

## ADS-B for Piston General Aviation Aircraft

Or

“How to get free traffic and datalink weather for under \$5K”

So, the conversation is moving from “What is ADS-B and why do I have to have it?” to “How do I get my free traffic and datalink weather?”

Here is how.

The ADS-B traffic and weather services are available as free uplinks to any aircraft that has the right equipment. Weather is continuously broadcast and you can pick it up with a 978 MHz ADS-B receiver. To get a valid traffic report you need to be a “client” of the ADS-B system, which means you have to have an approved ADS-B Out system on board. The traffic report can be received on the same receiver as the weather datalink, or you can receive it at the transponder frequency of 1090 MHz if you have an ADS-B approved transponder with an appropriate receiver built in.

If you have the ADS-B Out system, you get the additional benefits of

- a) meeting the rule [but you have until December 31 2019 to worry about that]
- b) getting “better than radar” flight following, clearances and enhanced SAR services

Put another way, if you elect to go with a “weather receiver only” solution today you are missing some important safety benefits. Anyway, one day you will have to add ADS-B Out to meet the rule. There is the risk that your weather receiver may not be a part of that solution.

To have an approved ADS-B Out system you also need a high performance, certified GPS. This can be an existing certified WAAS GPS (such as that found in the G 430W or 530W) or you can add a dedicated WAAS unit.

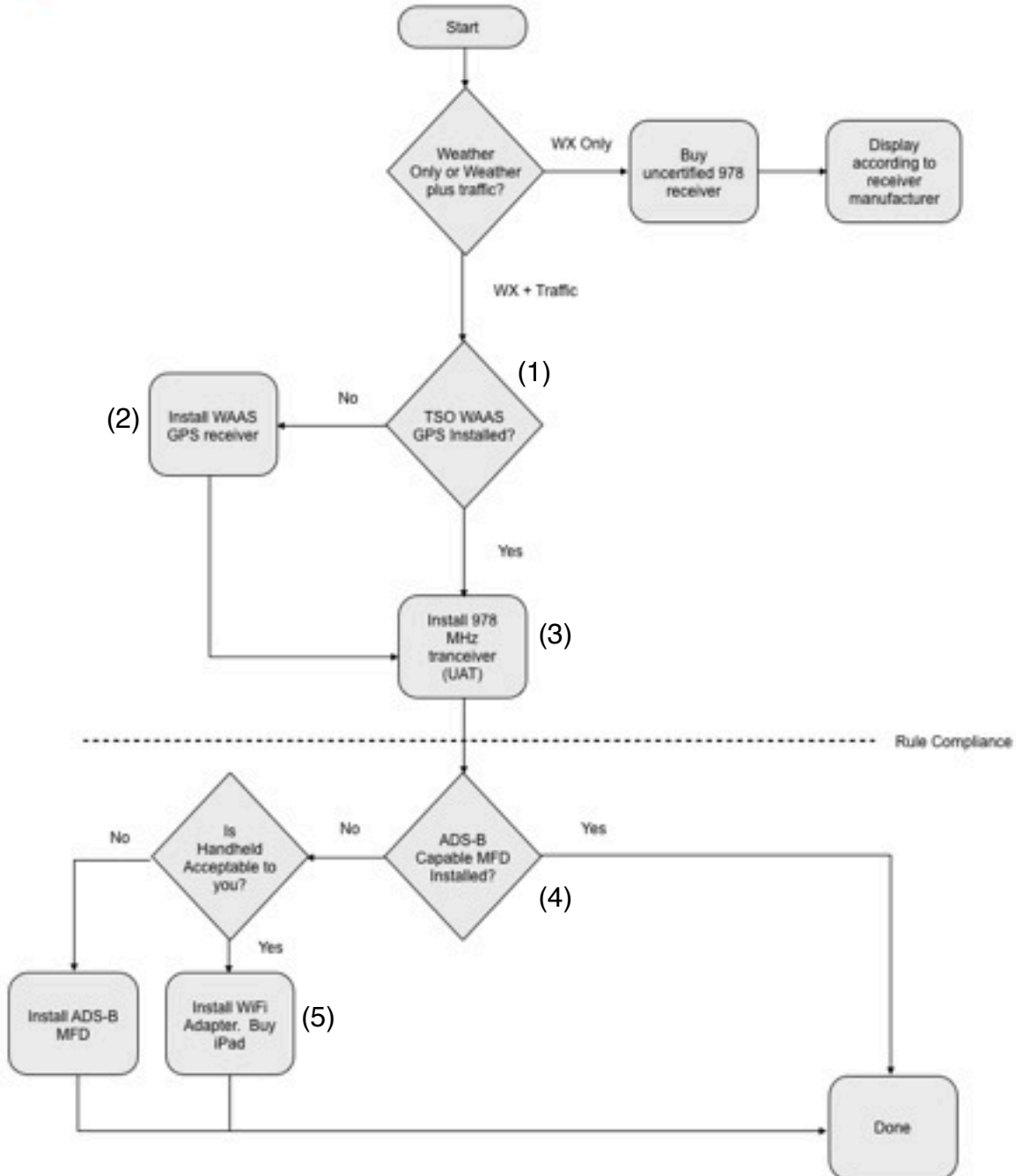
To display traffic or weather you need either a compatible MFD or a portable display that can interface with the ADS-B radio and (for traffic) the GPS position information.

This gives you some options, driven mostly by your current aircraft configuration and how much you want to spend.

Below is a decision tree to help guide you through the options. This decision tree makes the basic assumption that you have decided to go with the 978 MHz option for both receive and transmit. Here is the logic:

Since the most common transponders today that are likely to be available as ADS-B compliant (notably the GTX 330 EX ES) do not have ADS-B receive capability, you will most likely discover that adding a complete 978 MHz system is a less expensive solution than upgrading the transponder to full ADS-B compliance and buying a traffic / weather ADS-B receiver. The 978 MHz system co-exists peacefully with your transponder. With the 978 system installed, you can use the cheapest TSO Mode A/C transponder you can find since the transponder is now only used as a back-up ATC source.

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The numbered notes below should answer the obvious questions

- (1) The most common TSO WAAS GPS today is the Garmin 430W or 530W. This GPS meets the requirements for an ADS-B position source. If you have a non “W” Garmin you can upgrade through them or use a stand alone WAAS receiver. The upgrade is usually the best way to go since you get other benefits (LPV) and you are not adding another box / antenna. However, depending on your GPS model, adding a stand alone GPS may be less expensive.
- (2) The FreeFlight Systems model 1201 WAAS receiver lists for \$2K when purchased with a “RANGR” ADS-B radio.
- (3) The FreeFlight Systems RANGR 978 MHz ADS-B Radio (“UAT”) lists for just under \$5K
- (4) The ADS-B traffic and weather interface standard is published and open to all. ADS-B compatible displays today are the Garmin GMX 200 (MX 20), and Chelton Flight Systems EFIS. Avidyne, and Sandel are working on it, Aspen is thinking about it. Garmin says today that the rest of their product line will accept some of the traffic data but not the free weather. Generally a company’s willingness to display the free services is inversely proportional to their investment in XM weather or proprietary traffic systems
- (5) If you can live with an iPad, install the rest of the system but add an RS232-to-WiFi converter to the STC. The converter will allow you to uplink Traffic, Weather and GPS position to the iPad (or any other WiFi device you might use)