

ADS-B Out: 978 UAT Or 1090ES?

Which ADS-B Out standard is right for you depends on where you plan to fly. An all-in-one box offers the best of both.

By **Joseph E. (Jeb) Burnside** - Published: March 15, 2016 Updated: October 29, 2019

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You have less than four years until the January 1, 2020, mandate to have a working ADS-B Out system installed if you want regular access to airspace where a Mode C transponder currently is required. Many aircraft owners already have upgraded; many

more have yet to bite the bullet, perhaps because they're still waiting for prices to come down and capabilities to go up.

The good news is some recently introduced all-in-one boxes may make your decision easier. Newer ADS-B products, along with others that have been around for a few years, show some clear choices in capabilities, utility and price points. But making sense of all the options first requires an aircraft owner to decide where he or she intends to fly.





Class A Or International

That's because only one ADS-B Out standard—1090ES, or 1090 MHz with extended squitter—will be allowed at or above FL180. A misnomer in much of the documentation and explanations surrounding ADS-B is that the 978 UAT (universal access transmitter) is only allowed below FL180. It just ain't so:

1090ES is usable at all altitudes. Otherwise, how will all those 1090ES aircraft get from the surface to the flight levels?



At the same time, the 978 UAT flavor of ADS-B Out is a U.S.-only concoction—it's simply not an approved standard outside U.S. airspace. In other words and while ADS-B is not yet required in most airspace outside the U.S., if you think you'll be popping out to Mexico, to Canada, to South or Central America, or even to Europe, the day may come when your 978 UAT equipment isn't enough. You may be able to use it in conjunction with a Mode C transponder, which you'll likely have to retain anyway with 978 UAT, even in the U.S., but you won't be ADS-B-compliant outside FAA-regulated airspace.

The downside of a 1090ES-only solution is that it won't allow you to receive ADS-B In's traffic and weather. If you're flying something aboard which some flavor of TCAS and/or a datalink is required, ADS-B In's traffic and weather may not be of interest. If it is, though, and you opt only for a 1090ES box, you'll either have to use a portable receiver for that information or install an ADS-B In box of some kind. Many choices exist.

Display Tech

That's not an altogether unreasonable way to go, since current portable ADS-B In receivers offer lots of capability, including a backup attitude indicator and synthetic vision. A portable ADS-B In receiver with WiFi or Bluetooth wirelessly transmits the traffic and weather data from TIS-B and FIS-B, respectively, to the EFB app of your choice. In doing so, they eliminate the obsolescence of the display technology available when their panel-mounted playmates were certified.

Face it: a five-year-old iPad offers better display technology than almost any certified avionics, and the gap will only widen. It's simply too expensive and disruptive to rip out your panel every couple of years to keep up with the latest display technologies and maximize the situational awareness enhancements ADS-B In provides. While nothing's certain, we're willing to bet the current de facto standard of an iPad or Android tablet running an app will be the preferred way to display ADS-B In's data well past the 2020 deadline.

All-In-One

The solution we like—since we're spending your money, not ours—is to install a so-called all-in-one box, one combining 1090ES ADS-B Out and a 978 UAT receiver for ADS-B In—examples of which are already on the market.

Garmin, for example, just announced its new GTX 345, which combines a 1090ES transponder and optional WAAS/GPS position source, plus it can receive traffic on both frequencies. It can interface with compatible panel-mounted displays and wirelessly send data to a tablet-based EFB. Appareo is expected to bring a similar box to market in the near future.



Perhaps the most capable all-in-one box out there is L-3 Aviation's Lynx NGT-9000. In addition to combining 1090ES ADS-B Out and In, plus 978 UAT for traffic and weather, it features a touchscreen front display panel the equal of current-technology tablets and smartphones. In addition to interfacing with many panel-mounted displays, it also can be configured with a WiFi module to send traffic and weather data to an EFB app, giving you perhaps the most flexible of all solutions.

Going 1090ES or with an all-in-one box offers instant 2020 compliance anywhere you're likely to fly, with lots of flexibility for displays. There's nothing inherently bad about a 978 UAT solution as long as you never plan to venture outside the U.S. It's just that there may be better options available for the long haul.

Jeb Burnside is this magazine's Editor-In-Chief. He's a 3100-hour instrument-rated ASEL/ASES/AMEL commercial pilot and aircraft owner.



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Jeb Burnside is this magazine's editor-in-chief. He's an airline transport pilot who owns a Beech Debonair, plus the expensive half of an Aeronca L-16B/7CCM Champ.

1 COMMENT



Allioop August 15, 2023 At 10:11 pm

I realize this article is quite old but it needs some heavy proofreading and revision. Several sentences don't make any sense, or make very strange factual claims.

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