



GRT Avionics
Grand Rapids Technologies, Inc.

10.4 & 12.1 HXr EFIS

The large screen EFIS for your experimental airplane.



Insets...Preserving the View

One look at the HXr and you sense the situational awareness provided by the large screen and its wide field of view...a view as natural as looking out the window. Whether you are editing your flight plan, reviewing detailed engine data or any other task, the HXr won't compromise this view by splitting the PFD screen. Instead, it preserves it with the intelligent use of pilot-selectable insets for maps, traffic, flight planning, and more. The appeal is obvious, but the real strength of the HXr goes much deeper.

One Primary Flight View...One Scan

The pilot's scan of his primary flight instruments is the essence of his connection to the airplane. The information absorbed by this scan provides the pilot with the fundamental data required to fly safely. Preserving this scan is essential. This is why the HXr primary flight display is always full screen. One view...one scan...a comfort for the new VFR or the experienced IFR pilot.



Insets not only preserve the wide field-of-view, but they also eliminate the need for splitting the PFD view. With the HXr, critical flight data is always where you expect it.

Do two screens provide redundancy?

Two screens would seem to provide redundancy, but what happens when one fails? If flying from the remaining screen requires re-configuring it to split the primary flight screen, forcing you to adapt your instrument scan to an unfamiliar layout, is this practical redundancy? We did not forget this important fact when designing the HXr. The effective use of selectable "insets" assures your scan of essential primary flight, engine, and navigation data will remain unchanged...one screen or two, even when editing your flight plan, reviewing detailed engine data, or any other task.

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...above, beyond.



The HXR brings new possibilities to your panel design by giving you the option of a remote radio stack. Illustrated here is a scale RV-10 panel with two 10.4" HXR and one 12.1" HXR screens, with an android tablet computer in the console.

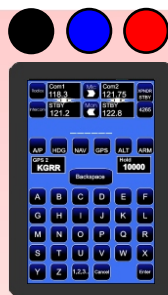
IFR
GPS

Audio
Panel

XPNDR

COM

NAV



The HXR Remote Radio Stack

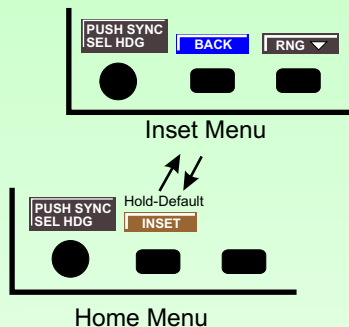
The radio stack has always used a great deal of valuable panel space, while providing a small amount of information. The HXR eliminates the need for a radio stack by providing the ability to interface with remote com and nav radios, as well as audio panels and transponders. The radio stack is controlled by 4 dedicated buttons and a rotary knob to provide operation that is so intuitive, you won't even need to read the manual. Most radio tuning can be accomplished by simple menu selections instead of tedious direct frequency entry.



An actual screenshot from a 6.5" HX illustrating the 3D flight plan, traffic, and other synthetic vision features.

Not all Synthetic Vision is equal...

The HXR synthetic world has more than just terrain and runways up to 30 miles away. It has terrain graphics optimized to naturally and intuitively promote a sense of terrain proximity, and isn't that what synthetic vision is all about? But that is just the start. We added a 3D representation of your flight plan by showing waypoints as balloons tied to your selected altitude, and courses as vectors into the balloons. We further enhanced your situational awareness with details such as lead-in lights into your selected runway, traffic that appears just the way it does out the window, and obstacles that become menacing as they are approached. Navigation via the HXR primary flight display occurs naturally and without effort, greatly reducing your need to reference the moving map for most navigation tasks.



Simple Softkeys

Making an EFIS simple to use requires more than just lots of buttons. It starts with simplified screen layouts, and is built on an understanding of the pilot's needs. New to the EFIS and are not sure what a softkey does? Go ahead...press it! Every softkey is labeled, and the HXR shows you the options available before it does anything. Pressing the same softkey again exits without action. Color coding and "hold for shortcut" features further streamline operation. Simple, effective and efficient. You will be navigating the EFIS options with confidence and feel like a pro on the first flight.

Press a softkey to see the menu underneath. Press it again to return to the home menu. Simple and highly effective.

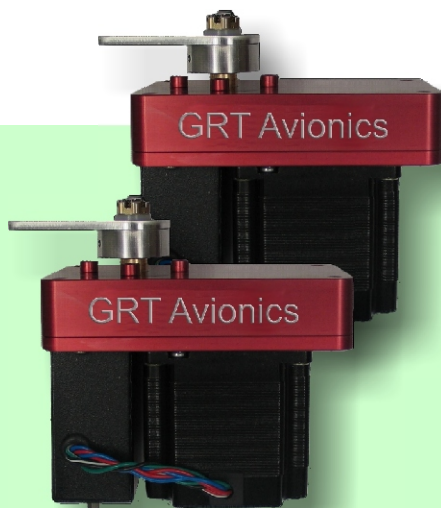
Single screen redundancy?

We recognized that not everyone will have two screens, but will still desire redundancy, so we introduced the Android tablet computer solution. The Android Tablet computer offers an extremely cost-effective way to add basic redundancy to your GRT Avionics EFIS, as well as touch screen data entry.



- ☞ Touch it to select what you want!
- ☞ View it. It backs up your EFIS with familiar graphics of the data you need.
- ☞ Listen to it! It plays music, takes photos, and gives you internet access when you are away from home.
- ☞ Take it home with you...it has a record of your flight and engine performance.
- ☞ Give one to your backseat passenger so they have their own EFIS.

Our connectivity with the Android Tablet computers and cell phones give you an inexpensive and exciting way to expand your GRT Avionics EFIS.



What is an Android tablet and why does the GRT Avionics use it?

Tablet computers using the Android operating system are manufactured by many companies, and are available in a variety of sizes. They are typically less than a 1/2" thick, have bright LCD screens 4" to 10" diagonally, touch screen entry, can operate from external power or their internal battery for hours. They are highly-engineered devices that can play movies and music, browse the internet wirelessly, and best of all, be right at home in the cockpit. They are already seeing widespread use for flight planning and electronic flight bag uses among airlines and private pilots.

GRT Avionics is harnessing these devices to bring not only a low-cost backup display, but also for their ability to add touch screen data entry. Graphical flight plan editing can be accomplished by "touching" the route line. Another touch can convert the tablet into an alpha-numeric touchpad for waypoint selection. The portability of the screen also means that you can take a piece of your airplane home with you, complete with engine and flight records for later review. The possibilities are staggering, and as usual, GRT Avionics is leading the way.

And an autopilot also...

Every HXR includes full auto-pilot functionality. Just connect our two servos, and we will fly you from just after takeoff, to just before touchdown...we will couple you to your approach and fly you to your selected altitude...and much more. Multiple display units mean you have multiple autopilot control heads. Want attitude redundancy? Update to our dual AHRS and get not only a second attitude source for your autopilot function and display unit, but also automatic cross-checking.

The HXR provides the total cockpit solution

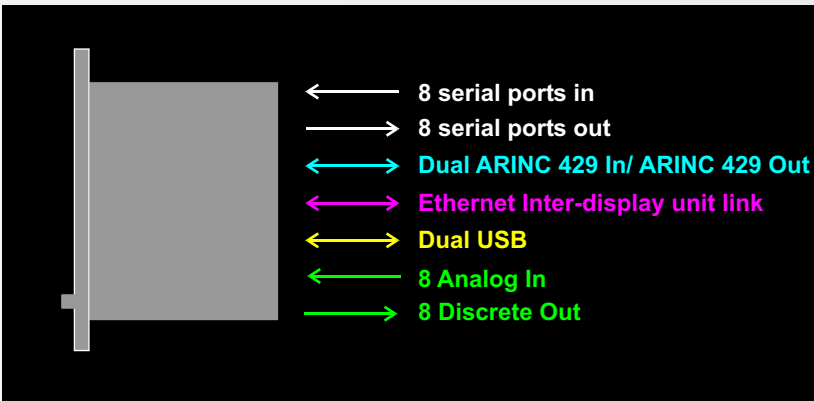


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You won't be caught short...

...of interfaces. Other EFIS systems reveal shortcomings as soon as you attempt to wire them up. Without adequate interfaces, it is impossible to achieve the functionality and redundancy you need. Like all HX models, the HXr include 8 serial ports in and out (one configurable as RS422), dual ARINC 429 in, ARINC 429 out, and dual USB ports. Multiple display units are coupled via Ethernet. Analog interfaces include 8 analog inputs and 8 discrete outputs. We have the interfaces for your needs now, and into the future. Don't wait to consider this important aspect of your EFIS before it is too late.



Typical HXr System Features:

Primary Flight Data, Moving Map, and Graphical Engine Data
High-Resolution (1024x768) Sunlight-Readable 10.4" LCD Display
Highway-in-the-Sky Integrated Navigation/Attitude Display with guidance to all runways.
Convenient USB Memory Stick for Software Loading, Database Updates and Data Logging
Multiple Power Inputs
14 or 28 volt (2.5 amps max)
Operating Temperature -15 to +160 deg F

The HXr Standard Interfaces

Android Tablet Computers
GRT Autopilot Servos
Single or Dual GPS Receivers (all types)
Remote communication and navigation radios
IFR Compliant GPS Modules
Remote intercom
Remote transponder
Full Nav Interface to Garmin 400/500/600/700 Series Panel Mount GPS/Nav/Comm
Single or Dual SL30/SL40
Deviation data from all Nav radios except those with composite outputs
XM Satellite Weather
CO Guardian
TIS Traffic datalink (GTx330)
Zaon Traffic
BF Goodrich WX-500 Stormscope
Vertical Power (All Models)
Tru-Track Autopilot
Trio Autopilot
FLIR Infrared Video Camera (for night vision)
All transponders which use serial data input
TCAS
ADS-B (Traffic and Weather)
EIS Engine Monitor (all versions)
..call for the latest... the list is always growing

Pricing

Introductory System Price, with 4 cylinder engine monitoring, moving map, attitude/heading reference system (AHRS), 10.4" HXr display unit and Android Interface: \$7000. Add a second 10.4" HXr for \$3600 and second AHRS for \$1000. This introductory price is low but won't last long, get yours today!

IFR GPS Remote Modules - Both are full compliant with FAA AC20-165 as a GPS source for ADS-B, and are certified to TSO-C145c. Availability February 2013.

| | |
|--|--------|
| LNAV Approach GPS - certified to TSO-C145c Class Beta-1 | \$3200 |
| LPV Approach GPS - certified to TSO-C145c Class Beta-1,2,3 | \$4400 |

Remote communication radio - 760 channel, 3.4" x 2.5" x 4.7", FCC Approved. (12V electrical systems only) \$1240

Remote intercom - 4-place, stereo, dual com, dual nav, automatic squelch, isolation modes. All functions easily controllable via HXr dedicated radio stack interface. Availability February 2013 (estimated price \$1250)

Suggested Panels & System Interconnects



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The Enhanced Single EFIS Panel



Sport EFIS from \$4,200

(6.5" Sport EFIS including engine monitoring)

Ungradable to full synthetic vision - \$1200
Works with any GPS or internal option - \$450
4 Serial Ports in/out

HXr from \$7,000

(10.4" HXr EFIS including engine monitoring)

Includes full synthetic vision, high-speed processor, 8 serial in/out, ARINC 429 interface, remote radio rack capability.

A single screen EFIS is a great solution for a VFR airplane. The GRT EFIS gives you the functionality that can't be matched with traditional instruments or competitive EFIS systems. It provides basic or full synthetic vision (always a benefit of low visibility or at night), a full featured moving map, advanced graphical engine monitoring features such as EGT time history, the ability to display ADS-B traffic and weather, and much more. All GRT EFIS display units can be coupled to GRT autopilot servos for a low-cost but fully functional autopilot.

The 10.4" HXr is ideal for single screen EFIS panels. Its large screen provides a natural, full-width PFD presentation, while simultaneously displaying a full-featured moving map and graphical engine data, and allowing flight plan editing.

The addition of an Android tablet computer adds redundancy and touch screen entry, and many other features that make this much more than an entry level EFIS based instrument panel.

The Standard Dual Screen Panel



From \$7,200

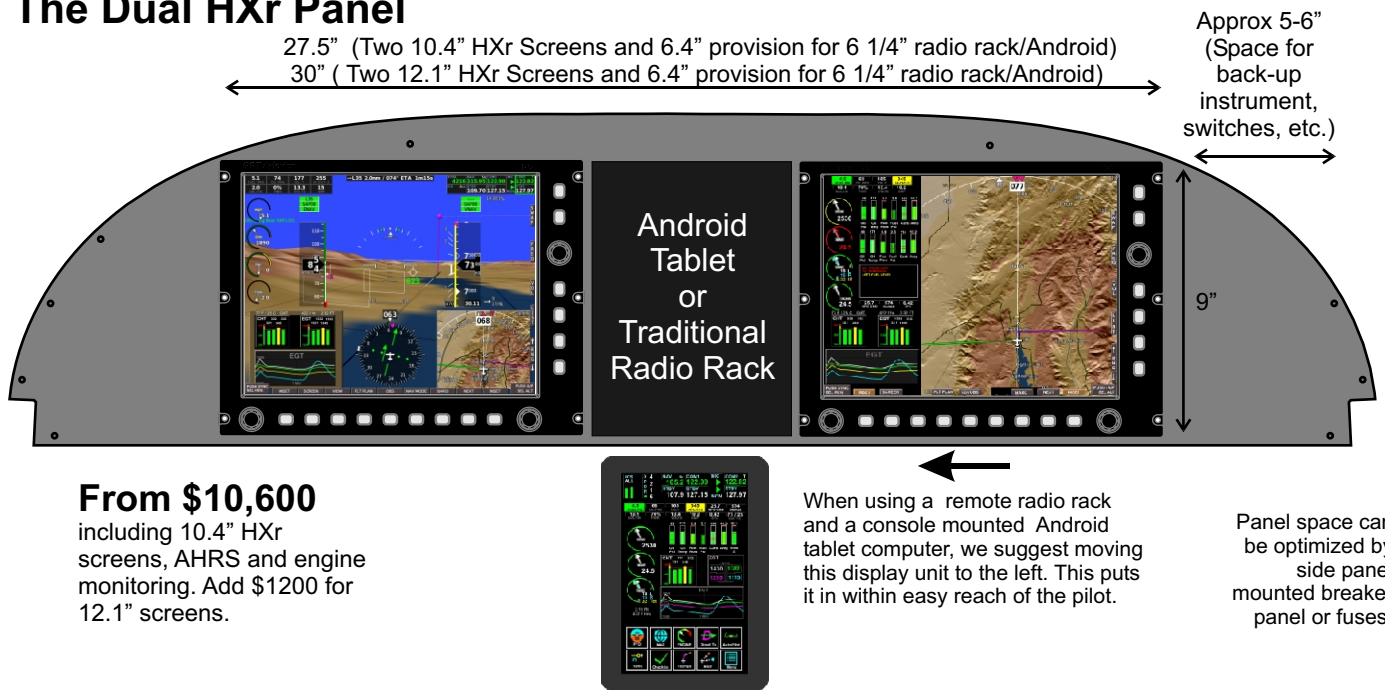
including Dual 6.5"
Sport EFIS w/AHRS
and engine monitoring.



Two standard size (6.5 or 8.4") screens provide an excellent solution when panel space is limited, or if panels space is required for other needs. The two screens provide redundancy and full functionality, and fit in practically any panel. Typical operation would keep one screen on the PFD page, with switching of the other screen from map to engine when needed. (Engine instruments can also be shown full time a strip on the bottom of the PFD screen, but we prefer a full screen engine page with EGT time history displayed on takeoff, and when leaning.)

This classic configuration can be further enhanced with an Android tablet computer.

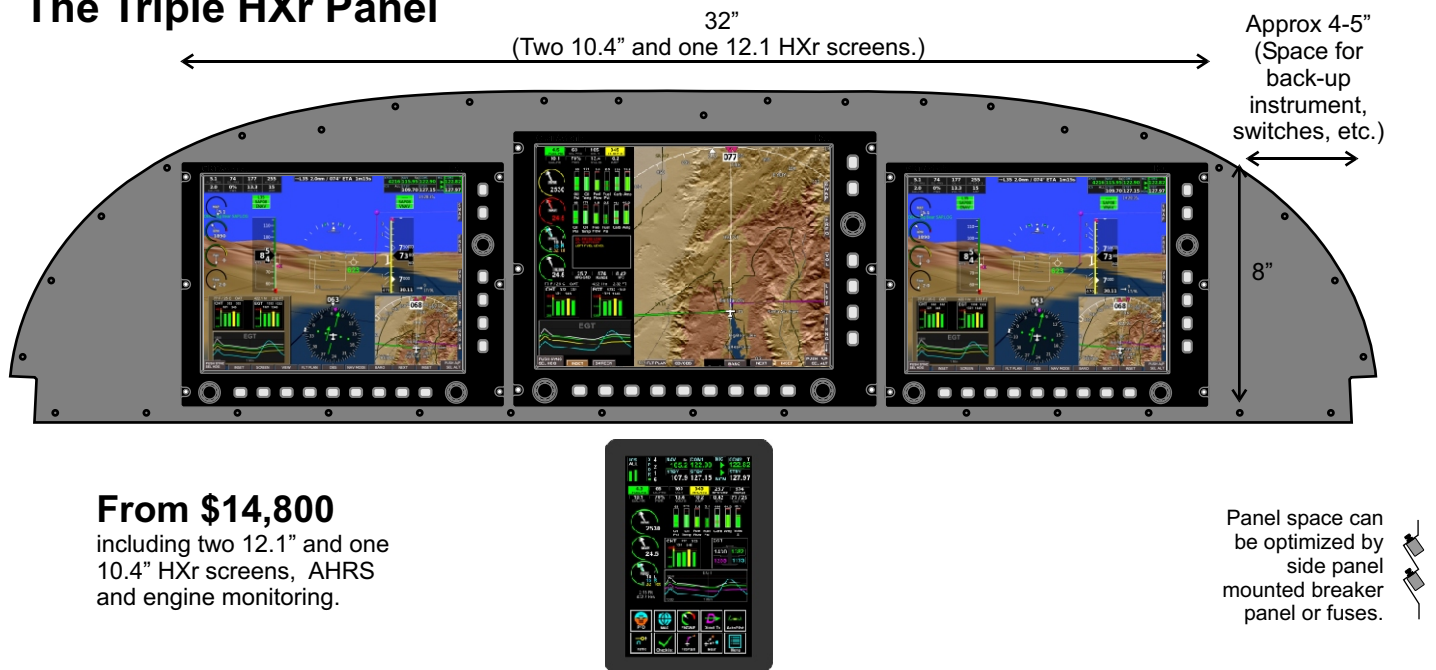
The Dual HXr Panel



An RV-10 Panel easily accommodates two 10.4 or 12.1" HXr screens with room for a large Android Tablet or a traditional radio stack. (RV-6,7,9 can easily accommodate two 10.4" HXr screens.) If a traditional radio stack is used, an Android can be mounted in the console. Significant panel space remains for mechanical backup instruments and switches. Android table computer also allows control of remote radio rack.

Excellent panel aesthetically and functionally. The HXr extensive interface capability (8 serial ports in/out, ARINC 429, etc.) and high-speed processor means this panel has built-in growth capability to for practically any future need.

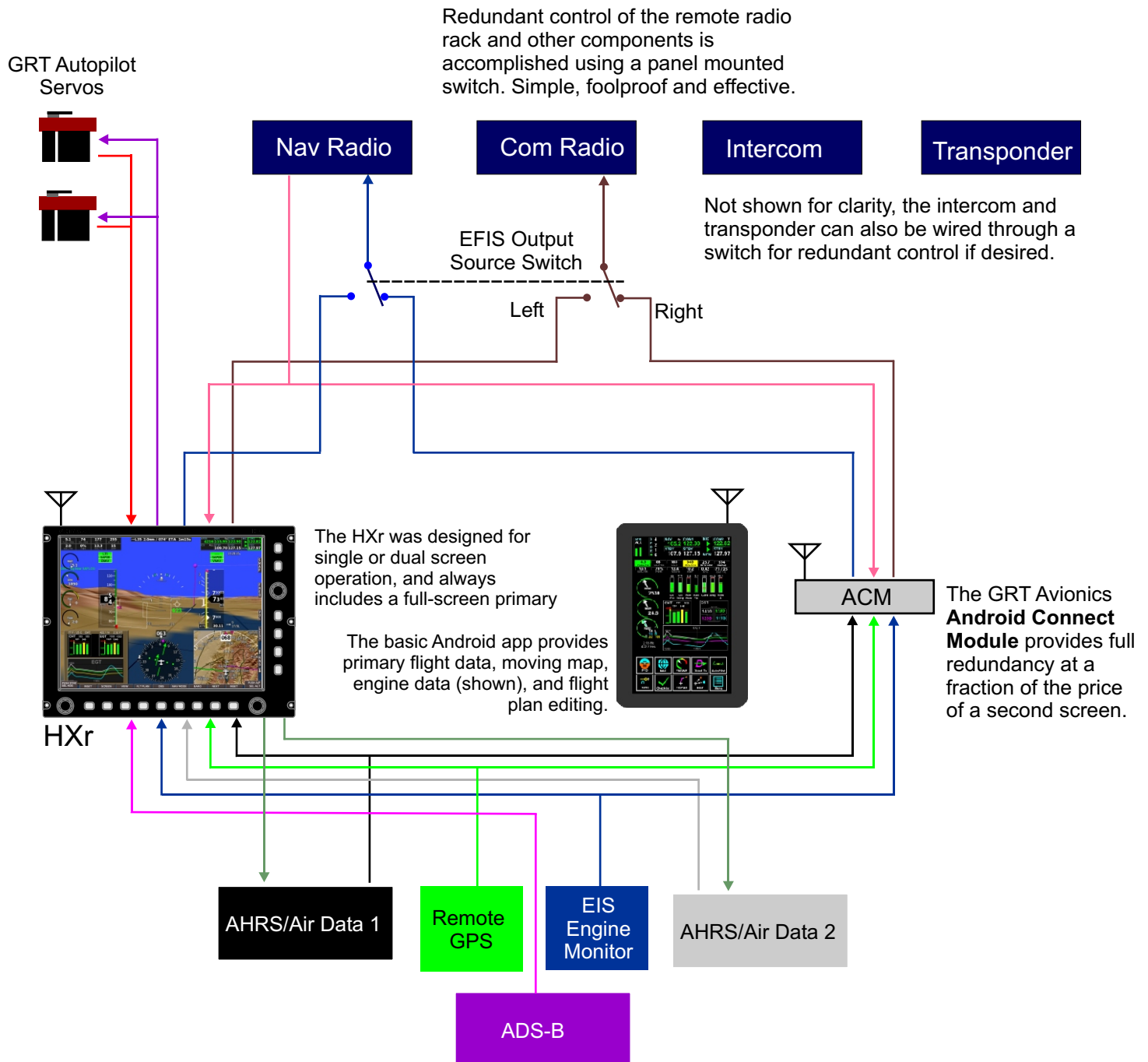
The Triple HXr Panel



A spectacular 3-screen EFIS system at a surprisingly affordable price. Full remote radio rack, large (12.1") screen typically would serve as moving map/chart viewer, with 10.4" screens dedicated to each pilot. Console mounted android for touch panel input and auxiliary display. Significant panel space remains for desired backup instruments.

Excellent panel aesthetically and functionally. The HXr extensive interface capability (8 serial ports in/out, ARINC 429, etc.) and high-speed processor means this panel has built-in growth capability to for practically any future need.

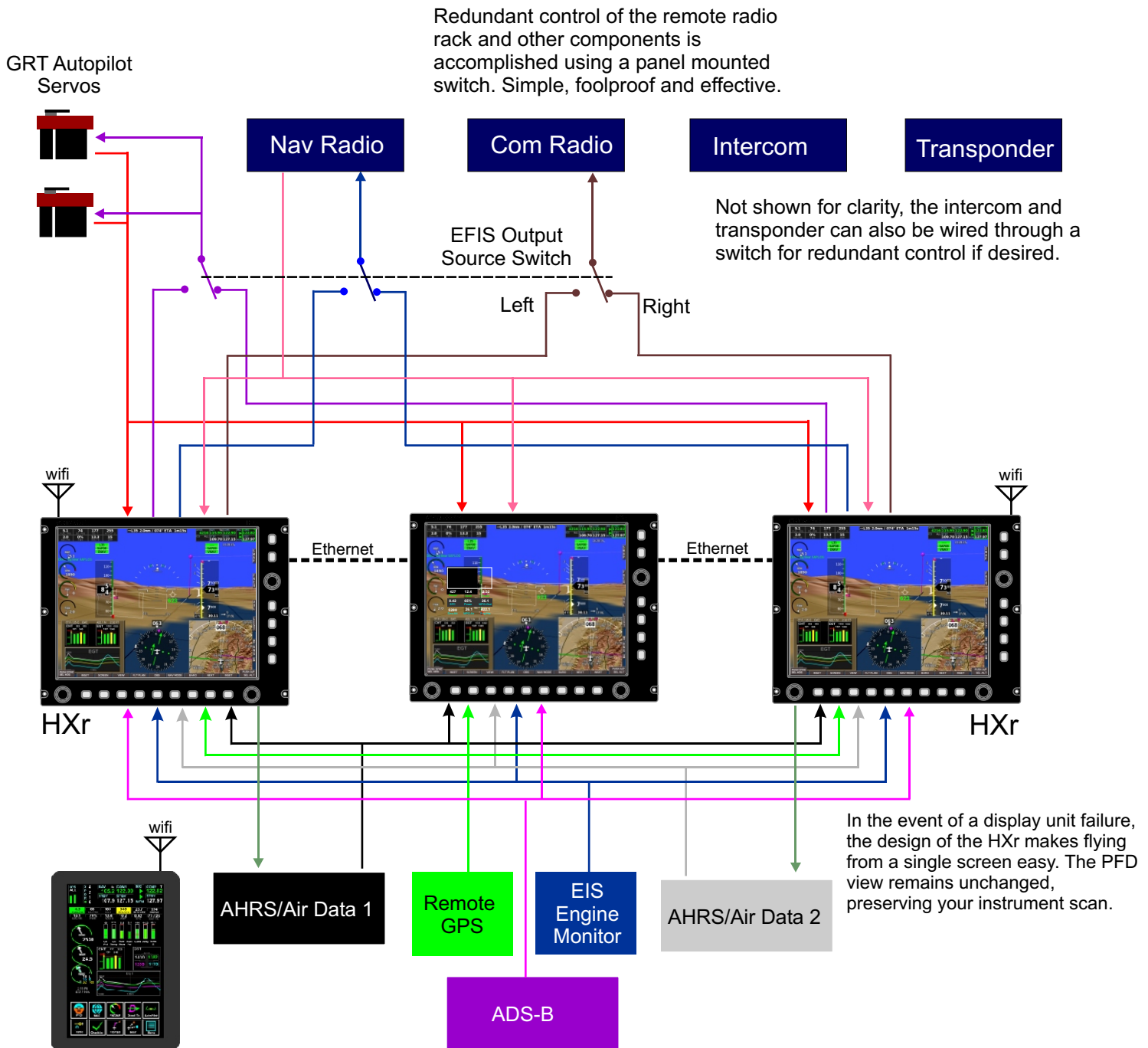
The “Redundant” Single Screen HXR System



The HXR's 8 serial inputs/outputs allow a high degree of functionality and redundancy. In this example an Android tablet computer is used to add redundancy and provide touchscreen control. In normal operation, the Android communicates directly with the HXR for display and control. In the event the HXR was non-functional, the optional Android Connect Module (ACM) allows an independent means of interfacing the Android tablet to aircraft systems at a very attractive cost.

While a dual HXR installation allows for very little functional loss in the event of a display unit or other device failure, this configuration is well suited for VFR, and IFR (with appropriate back-up instrumentation), and at a much lower cost. Pre-wiring the airplane for a second (future) HXR would allow for an easy upgrade to a full dual screen system. As always, GRT Avionics are the best choice for enhancing the future resale value of your airplane.

Typical Serial Connections for a 2- or 3-Screen HXr System



The HXr's 8 serial inputs/outputs allow a high degree of functionality and redundancy. In this example each display unit receives both sets of AHRS/Air Data, and all other data, always allowing dual AHRS to be cross-checked. When using dual com radios in a dual (or more) EFIS system, it is common to wire each display unit to one com radio (both com radios can be controlled from any screen via the ethernet inter-display unit communication). Similarly, redundant GPS receivers can be accommodated. Communication to the Android via wifi is also redundant as either wifi equipped display unit can communicate the tablet computer.

Since there is very little functional loss in the event of a display unit or other device failure, understanding and anticipating the response of the EFIS to failures is easy.

