



May 5, 2021

Redundancy, Redundancy

Classic Bonanza Avionics Showcase – One Year Later

It's been a year and 120 flight hours since we installed the most advanced avionics suite available for general aviation aircraft. Every flight confirms that we chose wisely. Quite a statement, isn't it? Let's take a moment to evaluate why we've come to this conclusion...

Safety

Our first priority in aviation is safety. Yes, there are other significant considerations, as well; performance, cost, etc. but safety is at the top of our list. Reliability is certainly a key safety component but redundancy is an even more important consideration. Eventually, every avionics component will fail – then what? The instrumentation chosen for the Classic Bonanza Avionics Showcase provides not just one or two, but five (5) layers of redundancy!

1. Aspen MAX 2000 provides reversion of the MFD to PFD, in case of primary PFD failure
2. The Aspen MAX external battery protects against alternator failure (and permits removal of the vacuum subsystem)
3. Avidyne IFD550 incorporates ARS, GPS heading, Integrated Flight Display w/ Horizontal & Vertical Deviation indicators, Skid/Slip indicator and Synthetic Vision. In the extremely unlikely event that both the Aspen MAX PFD & MFD fail, the IFD 550 provides a 'third backup' PFD
4. The airspeed and T&B 'steam gauges' remain, were all electronics to fail
5. A fully charged Aera[®] 500 is always in the flight bag, just in case 😊



Aspen MAX Advantages

Occasionally, when asked why we chose Aspen MAX over 'big screen' competitors, we reply:

- **Fit:** The Aspen 2000 MAX fit our panel without the need for a major panel rebuild - a significant factor given our desire to preserve the pre-'62 Bonanza 'art-deco' panel.
- **Fail Safe Operation:** An even more compelling reason for selecting the Aspen 2000 MAX was safety! The Aspen MAX PFD and MFD are completely independent, yet interoperable stand-alone units - each with their own separate power supplies – eliminating the 'single point failure' potential of a single-tube, 'big screen' installation.
- **Alternator Failure Fallback:** The Aspen external battery provides protection in case of alternator failure. Although externally invisible, a 6" alternator wire was over flexed during previous maintenance, resulting in failure on three separate occasions (split ring terminal & break at each end). While ultimately replaced, breakage caused charging failures on each occasion. However, the Aspen external battery provided continued operation of the Aspen MAX 2000 for 45+ minutes; easily sufficient for us to land safely.
- **Sunlight-Readable Displays:** Unlike their predecessors, the Aspen MAX units feature displays that are bright and easily readable (big print) – even in direct sunlight.
- **Real Situational Awareness:** The PFD and IFR geo-approach plates are side-by-side!

Aspen MAX Misconceptions

- I'm surprised by the occasional confusion regarding operation in case of Pitot/Static failure. While 'pre MAX' units were problematic in this area, the new Aspen MAX is a significant upgrade in several areas, one of which is that the displays now provide GPS-aided AHRS to provide useful information in case of a pitot-static failure, so an air data failure will no longer "red X" the attitude indicator.
- Some outdated online discussions still refer to small display lettering and/or sunlight 'washout', both of which were – once again - completely overcome with the release of the new MAX units.



Avidyne IFD Advantages

The Avidyne IFD550 is so good, it is hard to know where to start – or stop!

- **Integrated ARS:** Careful observers might have noticed that the Avidyne IFD550 is mounted at the top of the Classic Bonanza avionics stack. That's due to the superb Attitude Reference System (ARS) built into the unit. Classic Bonanzas were designed with the avionics stack in front of the pilot, enabling us to take full advantage of the Avidyne IFD550 capabilities!! In addition to Dynamic Synthetic Vision, having an redundant Integrated Flight Display w/ full roll, pitch, slip/skid indication as well as Horizontal and Vertical Deviation indicators, course, traffic & obstacles makes for a very comfortable IFR approach – even to minimums.
- **Ease of Use:** After years of the competitor's 'nested menu' interface, we really had no idea that a much less complicated and time consuming user interface was possible – until we used the Avidyne IFD550 for the first time! Avidyne's user interface reduces button pushes and knob twists required with previous navigators by 50%-75% or more. Really. Don't take my word for it, [see the comparison for yourself](#). Gone is the frustration of digging down thru five menu layers to access the feature you need.
- **Flight Management Preview:** FMS Preview makes it even more intuitive to load flight plans by showing you a real-time graphical depiction of each proposed modification prior to selection, allowing you to graphically view each available approach before committing.
- **Forward Looking Terrain Alerting:** We often fly from our new home in Texas to the Seattle area to visit those of our children who have not yet been able to escape Western Washington. FLTA is yet another Avidyne safety feature that makes flying through mountain passes and over ridgelines safer and more comfortable. Coupled with Avidyne's 3D Traffic, Obstacles and Required Terrain Clearance (RTC) alerting, the Avidyne IFD550 makes for a much more serene, informed flight.
- **Compatibility:** This is an often overlooked but very significant item for those of us looking for the best peripherals rather than be trapped into whatever a single manufacturer currently offers. The list of compatible 3rd-party avionics is far beyond the scope of this article. Follow this link to view the full [Avidyne Compatibility List](#).

PS Engineering Advantages

I'm embarrassed to admit that we didn't initially include a new audio panel in the Classic Bonanza

Avionics Showcase. After all, we flew with the excellent PS-Engineering PMA7000CD for years and it still worked well. Fortunately for us, I finally called PS-Engineering for their input and I'm sure glad I did! The new PMA450B is simply amazing, building on their legendary reliability and



adding a number of features that we didn't even know we needed! The PMA450B includes all the 'standard' capability one expects from this class of audio panel; 6-place stereo intercom, built-in marker beacon receiver, music inputs and even a USB charging dock.

What amazed us were the features we didn't even realize that we needed – and just how useful and desirable they are. For example:

- **IntelliAudio®**: We were surprised to find how beneficial this True Dimensional Sound feature is in the 'real world'. It really does enhance the pilot's ability to pay attention to whichever COM radio is more important at the moment; for instance, monitoring ATIS while chatting with ATC. With IntelliAudio enabled, COM 1 is spatially presented at the 10 o'clock position while COM 2 comes from 2 o'clock - similar to being at a party and paying attention to the person telling you something important while ignoring simultaneous, surrounding conversations. It's really uncanny ... and it works!
- **Flightmate®**: Integrates aircraft condition alerts into your audio system. We now hear Foreflight® alerts, easily integrate ATC clearance delivery phone calls and seamlessly listen to (auto muted) music from a smartphone or any other Bluetooth® -capable device – even stream audio to a digital video camera.
- **Alternate Intercom Mode**: Everyone hears each other but the passengers don't hear radio traffic and when the radio is active, the crew won't hear the passengers. Nice!
- **Dual Bluetooth® Channels**: For example, the pilot can be on the phone with Clearance Delivery while the passengers listen to uninterrupted music.
- **Copilot as Passenger**: Often when flying with friends, the husband 'rides shotgun'. This function spares him ATC radio chatter while enjoying uninterrupted pax intercom.



All the Best,

STEVE WALKER

Steve Walker, Founder
info@classicbonanza.org