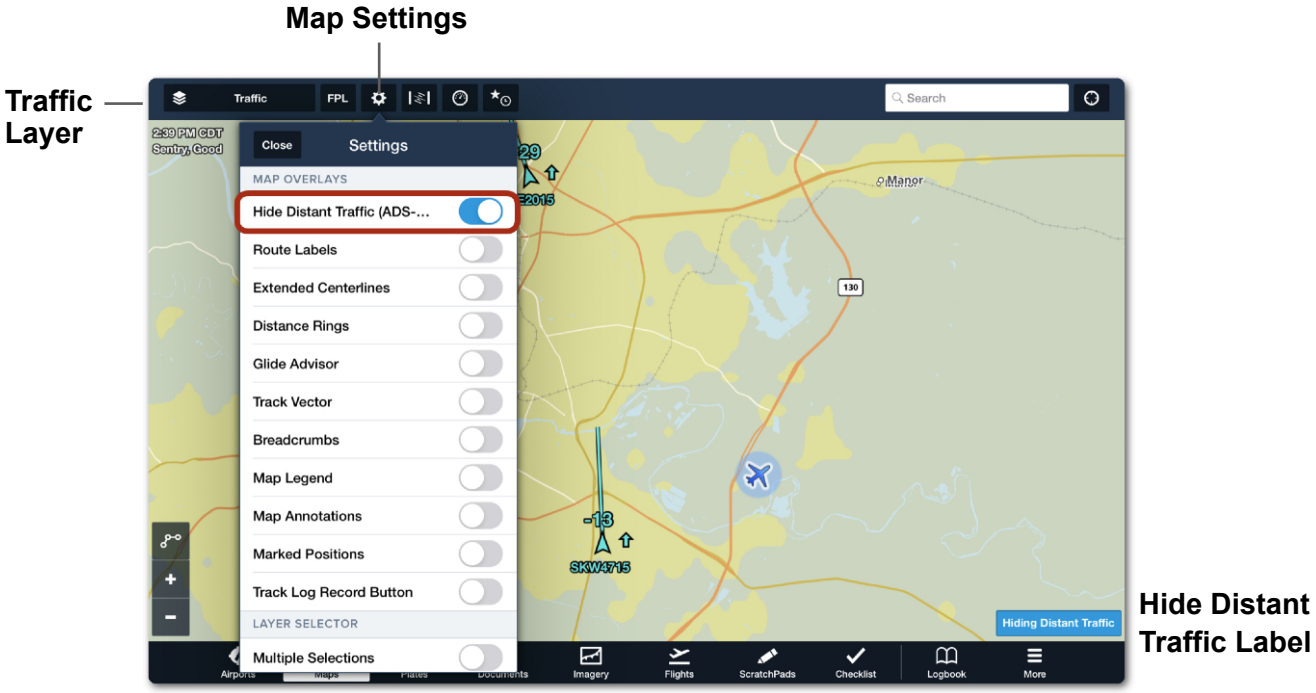
Traffic in Synthetic Vision

Hide Distant Traffic

All traffic detected by Sentry is displayed in ForeFlight when the **Traffic** map layer is selected. To reduce the amount of traffic displayed on the map, enable the **Hide Distant Traffic** setting.

When **Hide Distant Traffic** is enabled, traffic more than 15 nm or more than 3,500 feet above or below your position is removed from the map. Enabling **Hide Distant Traffic** while operating in congested areas is recommended.

To hide distant traffic, open the Map setting menu and enable **Hide Distant Traffic (ADS-B)**. When Hide Distant Traffic is enabled, a label appears in the lower right corner of the screen. The **Hide Distant Traffic** setting is *only* available when connected to Sentry. To remove *all* traffic from the map, deselect the **Traffic** layer from the map layer menu in the upper left corner.



Hide Distant Traffic (ADS-B) Enabled

NOTE: The Hide Distant Traffic setting does not affect traffic alerts.

Traffic Information Service Broadcast (TIS-B)

The Traffic Information Service Broadcast (TIS-B) is a component of ADS-B traffic. The TIS-B broadcast includes non-ADS-B Out equipped traffic on the 978 MHz frequency.

TIS-B is broadcast for the benefit of client aircraft. A client aircraft is any aircraft that is ADS-B Out equipped. As a result, aircraft are only included in the TIS-B broadcast if they are of concern to a client aircraft. To be included in the TIS-B broadcast, an aircraft must

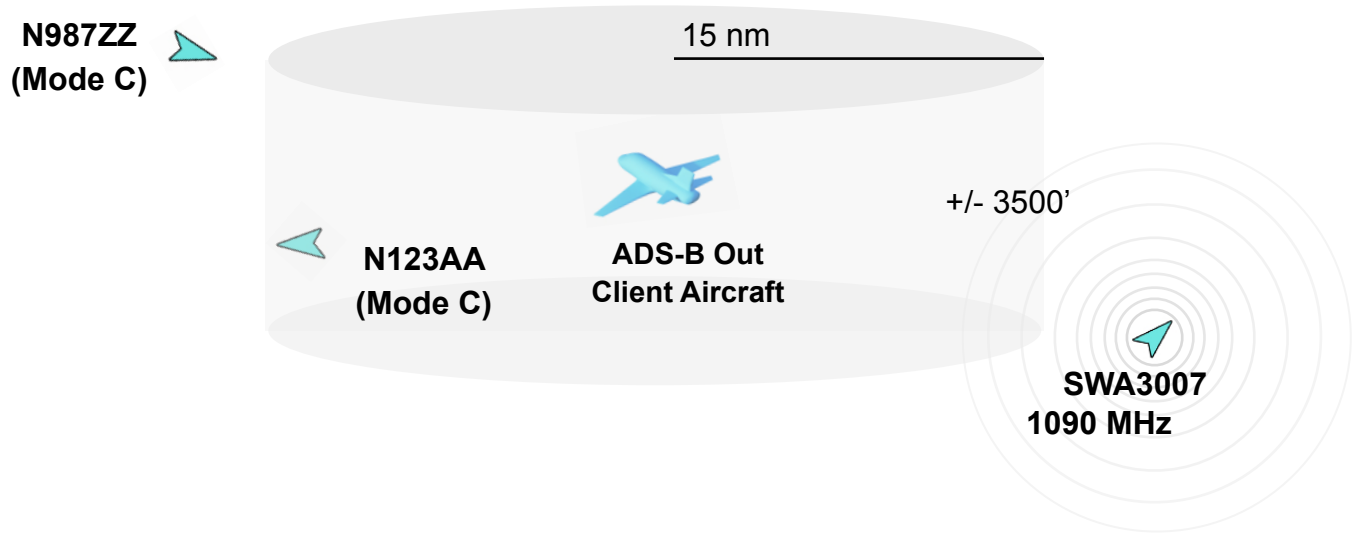
- Operate within 15 nm and 3,500 feet vertically of a client aircraft.
- Be equipped with an altitude encoding (Mode C) transponder.
- Operate in the service volume of surveillance radar.

The following aircraft are *not* included in the TIS-B broadcast

- Aircraft not operating within 15 nm and 3,500 feet vertically of a client aircraft.
- Aircraft without transponders.
- ADS-B Out equipped aircraft.

In the example below, N123AA is included in the TIS-B broadcast because it is within 15 nm and 3,500’ of a client aircraft. N987ZZ is not included in the TIS-B broadcast because it is outside the 15 nm requirement. SWA3007 is not included in the TIS-B broadcast because it is an ADS-B Out equipped aircraft (1090 MHz).

If the client aircraft is equipped with Sentry, SWA3007 and N123AA would be displayed in ForeFlight. N987ZZ would not be displayed in ForeFlight unless it were to enter the 15 nm service volume of *a* client aircraft.



Example TIS-B Scenario

How TIS-B is received

TIS-B traffic is broadcast on the 978 MHz frequency. Only Mode-C traffic detected by surveillance radar within 15 nm and 3500’ of ADS-B Out equipped aircraft are transmitted via TIS-B. Air-to-air ADS-B broadcasts are not a part of TIS-B.

Pilots using a Sentry receiver within the service volume of an ADS-B ground station will receive TIS-B data for display in ForeFlight. When a traffic target is tapped, the traffic pop-up will indicate whether the target is from an air-to-air broadcast (ADS-B) or the TIS-B broadcast.

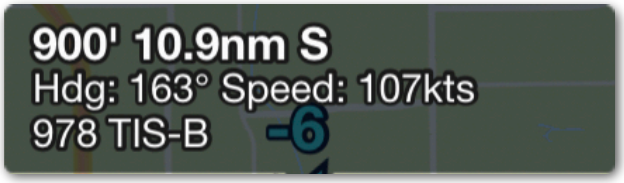
Unlike traffic information received directly from ADS-B Out equipped aircraft, TIS-B traffic targets often lack identifying information (tail number, call sign, Etc.).

NOTE: TIS-B does not include aircraft without transponders or ADS-B Out equipped aircraft.

ADS-B and TIS-B Differences

ADS-B traffic icons often include more information than a TIS-B traffic target. ADS-B Out traffic targets generally display, at minimum, a registration number and relative altitude whereas TIS-B targets only display the relative altitude. Tapping on each traffic symbol reveals information about the target.

ADS-B Traffic Pop-up

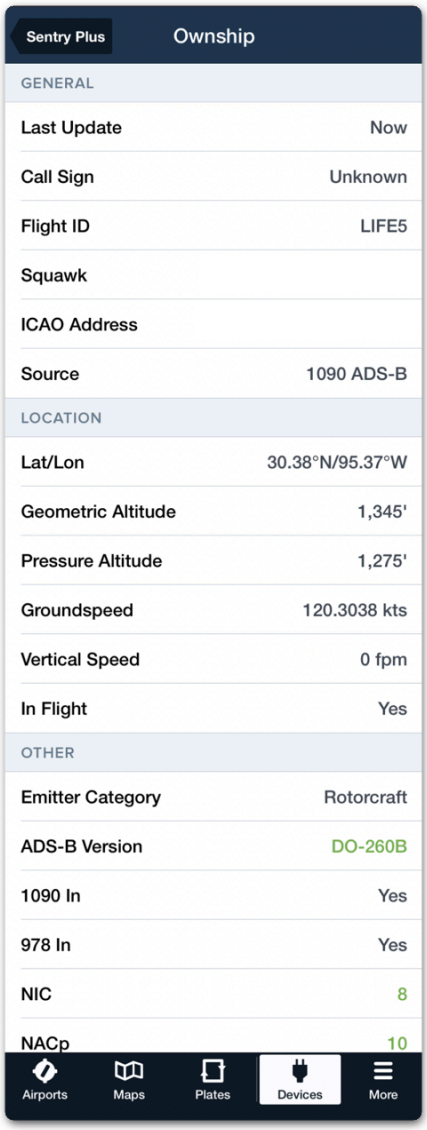


TIS-B Traffic Pop-up

ADS-B Ownship

ADS-B Ownship is the process of identifying a traffic target as being your aircraft. There are a few benefits for determining ADS-B Ownship.

- Your aircraft's *traffic* target is suppressed from the ForeFlight map when ownship is detected.
- Information from your ADS-B Out transmission can be used in ForeFlight Track Logs (e.g. Call Sign).
- Pressure altitude from your ADS-B Out transmission is used for altitude comparison. When ownship is not detected, ForeFlight compares relative altitude using your GPS altitude and the pressure altitude of nearby targets.
- Your aircraft's ADS-B Out data can be reviewed in **More** > **Devices** > **Sentry** > **Ownship**.



ADS-B Ownship

ForeFlight determines Ownship by evaluating the location, speed, and heading data of your ADS-B broadcast and comparing it to Sentry GPS data.

If your aircraft's ADS-B Out position data and Sentry GPS data match closely, ForeFlight recognizes the traffic information as coming from your aircraft and assigns ownship status. Once the ownship status for an aircraft has been established, the traffic target is hidden from the map and ForeFlight determines relative altitude by comparing the pressure altitude broadcast of nearby aircraft to the pressure altitude broadcast from your ADS-B Out transmission.

Tap **More** > **Devices** > **Sentry** > **Ownship** to see if ownship status is assigned for your aircraft. The Ownship view depicts information from your aircraft's transponder: call sign, squawk, ICAO address, source, location data, and more. If your aircraft is not ADS-B Out equipped, or if ADS-B out is not detected, **Ownship** displays **Not Detected**.

NOTE: Sentry must be able to directly receive your aircraft's ADS-B Out signal to assign ownship status accurately. In larger aircraft, it may not be possible for Sentry to detect your ADS-B Out signal due to interference from the airframe.

False Traffic Alerts

If Sentry detects your aircraft's ADS-B Out equipment and the information does not match Sentry's GPS, your aircraft will appear as a traffic target. Ownship status can not be assigned to an aircraft if GPS data does not match. If ownship is not assigned to your aircraft, your aircraft may generate false traffic alerts if detected.

False traffic alerts are most likely to occur with rapid maneuvering or poor GPS accuracy. If this occurs, ownship status is lost and your aircraft will appear as a traffic target on the map. Once position data matches, ownship correlation is established. If ownship is not assigned for the entire flight, airframe interference or an issue with the aircraft's configuration or position reporting may exist.

If your aircraft is not equipped with ADS-B Out equipment, that does not exclude you from being able to determine ownship. If your aircraft is broadcast via TIS-B (as a result of being within 15 nm and 3500' of an ADS-B Out equipped aircraft) and Sentry receives the TIS-B traffic target, ForeFlight may be able to determine ownship.

Detecting your aircraft's TIS-B target often causes your aircraft to appear slightly behind and +/- 200' from your actual position. After a short period of time, ForeFlight will recognize the TIS-B target as your aircraft and will assign it ownship status. Once assigned, the TIS-B target will be suppressed. If ForeFlight is unable to determine ownship and your TIS-B target is detected, there is no way to remove your TIS-B target from the map other than by turning off the **Traffic** layer.

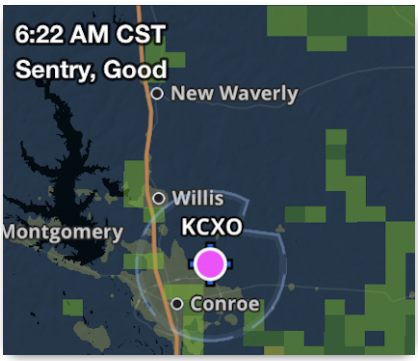
ADS-B WEATHER

The Flight Information Service Broadcast (FIS-B), commonly referred to as ADS-B weather, is a continuous ground-based weather and NOTAM broadcast. FIS-B also includes station information: latitude, longitude, tower type, and tower status. ForeFlight can display ADS-B weather, NOTAMs, and tower information on the map when connected to Sentry, Sentry Mini, or Sentry Plus.

Reception of ADS-B weather requires direct (line-of-sight) communication with a minimum of one ground-based transmitter. Aircraft on the ground or at low altitudes may not be able to receive ADS-B weather due to an inability to achieve line-of-sight communication.

ForeFlight displays a label in the upper left corner of the map when a weather or NOTAM layer is selected. The label indicates the source of data, the status of the source, and the last time the data was updated. When connected to an ADS-B receiver, the label indicates how many towers are currently being received, not how strong the signal is. ForeFlight will display one of the following four statuses:

- **No Towers** - Sentry is not receiving any tower data.
- **No Data** - Sentry receiving tower data, but not weather or NOTAM data.
- **Marginal** - Sentry receiving FIS-B data from one tower.
- **Good** - Sentry receiving FIS-B data from more than one tower.



FIS-B Signal Status

ADS-B Ground Based Towers

Hundreds of towers throughout the United States broadcast FIS-B data. There are four types of FIS-B ground-based towers: surface, low altitude, medium altitude, and high altitude. Each tower type provides a range of aeronautical information (see table in this chapter for additional details). Approximately two-thirds of towers in the United States are low altitude tier towers. Low altitude towers provide less information but can be received at lower altitudes.

The amount of information broadcast by a tower is determined by its look-ahead range. ADS-B tower look-ahead range specifies how far and the type of data a tower transmits. For example, a low altitude tower broadcasts METARs for airports within 250 nm, whereas a medium altitude tower broadcasts METARs for airports within 375 nm.

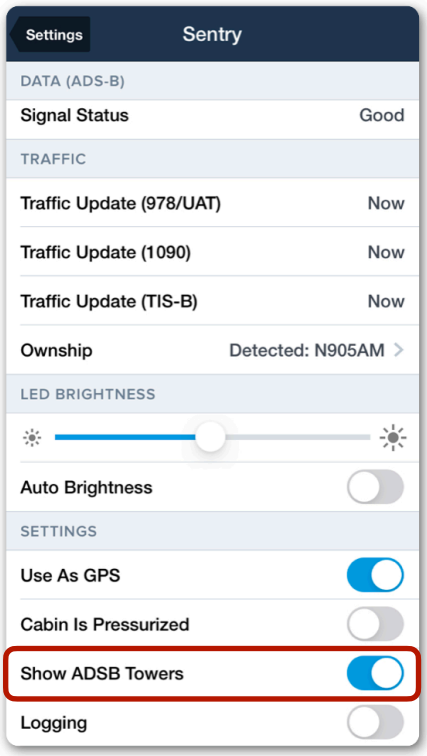
Sentry is capable of receiving data from multiple towers simultaneously. What is shown in ForeFlight is a combination of data from all the towers being received.

Tower Location on Map

ForeFlight can display the towers Sentry is receiving data from on the map. Any data being received from a tower (including station data only) will result in the tower being displayed on the map.

To display ADS-B towers, open **Map Settings** > **Sentry** and enable **Show ADS-B Towers**. Tower location can also be depicted by enabling the setting in **More** > **Devices** > **Sentry** > **Show ADS-B Towers**.

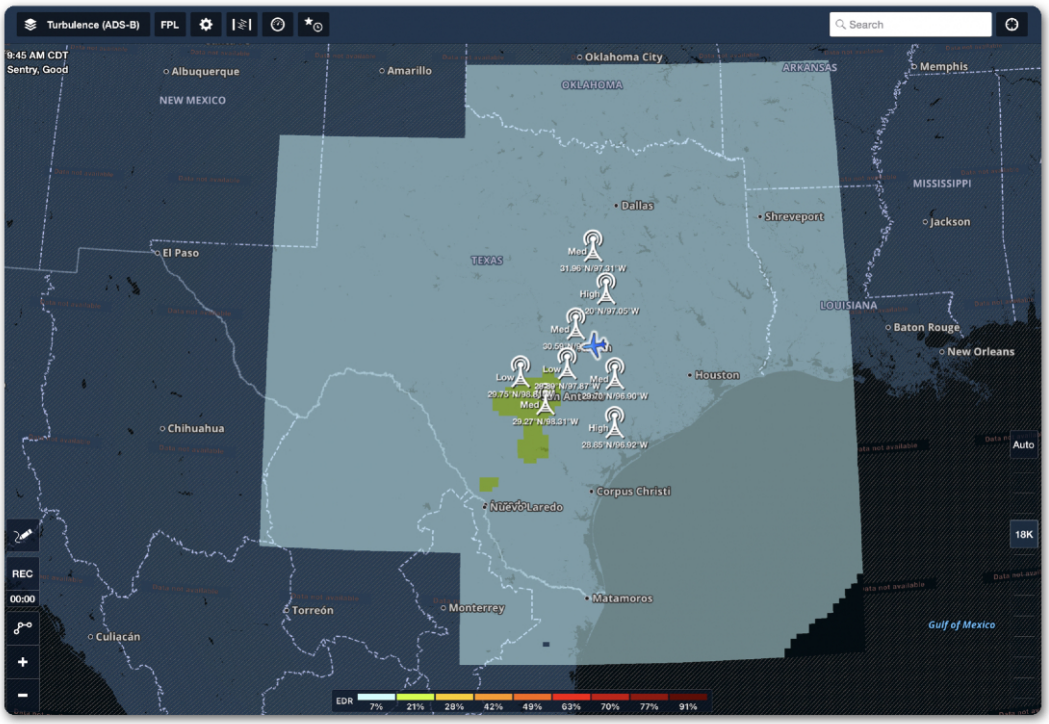
Towers are depicted on the map at their approximate location. Tower latitude, longitude, and tower type are shown next to the tower icon. Tapping an ADS-B tower icon does not provide any additional information.



Show ADS-B Towers

FIS-B Tower Tiers and Look-Ahead Range

ForeFlight combines information from multiple towers (if applicable) into a single map layer. Areas outside the broadcast range (look-ahead range) display hash marks and **Data not available** labels.



Example of ADS-B Turbulence Look Ahead Range

ADS-B Tower Tier Look-Ahead Range

Refer to the table below to determine weather product availability and broadcast range.

Weather Product	Surface Towers	Low Altitude Tier	Medium Altitude Tier	High Altitude Tier
CONUS NEXRAD	Not Provided		Entire CONUS	
REGIONAL NEXRAD	150 nm		200 nm	250 nm
METAR	100 nm	250 nm	375 nm	CONUS B & C Airports
TAF	100 nm	250 nm	375 nm	
AIRMET/SIGMET	100 nm	250 nm	375 nm	500 nm
Graphical AIRMETs	Not Provided	250 nm	375 nm	
CWA				
PIREPs				
SUA				
NOTAM	100 nm			
Cloud Tops	Not Provided	150 nm	200 nm	250 nm
Icing				
Lightning				
Turbulence				
Winds & Temp Aloft	500 nm		750 nm	1000 nm

FIS-B Look-Ahead Range by Tower Tier and Weather Product

Weather Replay

All Sentry receivers have an integrated memory chip that allows them to store up to 30 minutes of weather and NOTAM data. When Sentry is powered on and receiving ADS-B data, it automatically starts storing the information it receives.

Sentry automatically deletes data older than 30 minutes. Weather Replay reduces the time it takes to display ADS-B data by storing information locally until you select the stored weather product in ForeFlight. Information from the integrated Weather Replay memory chip appears no different in ForeFlight than information received in real-time.

ADS-B Map Layers

When connected to Sentry, ADS-B weather products become available to select from the layer menu.

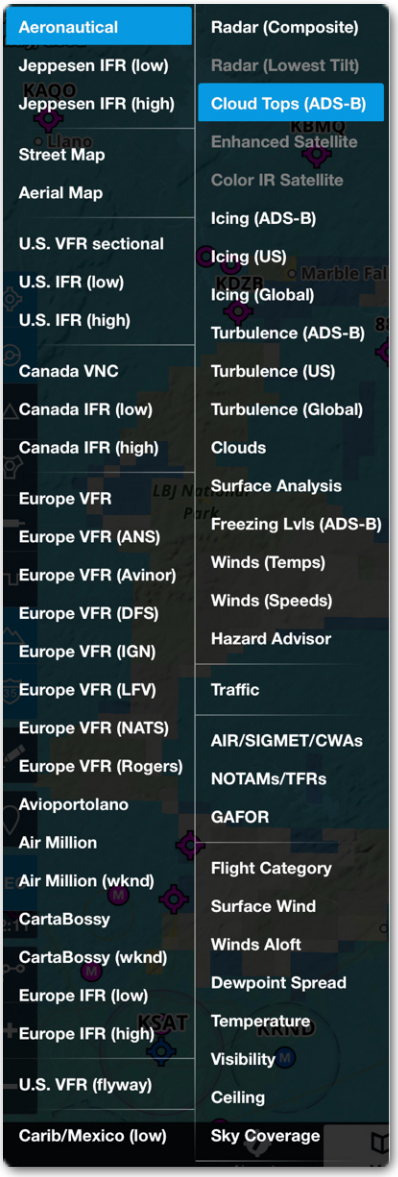
- Cloud Tops (ADS-B)
- Icing (ADS-B)
- Turbulence (ADS-B)
- Freezing Level (ADS-B)

ADS-B weather layers can be selected even if data is not being received. If you select an ADS-B only weather layer before receiving data, the map displays **No Data Available**.

The layer menu includes weather products that are available when connected to Sentry and may also be available via Pack. If a weather layer is selected when connected to Sentry but the data was not packed, the map displays **No Data Available**.

If a weather product is not part of the FIS-B broadcast or able to be packed, it is greyed out and not selectable (e.g., Enhanced Satellite and Radar Lowest Tilt).

NOTE: If a weather product is not listed in the map layer menu, it is not included in your subscription.



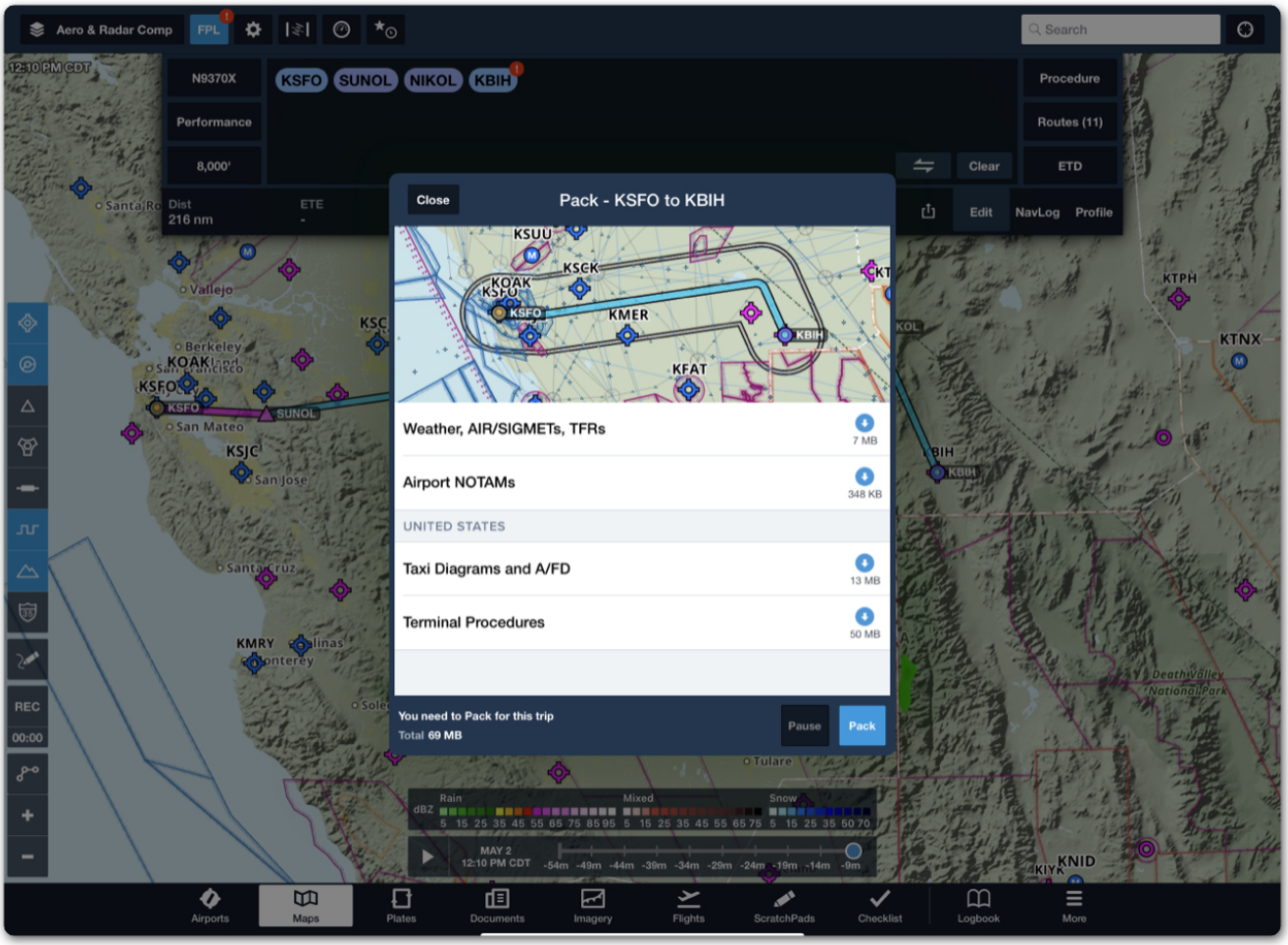
Performance Plus Map Layers

ForeFlight Pack

ForeFlight can download charts, weather, NOTAMs, and fuel price information for your upcoming flight so that you can access the information en route. Pack requires an active internet connection and can not be completed while connected to Sentry. ForeFlight recommends Packing for your flights before heading to the aircraft.

To download information, pack for your flight by tapping the suitcase button at the bottom of the FPL editor. Alternatively, tap **Pack** from the Flights view. Packing from the Maps view or Flights view downloads the same information.

Packing for a flight downloads the latest weather information along with charts, NOTAMs, and fuel prices for the airports within 25 nm of your route and 50 nm of your destination and departure airports.



ForeFlight Pack

Packing with Sentry

When you pack for a flight and connect to Sentry, ForeFlight displays the *latest* information it has available. For example, if you pack for a flight and check the METARs along your route before receiving FIS-B data, ForeFlight will display the METARs from when you packed.

After you depart and start to receive FIS-B data, ForeFlight will automatically delete the packed METARs and display the FIS-B data provided by your Sentry. Refer to the table below to determine when you should be able to view a particular weather product.

Weather Product	Minimum Subscription	Internet	Pack	Sentry
Radar (Composite)	Basic Plus	✓		✓
Radar (Lowest Tilt)	Basic Plus	✓		
Cloud Tops (ADS-B)	Basic Plus			✓
Enhanced Satellite	Basic Plus	✓		
Color IR Satellite	Basic Plus	✓		
Icing (ADS-B)	Basic Plus			✓
Icing (US)	Pro Plus	✓	✓	
Icing (Global)	Pro Plus	✓	✓	
Turbulence (ADS-B)	Basic Plus			✓
Turbulence (US)	Pro Plus	✓	✓	
Turbulence (Global)	Pro Plus	✓	✓	
Clouds	Pro Plus	✓	✓	
Surface Analysis	Pro Plus	✓	✓	
Freezing Lvls (ADS-B)	Basic Plus			✓
Winds (Temps)	Performance Plus	✓	✓	
Winds (Speeds)	Performance Plus	✓	✓	
AIR/SIGMET/CWAs	Basic Plus	✓	✓	✓
PIREPs	Basic Plus	✓		✓
Lightning	Basic Plus	✓		✓
METARs/TAFs	Basic Plus	✓	✓	✓
NOTAMs (Including TFRs)	Basic Plus	✓	✓	✓

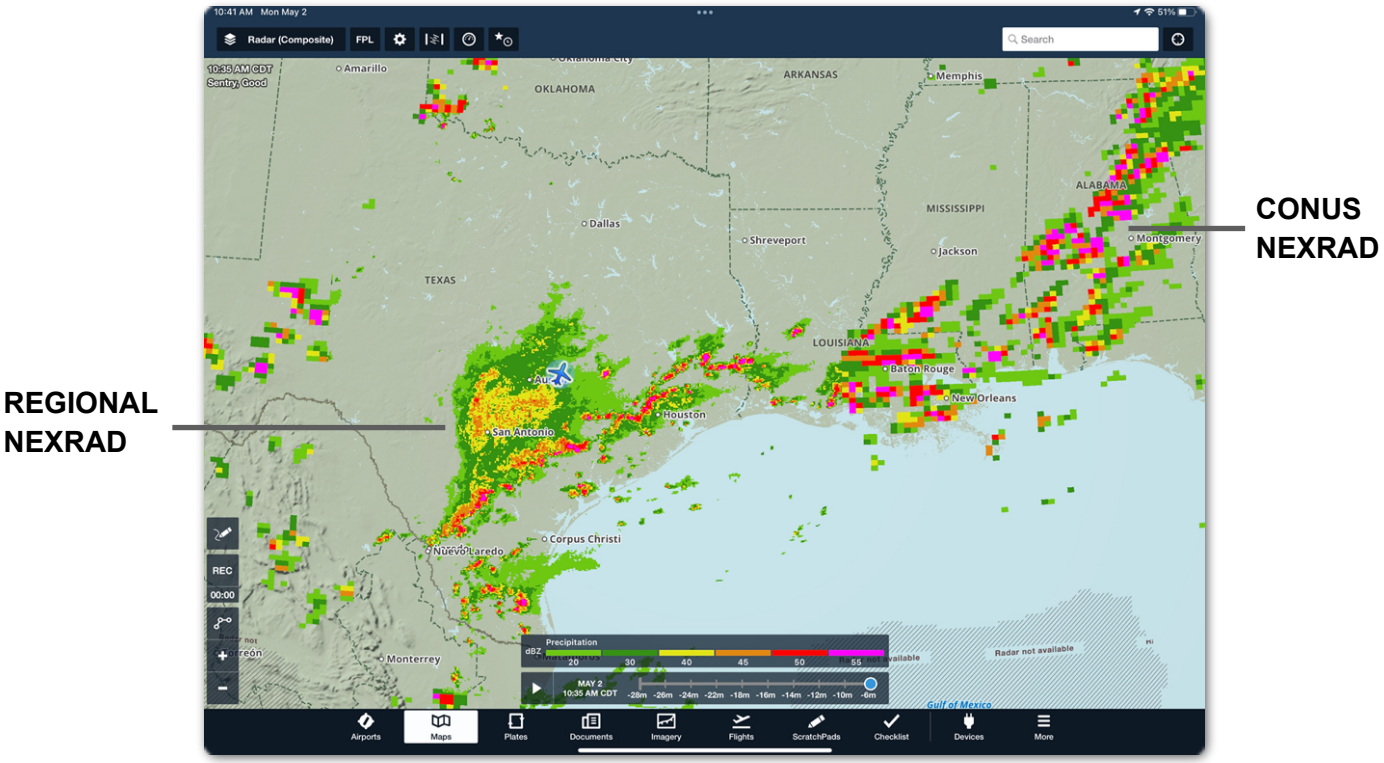
CONUS and Regional NEXRAD

Medium and high altitude FIS-B towers broadcast CONUS precipitation radar for the Continental United States (CONUS). Regional NEXRAD is broadcast by all tower tiers and is higher resolution than CONUS NEXRAD with a faster refresh rate.

To display ADS-B NEXRAD, select the **Radar (Composite)** map layer. **Radar (Lowest Tilt)** data is not broadcast via FIS-B or able to be packed. As a result, **Radar (Lowest Tilt)** is not selectable when connected to an ADS-B receiver.

ForeFlight receives updated CONUS NEXRAD every 5 minutes. FIS-B towers refresh CONUS NEXRAD data every 15 minutes. Regional NEXRAD is refreshed every 2 minutes. On clear days when there are no radar returns, Regional NEXRAD is refreshed every 10 minutes.

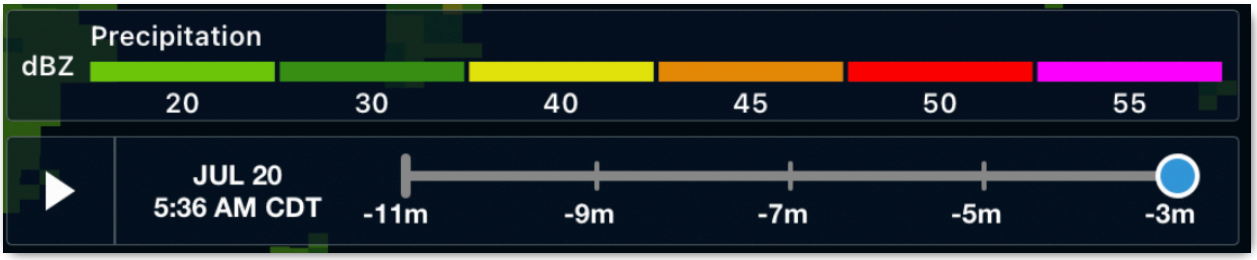
Regional NEXRAD is automatically displayed within the look-ahead range (150 nm to 250 nm based on tower tier). CONUS NEXRAD is displayed beyond the Regional NEXRAD look-ahead range. As you fly across the country, the radar returns will automatically change from CONUS to higher resolution Regional NEXRAD as you get within the look-ahead range.



ADS-B Radar (Composite)

Animated ADS-B Radar

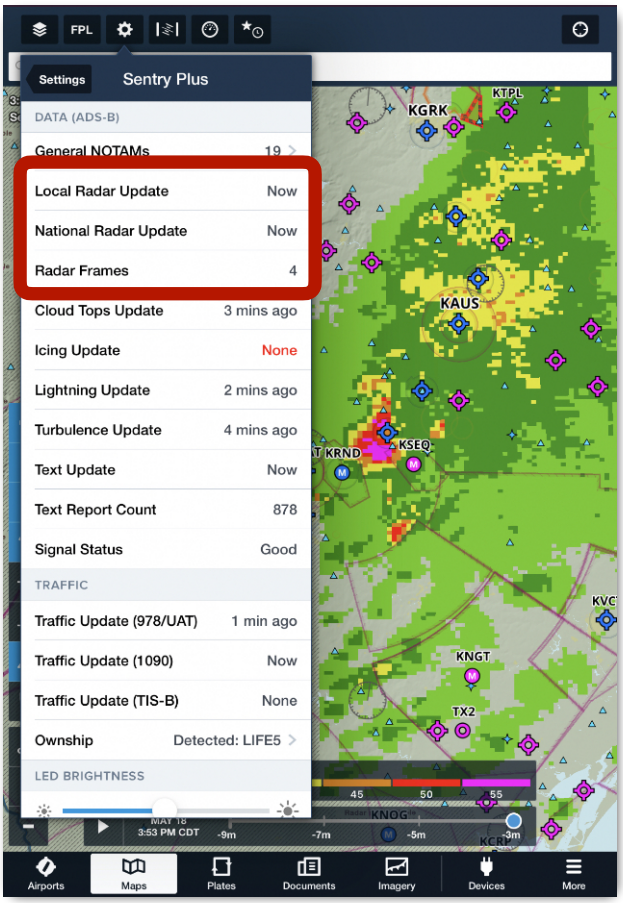
When **Radar (Composite)** is selected, the animate (play) button is displayed left of the time slider at the bottom of the Maps view. The time slider and play button are removed when less than two radar frames are available. ForeFlight will animate (loop) up to 10 frames of NEXRAD data.



NEXRAD Animation Time Slider with Play Button

Open the **Map Settings** (gear button) and select **Sentry** (near the bottom of the list) to see how many radar frames are stored via Weather Replay.

If two or more radar frames have been received, radar can be animated. The Local Radar Update displays when Regional NEXRAD was last updated. National Radar Update displays when CONUS NEXRAD was last updated.



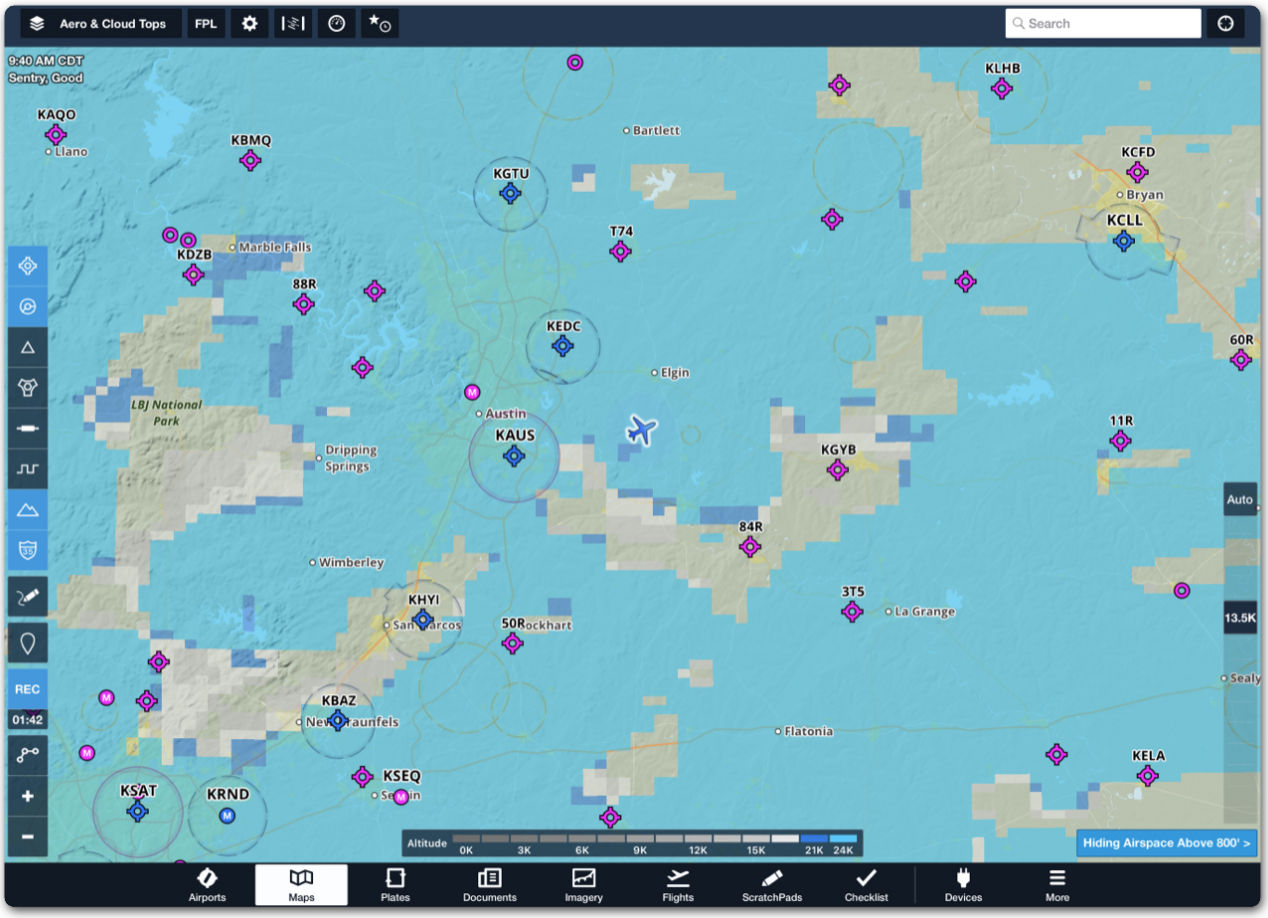
ADS-B Radar Update Times

Cloud Tops (ADS-B)

The Cloud Top (ADS-B) weather layer is included with all subscriptions when connected to Sentry. Cloud tops are a forecast map layer from the National Weather Service (NWS). Cloud tops are derived from satellite temperature sensors using the High-Resolution Rapid Refresh (HRRR) model.

Cloud Tops are only available for the continental United States. Cloud tops are not provided for Alaska, Hawaii, Guam, or Puerto Rico. The Cloud Top forecast is generated by NWS every hour and transmitted over ADS-B every 15 minutes.

Select **Cloud Tops (ADS-B)** from the layer selector and use the altitude slider on the right side of the map to filter clouds with tops below the selected altitude. Cloud Tops (ADS-B) is a useful tool for determining if flight can be conducted in visual conditions above the clouds. Forecast cloud tops that exist at or above the selected altitude are depicted on the map according to the color-coded scale. Tap **Auto** above the altitude slider to automatically display cloud tops at and above your current GPS altitude.



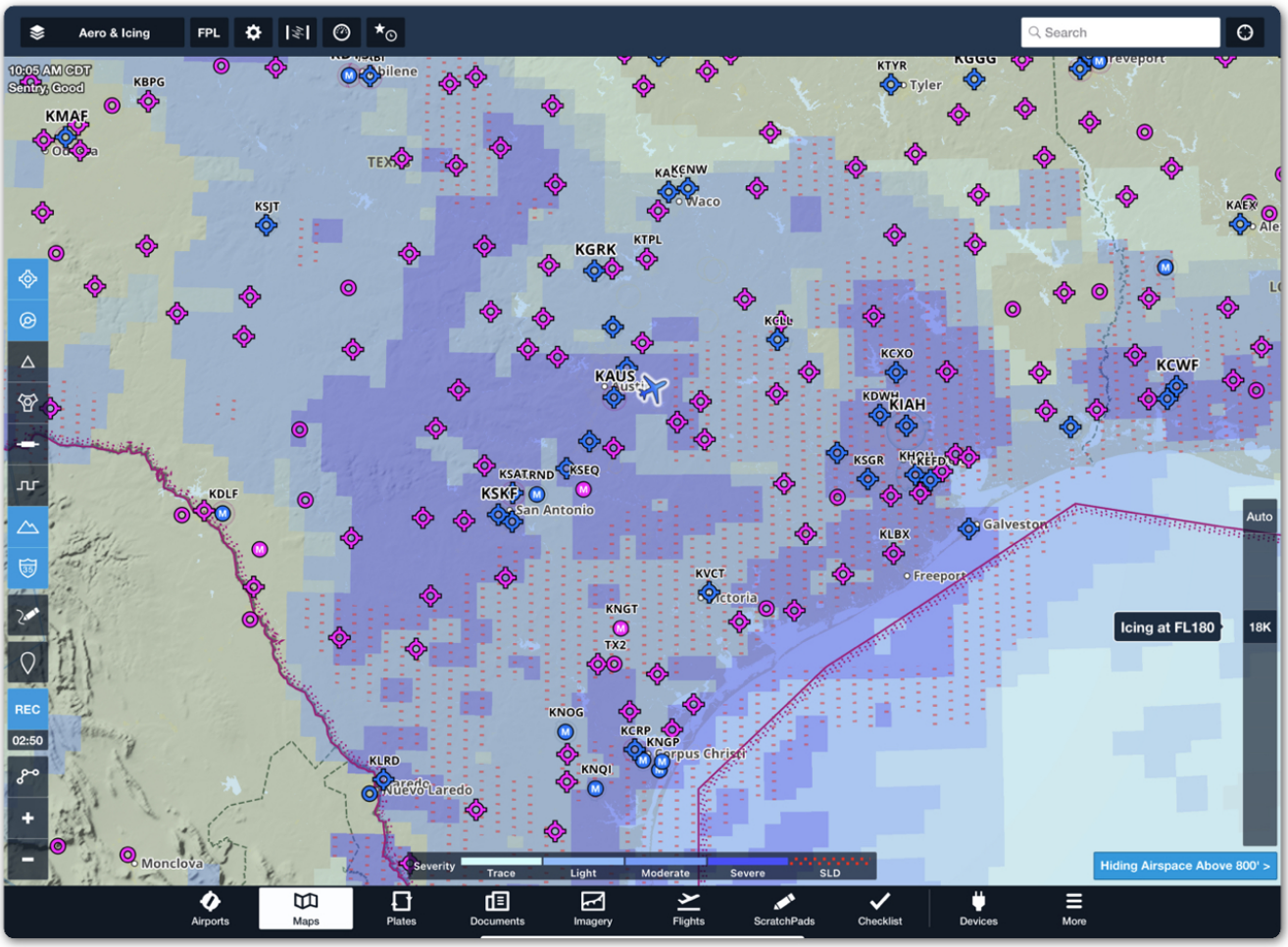
Cloud Tops (ADS-B)

Icing (ADS-B)

The Icing (ADS-B) weather layer is included with all subscriptions when connected to Sentry. ADS-B icing is an NWS graphical forecast with a look ahead range of 150 nm to 250 nm.

Forecast icing severity and anticipated presence of super-cooled large droplets (SLD) are provided for every 2,000 ft up to 24,000ft MSL. The altitude slider on the right side of the map is displays the icing data at various altitudes. This information comes from the NWS Forecast Icing Potential model, available only in the continental United States. Forecast icing information is not provided for Alaska, Hawaii, Guam, or Puerto Rico. This model is run on an hourly basis. The transmission interval is every 15 minutes.

Select **Icing (ADS-B)** and use the altitude slider on the right side of the map to display forecast icing severity and anticipated presence of SLD. Tap **Auto** above the altitude slider to automatically display icing information at your GPS altitude.



Icing (ADS-B)

Turbulence (ADS-B)

The Turbulence (ADS-B) weather layer is included with all subscriptions when connected to Sentry (or another supported ADS-B receiver). Turbulence (ADS-B) is an NWS *forecast* map layer with a look-ahead range of 150 nm to 250 nm.

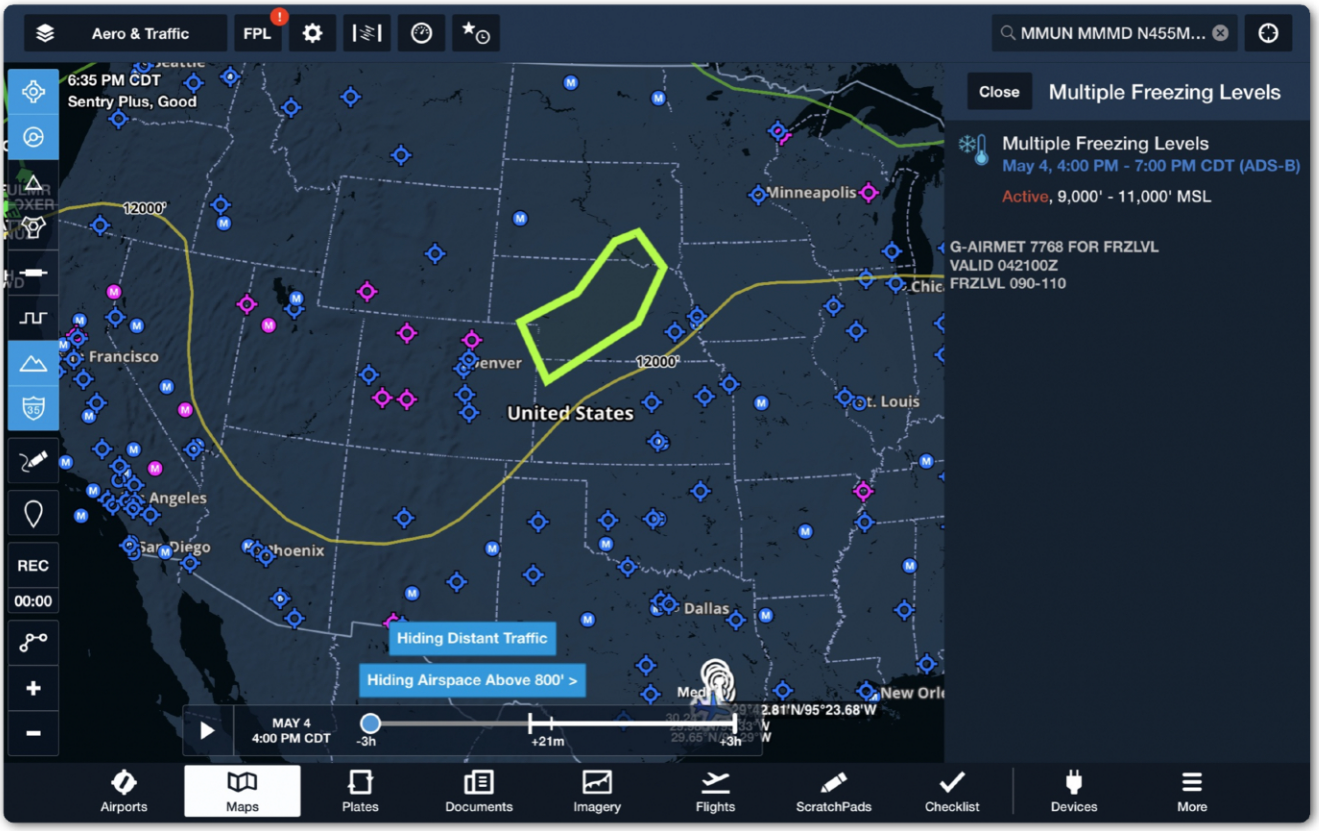
Turbulence (ADS-B) displays the forecast eddy dissipation rate (EDR) (i.e., turbulence intensity) based on a medium aircraft weight category. Turbulence is depicted at every 2,000 feet to 24,000 feet MSL using the altitude slider on the right side of the map. Turbulence (ADS-B) data is available only in the continental United States. Tap **Auto** above the altitude slider to automatically display forecast turbulence intensity at your GPS altitude.

Turbulence (ADS-B)

Freezing Lvls (ADS-B)

The Freezing Level (ADS-B) layer is included with all subscriptions when connected to Sentry. The map layer provides a graphical representation of freezing levels across North America. Freezing levels are delineated with color-coded lines at 4000 feet intervals (MSL) up to 24,000 feet (MSL).

If there are multiple freezing levels for a region, a shaded polygon is displayed on the map. Tap the polygon to display additional details. Freezing level forecasts are generated every three hours and automatically updated in ForeFlight.



Freezing Lvls (ADS-B)

AIRMETs, SIGMETs, CWAs

ForeFlight combines AIRMETs, SIGMETs, and Center Weather Advisories (CWA) into a single map layer. When the **AIR/SIGMET/CWAs** map layer is selected, the individual weather products can be filtered with the buttons near the bottom of the map.

AIR/SIGMET/CWA Filters

Buttons highlighted in blue are selected, and the relevant advisories are displayed graphically on the map during the appropriate active time.

AIRMETs, SIGMETs, and CWA layers are routinely updated every six hours and are automatically refreshed in ForeFlight every five minutes. AIRMETs, SIGMETs, and CWAs are forecast products. Use the time slider to view future forecast periods.

If an observed weather product (i.e., Radar) is selected at the same time as the AIR/SIGMET/CWA layer, the time slider reflects historical data, not forecast.

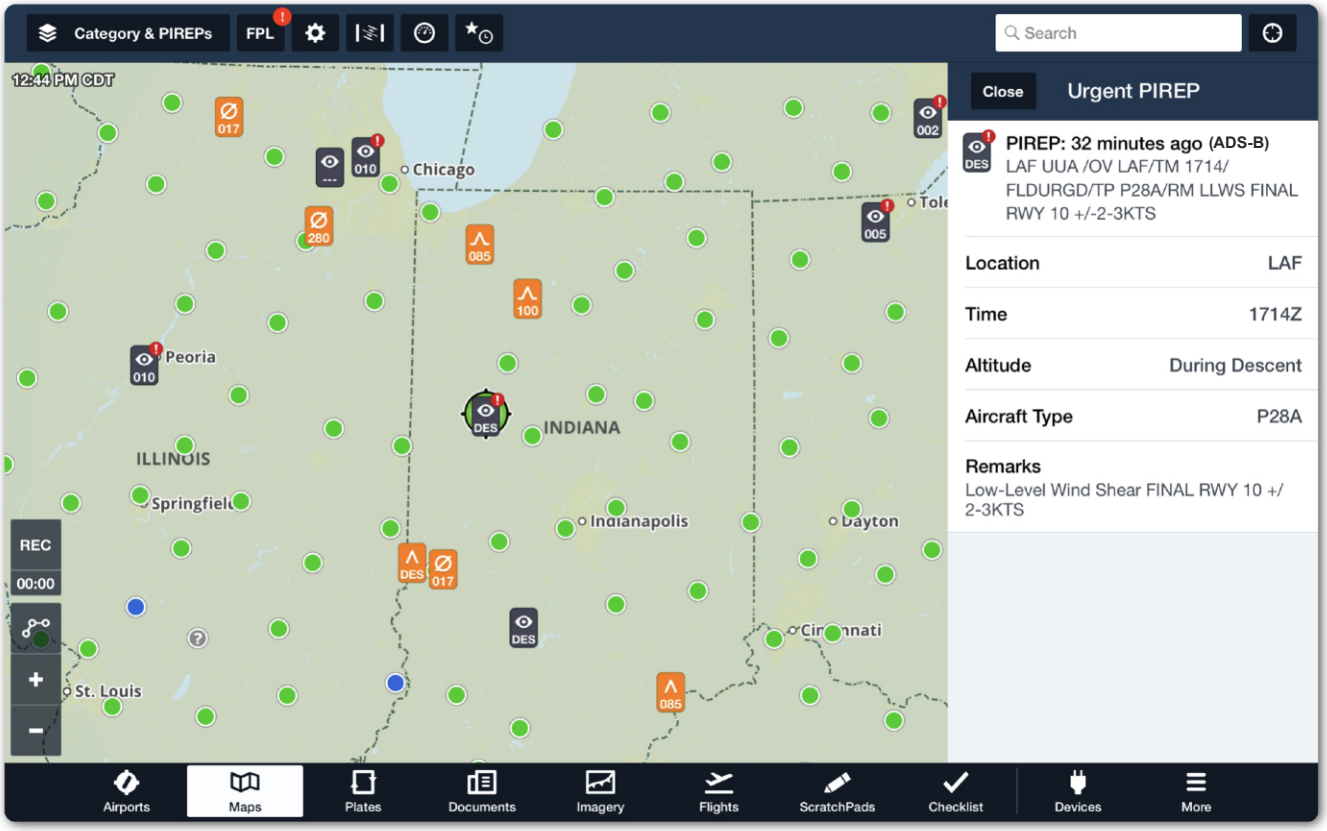
Tap an AIRMET, SIGMET, or CWA to display the associated textual pop-up. If there are more than one active layers where you tapped, the advisories are depicted in a list view. Tap an individual advisory to display the advisory's text.

AIR/SIGMET/CWAs with ADS-B Radar and Surface Winds

PIREPs

Pilot reports (PIREPs) are broadcast over ADS-B with a range of 250 nm, 375 nm, and 500 nm for low, medium, and high altitude towers, respectively. PIREPs are issued by pilots as needed and are automatically refreshed in ForeFlight every ten minutes.

PIREPs are displayed graphically on the map when the **PIREPs** layer is active. Tap a PIREP to display the coded and decoded PIREP text. The age of the PIREP is displayed at the top of the PIREP menu alongside the source (ADS-B).



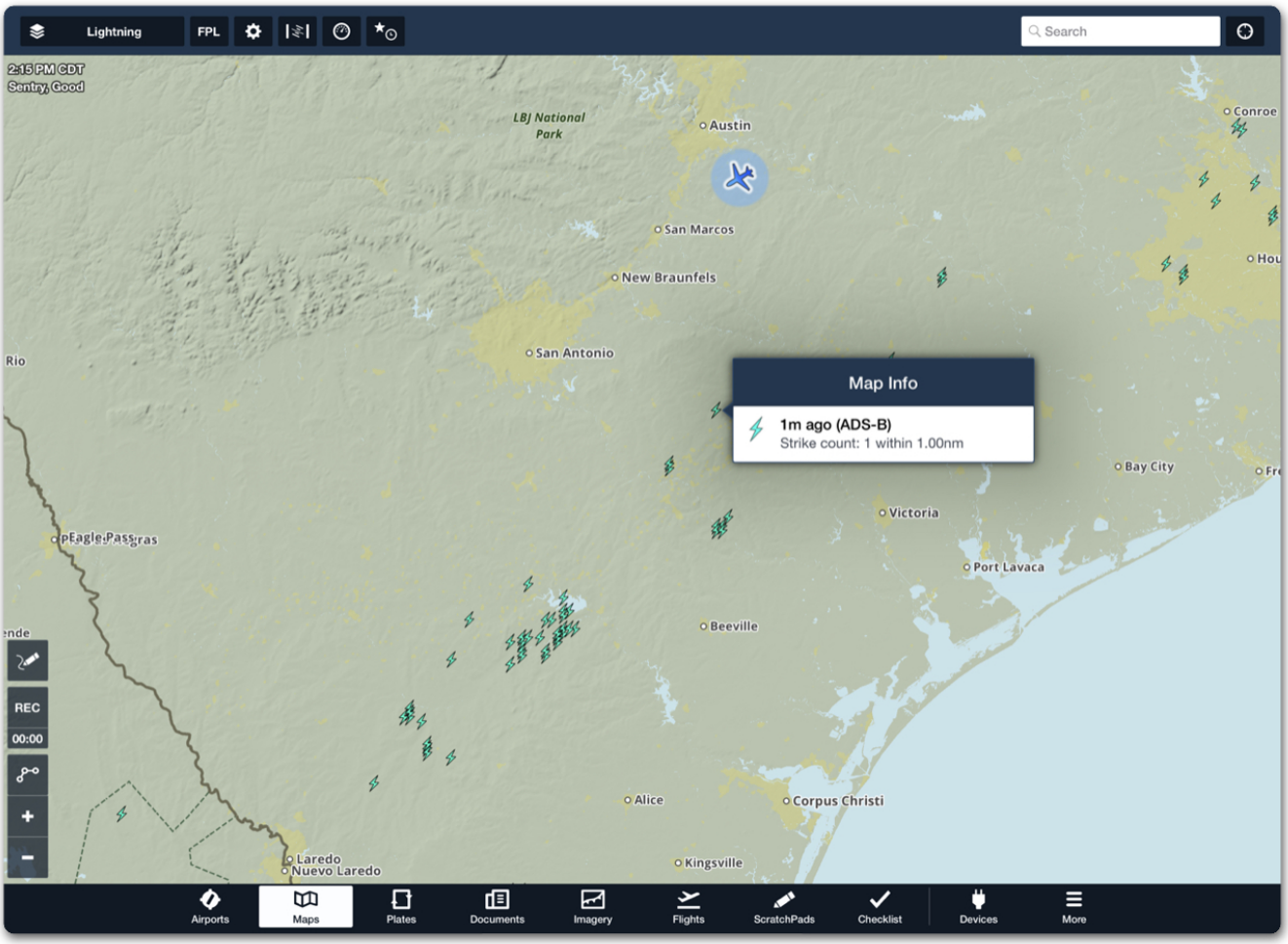
FIS-B PIREPS

NOTE: PIREPs not formatted properly are not depicted on the map.

Lightning

The Lightning layer is included with all subscriptions when connected to Sentry. Lighting provides a graphical representation of the observed *cloud-to-ground* lightning strike density and polarity every five minutes from the U.S. national lightning detection network.

Lighting data is transmitted over FIS-B with a 150 to 250 nm look-ahead range. Tap a lightning icon to reveal the number of strikes within the given radius.



Lightning Data from Sentry

METARs

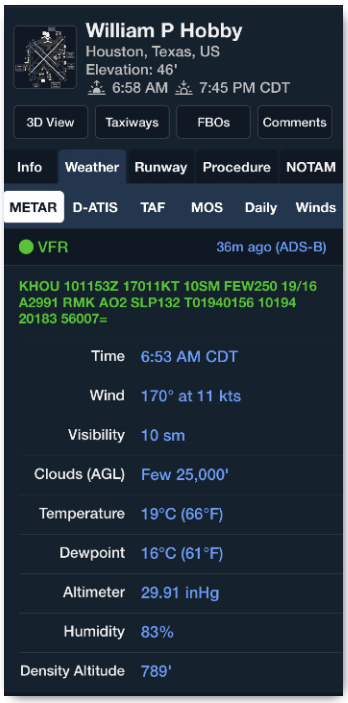
All tower types transmit METARs. Low altitude towers transmit METAR data for airports within 250 nm.

If receiving data exclusively from low altitude towers, it will not be possible to display ADS-B METAR data for airports that are greater than 250 nm from the towers.

METARs from ADS-B can be viewed the same way as when connected to the internet. Tap an airport icon and select **Weather** > **METAR**. The airport pop-up displays the METAR, when it was updated (36m ago), and the source (ADS-B).

Selecting a map layer that uses METAR data displays the relevant information on the map (Flight Category, Surface Winds, Dewpoint Spread, Temperature, Visibility, Ceiling, Sky Coverage).

METARs received via ADS-B are also available on the Airports view. METARs are refreshed automatically every five minutes or when the layer is first selected.



ADS-B METAR

TAFs

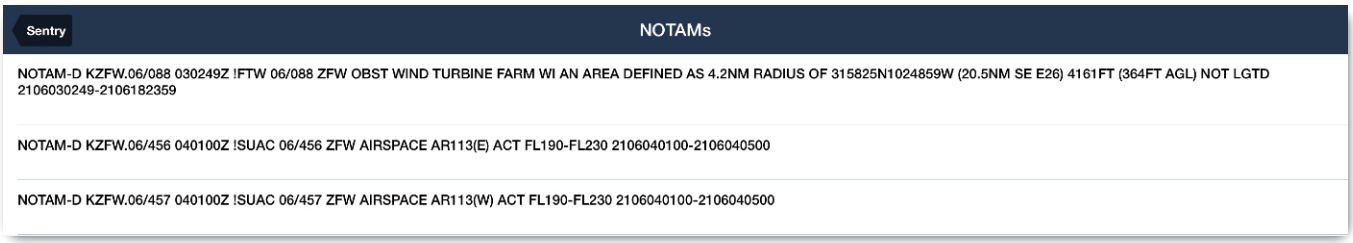
TAFs are broadcast with the same look-ahead specifications as METARs. TAFs received via FIS-B are viewed the same way as when connected to the internet.

Tap an airport on the map and select **Weather** > **TAF**. TAFs are updated by the National Weather Service every six hours or as unexpected weather occurs. ForeFlight obtains the latest TAFs when the layer is first selected and automatically every ten minutes after that. Due to TAF update frequency, it’s not uncommon to see TAF update times up to six hours old.

SUA

Special Use Airspace (SUA) is an area designated for operations that may impose limitations on aircraft not participating (Alert Area, Controlled Firing Area, Military Operations Area, Prohibited Area, Restricted Area, and Warning Area). SUA status is broadcast over the FIS-B NOTAM-D feed and displayed textually in ForeFlight.

Because SUA is not directly associated with an airport, SUA status is only available by selecting **More** > **Devices** > **Sentry** > **NOTAMs**. SUA status NOTAMs have a 100 nm look ahead and are refreshed automatically in ForeFlight every ten minutes.



Special Use Airspace (SUA) Status NOTAMs

NOTAMs

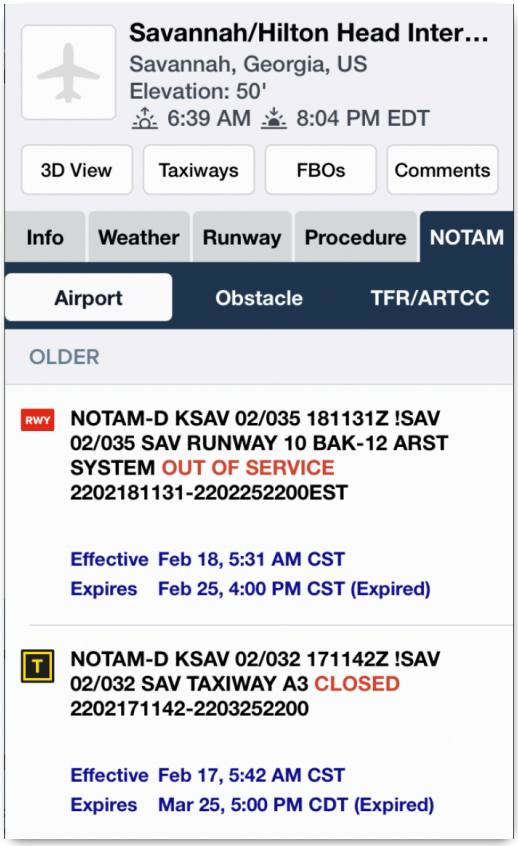
Flight Data Center (FDC*)* and domestic NOTAMs are broadcast over FIS-B. FIS-B NOTAMs are limited to NOTAMs from the preceding 30 days and do not provide all NOTAMs that a standard preflight briefing includes.

FDC NOTAMs are regulatory in nature. Temporary Flight Restrictions (TFRs) and amendments to published instrument approach procedures are broadcast as FDC NOTAMs over FIS-B.

TFRs that contain properly formatted graphical information can be displayed on the map. Individual sporting event (stadium) TFRs are not broadcast over FIS-B. Stadium NOTAMs must be viewed over the internet or **Pack** them for a flight.

NOTAMs broadcast over FIS-B have a 100 nm look ahead range and are refreshed automatically in ForeFlight every ten minutes.

NOTAMs can be viewed from the Airports or Maps view by tapping an airport icon and selecting **NOTAM**.

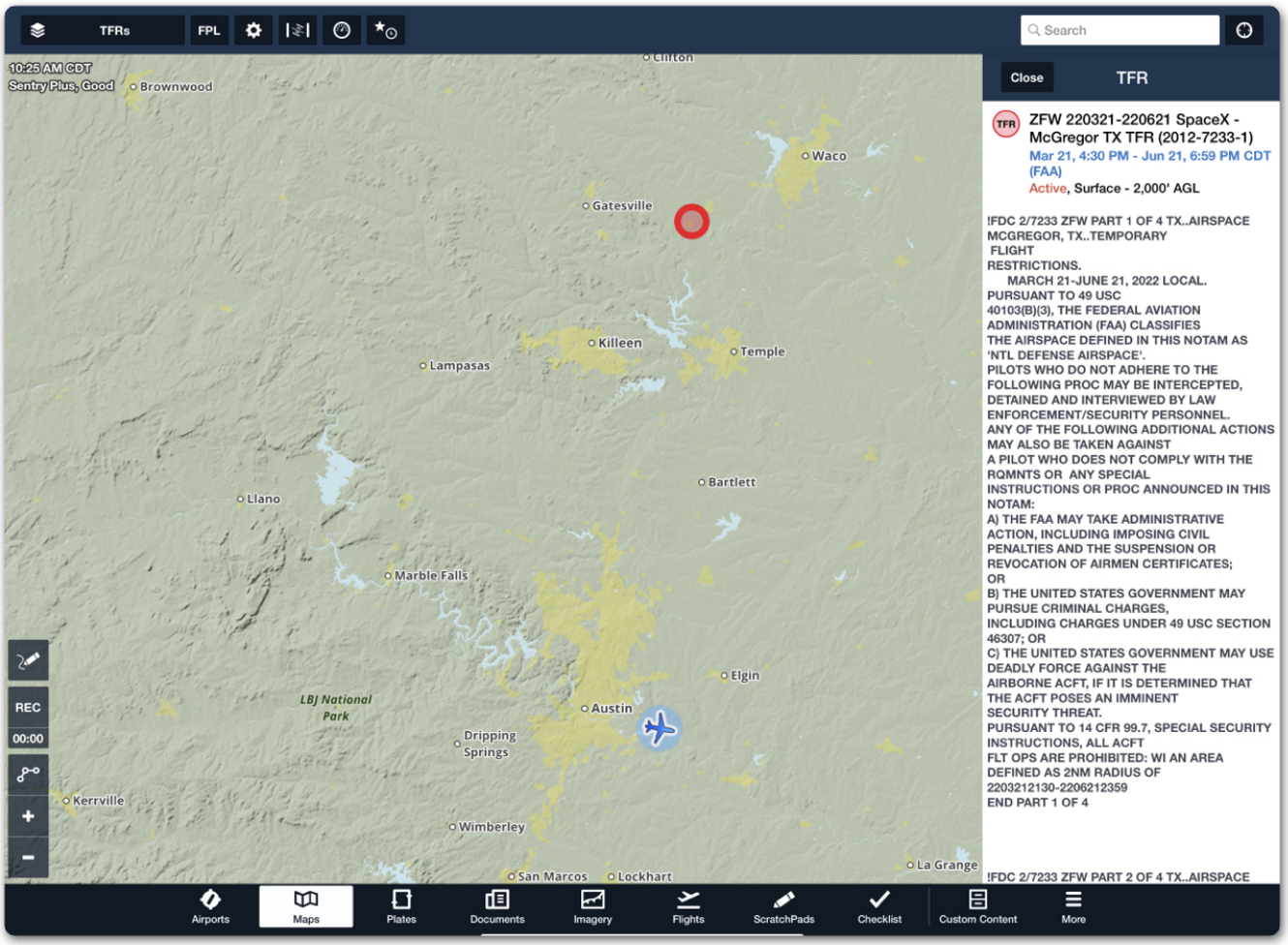


FIS-B Domestic NOTAMs

Temporary Flight Restrictions (TFR)

Temporary Flight Restrictions (TFRs) are issued via FDC NOTAM. TFRs temporarily restrict non-participating aircraft access to airspace. TFRs from the preceding 30 days (with properly formatted graphical information) are displayed on the Maps view when the **TFRs** map layer is selected.

TFRs which are within 8 hours of becoming active are **red**. Published TFRs that are *more* than 8 hours from becoming active are yellow. Tap the TFR shape to reveal the raw text associated with the FDC NOTAM.



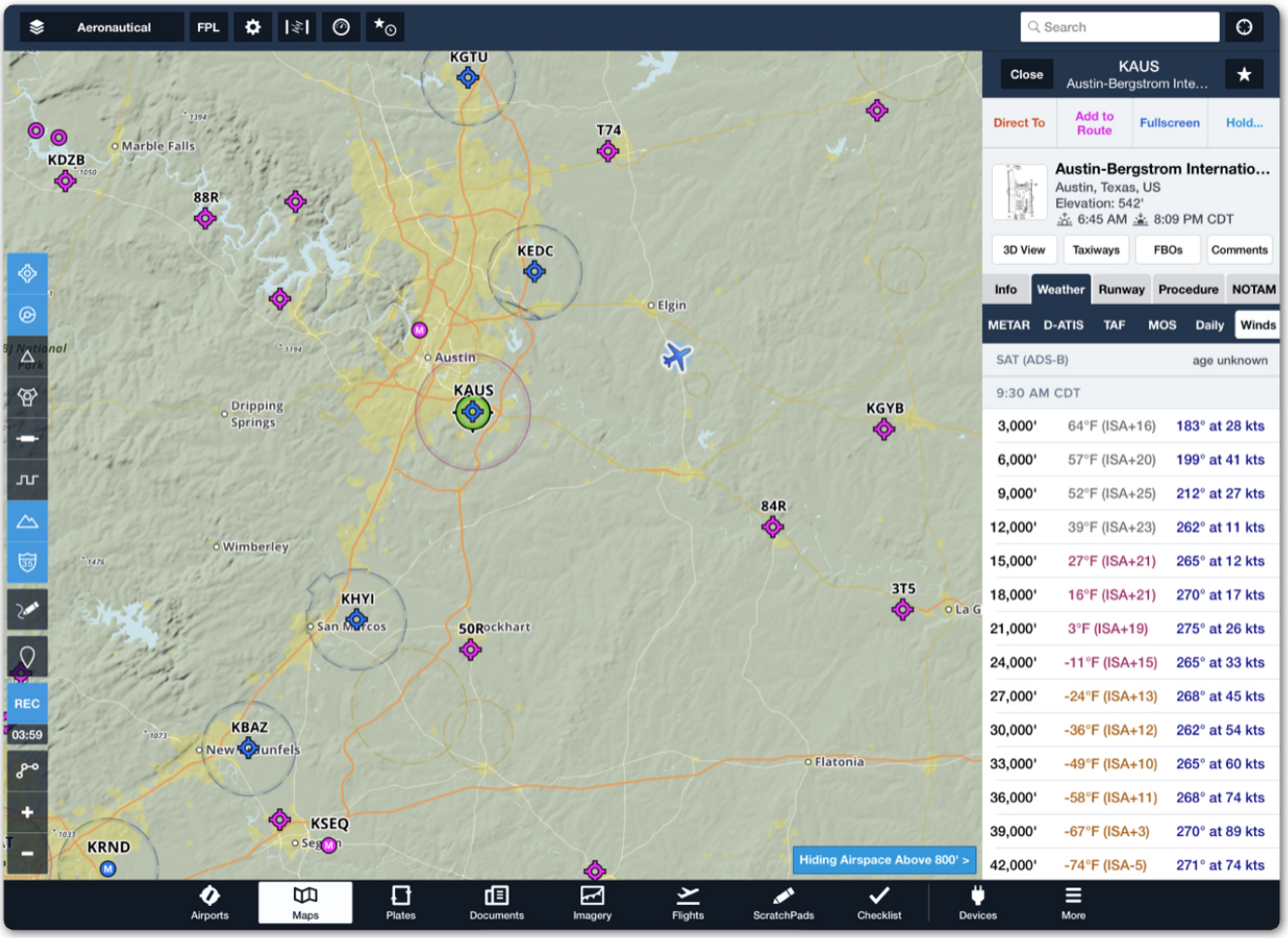
FIS-B Temporary Flight Restriction - NOTAM (FDC)

WARNING: Information obtained *solely* via FIS-B should not be regarded as a thorough preflight briefing. NOTAMs that are not TFRs are not displayed graphically when the data source is ADS-B.

Winds & Temperatures Aloft

Winds & Temperatures Aloft are broadcast over FIS-B with a look-ahead range up to 1000 nm. Winds & Temperatures aloft are included with all subscriptions when connected to Sentry.

To view Winds & Temperatures Aloft, tap an airport icon and select **Weather** > **Winds**.



FIS-B Winds & Temperatures Aloft

NOTE: The Winds Aloft *map layer* is not available over FIS-B. To view the Winds Aloft map layer in flight, use ForeFlight Pack.

WAAS GPS

Sentry, Sentry Mini, and Sentry Plus are equipped with an integrated WAAS GPS. Sentry can receive GNSS position data from up to three GNSS constellations concurrently (GPS, Galileo, and GLONASS). Sentry GPS is capable of signal spoofing detection and advanced jamming techniques.

Sentry GPS Accuracy

GPS accuracy is determined by Sentry's internal processor. The processor controls Sentry's GPS LED and sends accuracy data to ForeFlight for display in the Accuracy instrument.

GPS LED

On the front of each Sentry is an LED that automatically changes color as Sentry's GPS accuracy changes.

- **Green** - Sentry providing three-dimensional GPS data.
- **Yellow** - Sentry providing two-dimensional GPS data.
- **RED** - Sentry not providing GPS data.

Sentry Mini GPS LED

ForeFlight Mobile Accuracy Instrument

When an accurate GPS signal is provided by Sentry, aircraft position is displayed on the ForeFlight moving map. The ForeFlight *Accuracy* instrument displays Sentry's reported GPS accuracy. Smaller reported values provide more accurate GPS position information. The *Sentry Plus* OLED display can also display GPS accuracy.

To display GPS accuracy in ForeFlight, enable the instrument panel by tapping the airspeed indicator button in the upper toolbar. Tap the instrument panel where you want *Accuracy* to be displayed. Select **GPS Accuracy** from the list of available instruments.

ForeFlight Mobile GPS Accuracy Instrument

Troubleshooting GPS

If Sentry GPS accuracy exceeds 100 meters, ForeFlight will not display your position on the map. To troubleshoot GPS issues or to compare GPS accuracy with the iOS device's internal GPS (if equipped), select **More** > **Devices** > **Sentry** and disable **Use as GPS**. When **Use as GPS** is deselected, ForeFlight uses the iOS device's internal GPS (if equipped).

The lack of an aircraft icon on the map can be a result of poor GPS signal or device settings. To troubleshoot, follow these steps:

1. Ensure Sentry has a clear view of the sky.
2. Select **More** > **Settings** > **Enable Ownship** and verify **Always** is selected.
3. Verify **Use as GPS** is enabled in **More** > **Devices** > **Sentry**.
4. If enabled, toggle **Use as GPS** off to see if the issue is corrected.
5. Verify iOS Location Services.
    a. Open the iPad/iPhone Settings app and select **Privacy**.
    b. Verify Location Services are enabled.
    c. Select ForeFlight.
    d. Verify **While Using the App** or **Always** is selected.
    e. Enable **Precise Location**.

How do I troubleshoot a yellow or red GPS LED.

Poor GPS accuracy is often a result of Sentry not being able to view the GPS satellites. Move Sentry in the cockpit or bring Sentry closer to a window (if indoors) to improve accuracy.

AHRS

Sentry and Sentry Plus provide ForeFlight Mobile with an attitude and (GPS) heading reference system (AHRS). Attitude data is provided by a 3-axis accelerometer and digital gyroscope.

ForeFlight Mobile's backup attitude indicator displays Sentry's attitude and GPS track information in real-time. Attitude and GPS track information can be reviewed post-flight with ForeFlight Track Log.

Sentry Provided Pitch & Roll Information

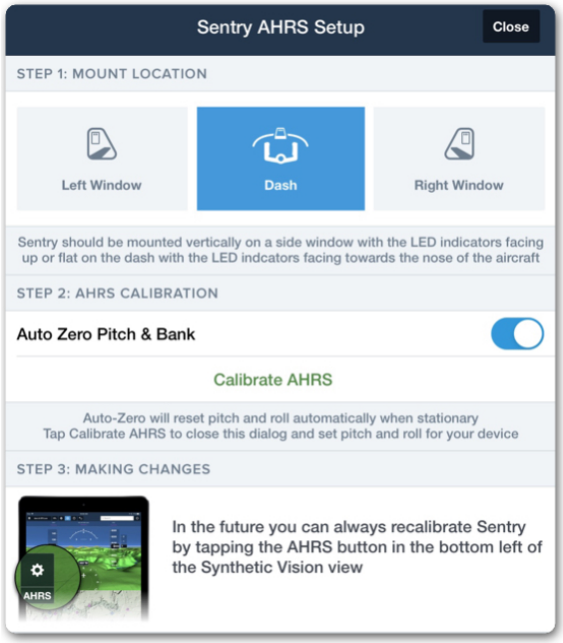
NOTE: Sentry and Sentry Plus AHRS are not optimized for acrobatic flying.

Mounting Location

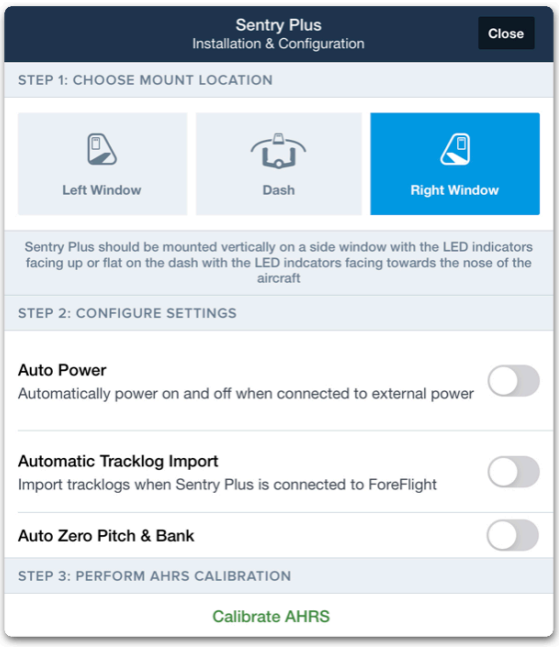
To provide accurate pitch and roll information, Sentry must communicate to ForeFlight where it is mounted. Selecting a mounting location is one of the options provided during the *initial* setup process. The *initial* setup menu is automatically displayed anytime ForeFlight recognizes a new Sentry or Sentry Plus.

To change the mounting location after initial setup, perform the following

1. Open ForeFlight's backup attitude indicator (Attitude Indicator button in the upper toolbar).
2. Tap the AHRS settings (gear) button near the bottom left corner of the screen.
3. Select a new mounting location (Left Window, Dash, or Right Window).



Sentry Initial Setup



Sentry Plus Initial Setup

NOTE: Sentry and Sentry+ mounting location can be changed as often as necessary.

Calibrating AHRS

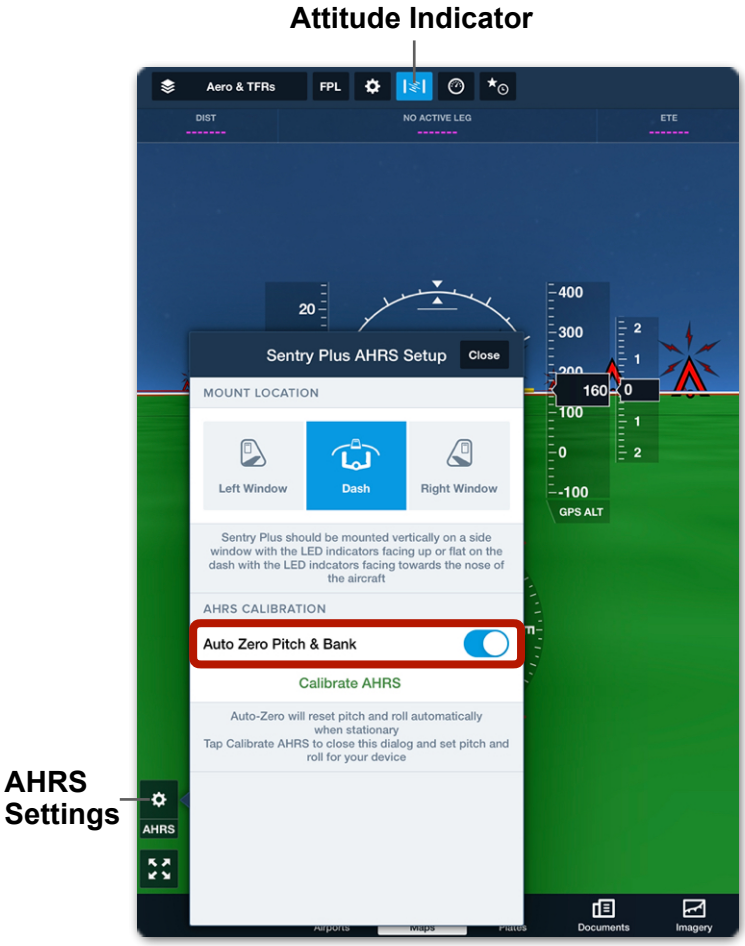
Sentry and Sentry Plus AHRS can be calibrated automatically or manually. Calibrating Sentry AHRS ensures the backup attitude indicator displays a level horizon when straight and level. The recommended method is to calibrate AHRS *automatically*.

Automatically Calibrating AHRS

To *automatically* calibrate Sentry or Sentry Plus AHRS, perform the following

1. Open ForeFlight's backup Attitude Indicator (see image below).
2. Tap the AHRS settings (gear) button.
3. Enable the **Auto Zero Pitch & Bank** setting.

When **Auto Zero Pitch & Bank** is enabled, ForeFlight constantly evaluates your pitch, bank, and acceleration. When ForeFlight determines that your aircraft has been straight and level with no acceleration for more than ten-seconds, it automatically cages the AHRS and displays zero degrees of pitch and roll.

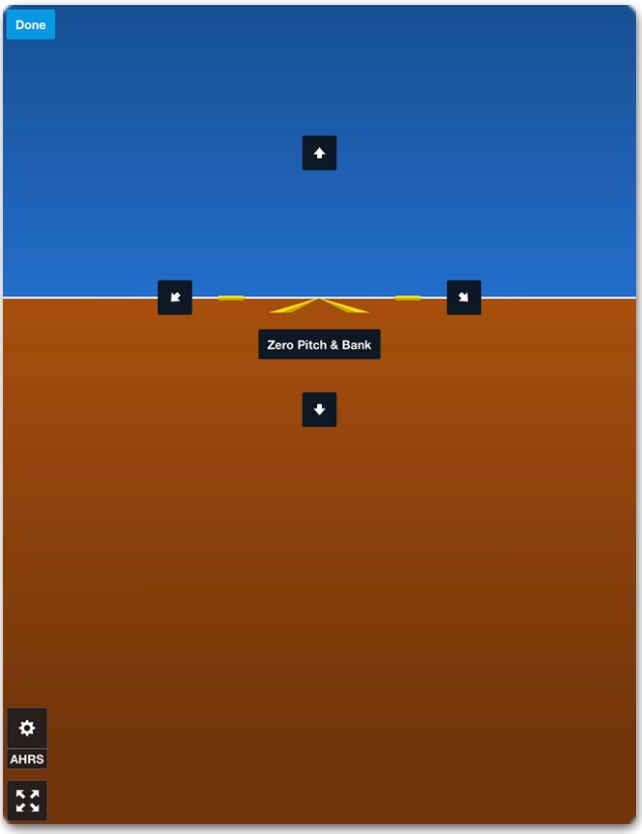


Automatic AHRS Calibration

Manually Calibrating AHRS

To manually calibrate AHRS, follow the steps below.

1. Open ForeFlight's backup attitude indicator by tapping the Attitude Indicator button in the upper toolbar.
2. Tap the AHRS settings (gear) button near the bottom left corner of the screen.
3. Verify that the mounting location is correct.
4. Disable **Auto Zero Pitch & Bank** (if enabled).
5. Tap **Calibrate AHRS**.
6. If the aircraft is level, tap **Zero Pitch & Bank**.
7. Tap the arrows as needed until the yellow reference lines are level with the horizon.
8. Tap **Done** in the upper left corner of the screen.



Manual AHRS Calibration

When Sentry or Sentry Plus are manually calibrated, the pitch and roll corrections are saved to the device. Sentry AHRS corrections are sent to ForeFlight each time Sentry connects, eliminating the requirement to manually calibrate each time ForeFlight is connected.

CARBON MONOXIDE

Sentry and Sentry Plus are equipped with an electronic carbon monoxide (CO) sensor. The sensor continuously monitors the concentration of CO and alerts you of dangerous levels via in-app visual and audible alerts. The sensor has a life span of ten years and cannot be replaced.

CO LEDs

Sentry and Sentry Plus are equipped with three LEDs. The middle LED corresponds to CO concentration. When elevated levels of CO concentration are detected, the LED changes color according to the amount of CO detected.

- **Normal**
- **Caution**
- **Danger**

ForeFlight Mobile Alerts

ForeFlight warns of elevated CO concentration with an in-app audible and visual pop-up notification. The audible notification is played on the iOS device (or through a connected headset). The audible notification is read aloud by the iOS device's default voice and will state, "Caution, Sentry carbon monoxide level is eighty parts per million."

The visual pop-up notification appears on any ForeFlight Mobile view (Maps, Flights, Documents, Etc.) and includes the specific CO concentration. Tap the notification to hide it for five minutes.

If elevated levels of CO concentration exist after five minutes, the notification will be displayed again. If CO concentration increases to dangerous levels, another visual pop-up and audible notification will be displayed even if the previous notification was muted.

ForeFlight Mobile Carbon Monoxide Caution Notification

Alarms

Sentry and Sentry Plus are equipped with stand-alone, built-in carbon monoxide alarms. If CO concentration rises to a dangerous level, the following actions occur:

- The CO LED changes to red.
- The in-app notification is displayed.
- An audible alert is played over the iOS device speakers.
- The Sentry built-in alarm is activated.

Mute the built-in alarm for five minutes by pressing Sentry's power button.

Sentry CO LED Danger Status

ForeFlight Mobile Carbon Monoxide Danger Notification

CO Alarm Test

Sentry's built-in alarm can be activated for testing purposes by selecting **More** > **Devices** > **Sentry (Plus)** > **Test CO Alarm**. When the built-in alarm is activated, it plays until manually disabled. Press the Sentry power button to disable the alarm.

WARNING: Do not hold Sentry near your ear when testing the alarm.

BAROMETER

Sentry and Sentry Plus are equipped with an integrated barometer. The barometer sends ForeFlight ambient air pressure information (uncorrected). Barometric data is used to determine pressure altitude or cabin pressure in ForeFlight Mobile.

Pressure Altitude

To display pressure altitude, open the ForeFlight Instrument Panel by tapping the airspeed indicator button (see image). Tap the instrument at the bottom of the screen where you want *Pressure Altitude* to be displayed. Select **Pressure Altitude** from the list of available instruments.

Cabin Pressure

ForeFlight can display cabin pressure for pressurized and non-pressurized aircraft. To display cabin pressure

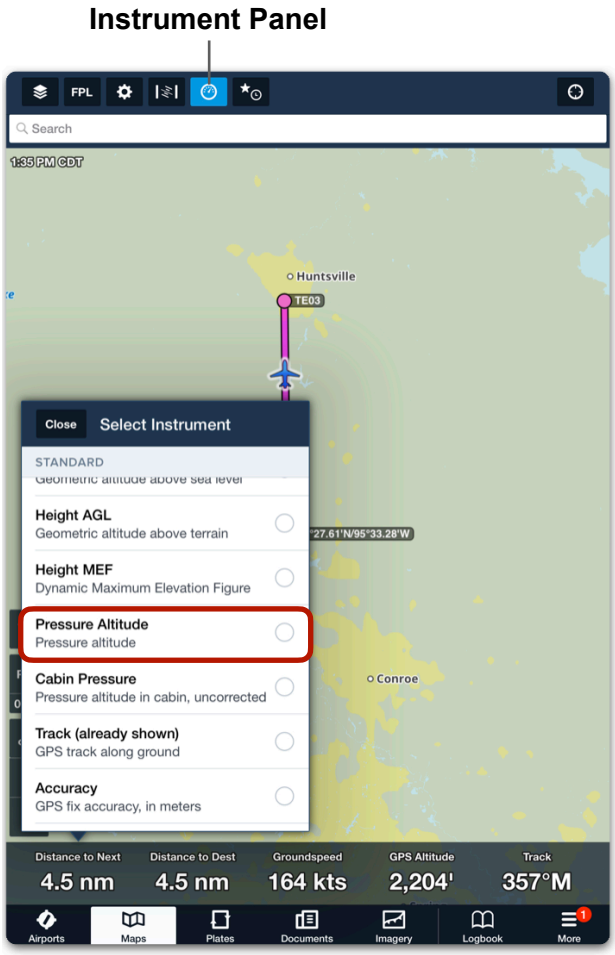
1. Open the ForeFlight Instrument Panel.
2. Tap an instrument.
3. Select **Cabin Pressure**.

When flying a non-pressurized aircraft, pressure altitude and cabin pressure display the same value.

If flying a pressurized aircraft, select **More** > **Devices** > **Sentry** and enable **Cabin is Pressurized**.

When the **Cabin is Pressurized** setting is enabled, the Pressure Altitude instrument displays dashes.

Barometric data provided by Sentry is used for Cabin Altitude alerts. ForeFlight displays a caution alert when pressure altitude or cabin pressure reaches 12,000 feet. A warning is displayed when pressure altitude or cabin pressure reaches 25,000 feet.



Displaying Pressure Altitude

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ForeFlight

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