



Flarm Guidance

RunwayHD 3.3 , Flarm v6.0

Revision
1.0

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Introduction

RunwayHD can now display traffic data and warnings when connected to either a Power Flarm Portable or Core. It is important that users of these systems take time to understand the limitations of the installation in their aircraft and how RunwayHD displays this data.

Power Flarm allows the accurate display of ADS-B & Flarm traffic as these contain GPS data. Transponder traffic is shown via a range ring or likely area, this can be inaccurate and is not based on GPS data. Mode C & S traffic will be displayed with a relative altitude.

This is a traffic advisory system and NOT a TCAS. Users must establish the effectiveness of their Flarm installation.

In airborne testing it has been found that effective range can be significantly inhibited by antenna blanking (in some cases reducing the distance to approximately 2km). It has also been found that the accuracy of range and height data from transponder targets can be inaccurate by a factor of 3.

However, Flarm is a very effective tool for traffic situational awareness if used correctly and in conjunction with traditional 'eyes out' traffic avoidance.

Requirements

In order to use this feature you will require the following:

- RunwayHD 3.3 or above
- Power Flarm Core or Portable* running v6.0
- AIR Connect

*Please note that the Power Flarm Portable must be externally powered to run the AIR connect Wifi dongle.

Flarm Setup

Customers should be aware that placement of antennas can affect the performance of Flarm in various sectors around the aircraft as well as above and below. We strongly recommend that customers make use of the range analyser tool to understand the likely range of their installation.

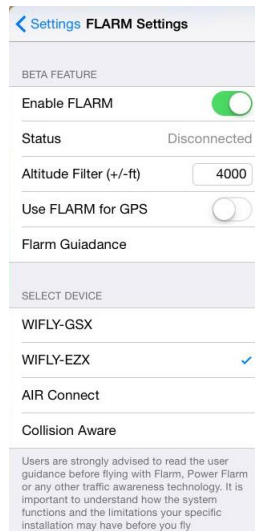
Flarm Range Analyser: <https://flarm.com/support/tools-software/flarm-range-analyzer/>

Any Flarm support or technical queries should be directed to Flarm or the UK distributors.

RunwayHD Setup

Please refer to Flarm setup guidance and ensure that the Flarm installation is working correctly BEFORE attempting to use it with RunwayHD.

1. Connect the AIR Connect to your Power Flarm unit. For Portable units please ensure the unit is externally powered.
2. Turn on your Power Flarm device, wait until it has a good GPS signal.
3. Go to Settings → Wifi and select the AIR Connect Wifi network. This should be written on the side of your AIR Connect.
4. Launch RunwayHD.
5. Go to Settings → Flarm
6. Select the type of AIR Connect and enter the PIN number that is printed on the side of the unit. Here you can alter the height filter of traffic that is displayed on the map.



7. Now turn on the Flarm feature using the switch at the top of the menu. You will see RunwayHD connect and then any traffic received will be displayed on the map.



8. Should the connection with Flarm be lost, RunwayHD will warn you in a variety of ways. These are covered in the next section.

Using Flarm with RunwayHD

This section aims to give you an overview of how RunwayHD displays traffic on the map depending on type and some examples of traffic warnings as displayed on screen.

When Flarm is connected, a green icon will be displayed in the bottom right corner of RunwayHD. When connecting this is yellow and when the feature is off or there is a problem then the icon is red. If you have opted to use Flarm as your GPS source then the icon will have a small satellite shown.



Off or Unable to Connect



Connecting

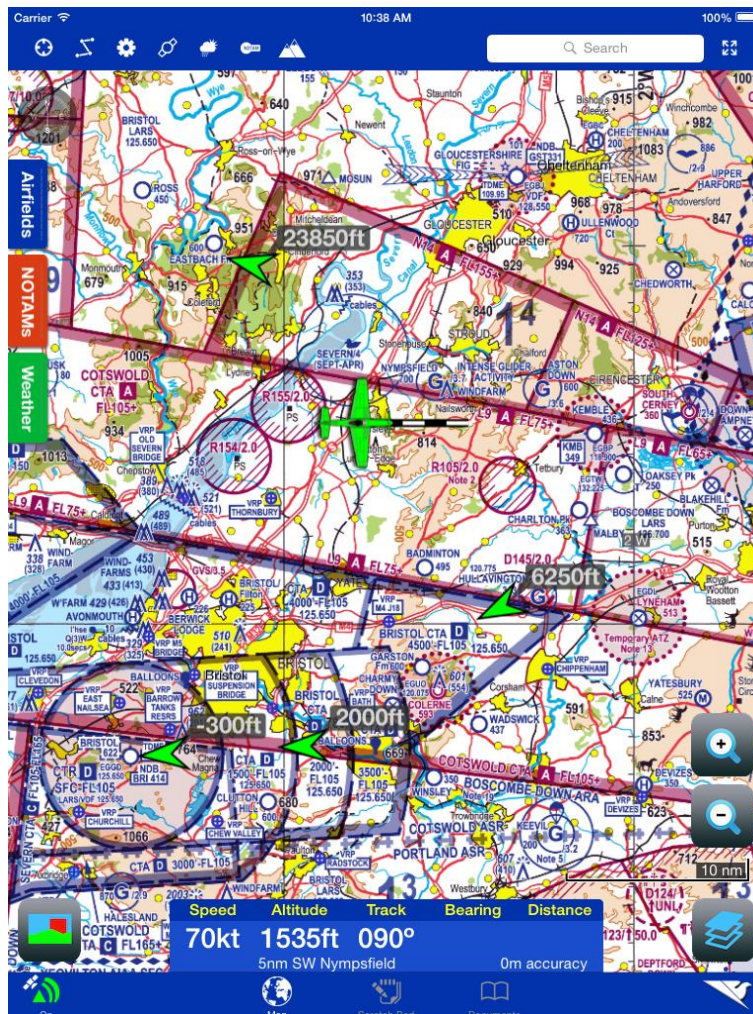


On

Map Display

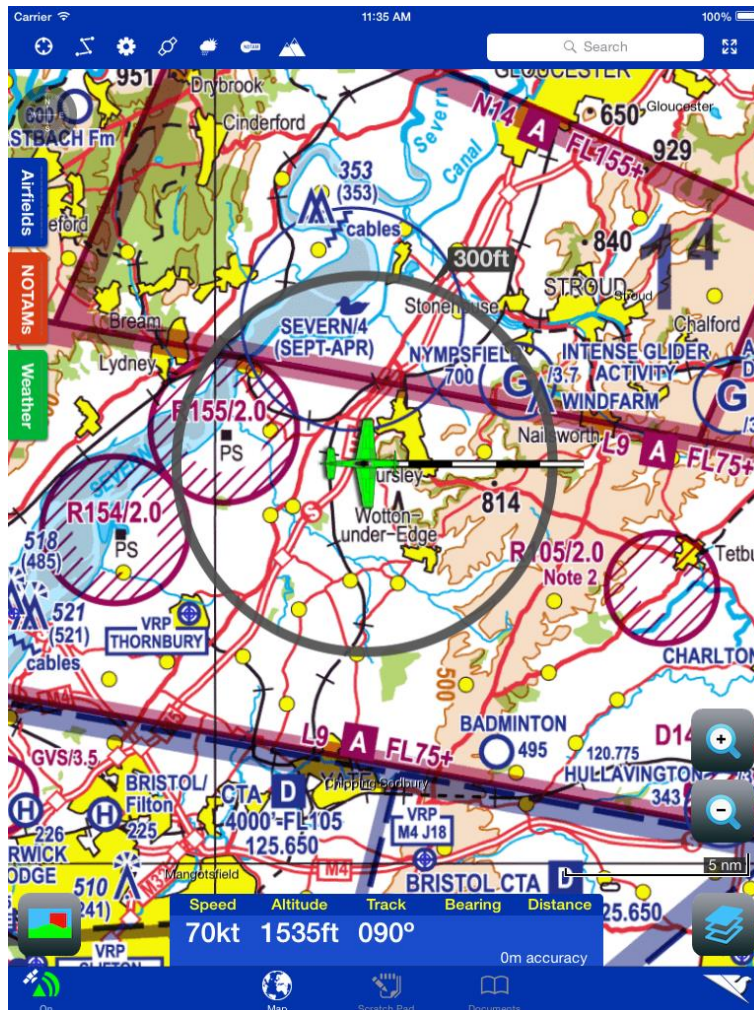
The image below shows a typical view of RunwayHD with ADS-B & Flarm traffic types displayed. In this example the height filter (Settings → Flarm) has been set very high and this will show some aircraft at high altitudes. You should set a reasonable value to avoid cluttering the map.

Each traffic icon has a relative altitude rounded to the nearest 50 feet.



The following screenshot shows a transponder range ring type traffic return. A transponder is shown as a range and not an exact position because there is no accurate location data. The range is calculated from signal strength and is susceptible to a range of installation and environmental factors.

Mode C & S transponders will also provide a relative altitude, this will always be shown as a label on the range ring and does NOT indicate the bearing of the traffic. No bearing information is given for transponder traffic.



It is possible to see multiple range rings on the screen at one time. They will fade out and be replaced as new data comes in from the Flarm unit.

Traffic Warnings

The following screenshots give an idea of the warnings that you might see in RunwayHD. It is important to remember that RunwayHD makes no calculation of warnings, this data is supplied from the Flarm unit directly and is produced by their algorithms.

Audio warnings are given by RunwayHD if you have the volume turned on and / or use the headphone output.

Warnings are given in three stages:

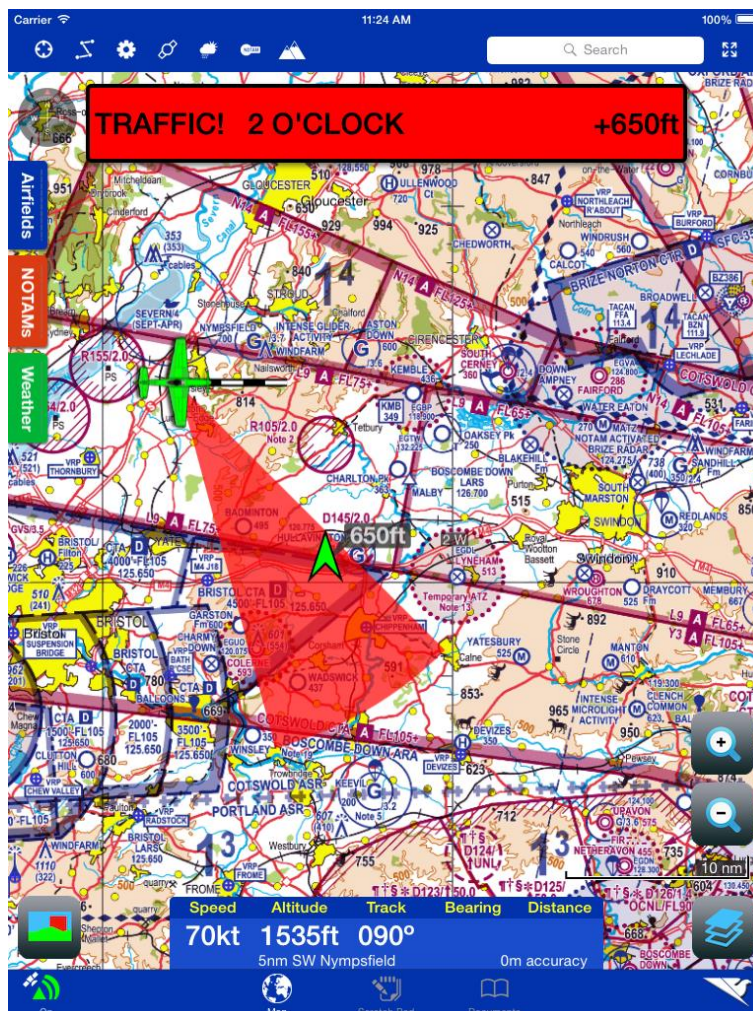
- **18 – 13 seconds to impact = Yellow**
- **12 – 9 seconds to impact = Orange**
- **8 – 0 seconds to impact = Red**

ADS-B & Flarm

In this example the alerting traffic is shown at a greater distance than would be realistic, you can expect that any alerting traffic would be obscured by your aircraft symbol. It is important to use the red sector as a guide for your lookout.

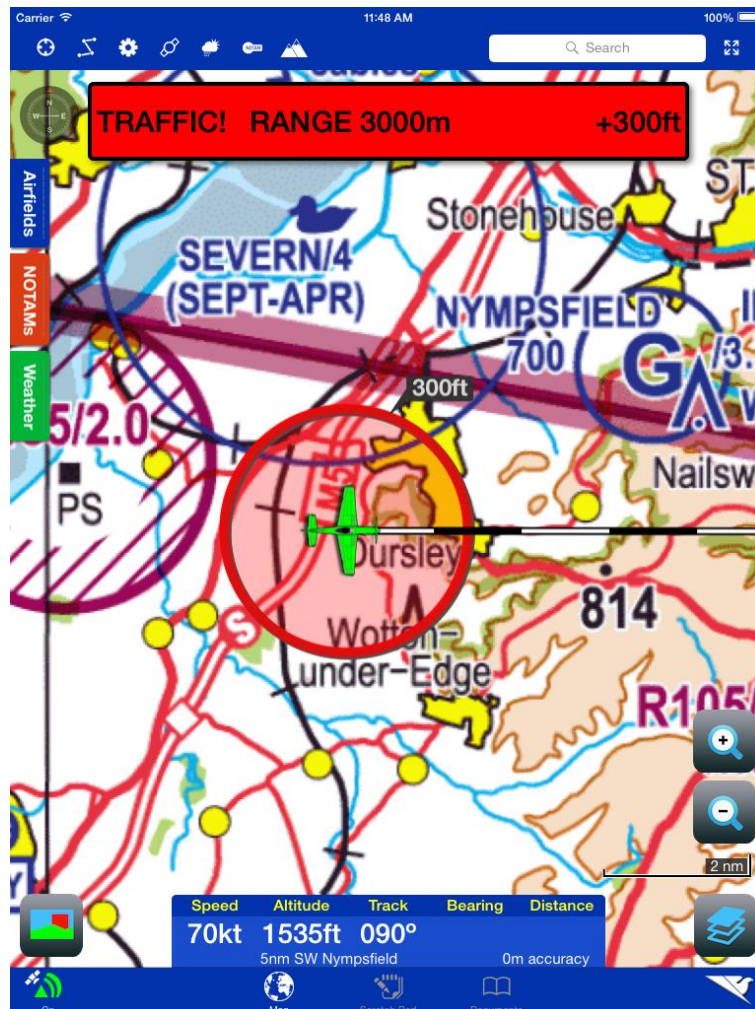
A colour coded warning banner will appear at the top of the screen describing the direction and relative height. It is important to understand the height banding, which is as follows:

- +250 feet – Any traffic higher than 200 feet will be displayed to the nearest 50 foot.
- Level – Any traffic between +200 feet and – 200 feet.
- -250 feet – Any traffic lower than 200 feet to the nearest 50 foot.



Transponder

Transponder warnings will produce a banner alert in the same style as the ADS-B & Flarm warning, but due to the non-directional nature of the transponder data the only information given will be relative height.



Connectivity Warnings

Should data not be received from the Flarm device for more than 5 seconds than RunwayHD will produce a banner alert. If you experience frequent drop outs then it is suggested you check your installation or consider moving the AIR Connect closer to the cockpit.

RunwayHD will automatically try to reconnect to the Flarm, but to do this manually go to Settings → Flarm and toggle the on/off switch.