



**Flight Data Systems Pathfinder Remote ADS-B Receiver
Equipment Supplement**



Revision A1

10-Nov-2014

Revision Notes

Revision	Date	Change Description
A	9-Jul-2014	Initial Release
A1	10-Nov-2014	Section 2.1- Clarified note for high-speed serial ports in Horizon WS/HS systems. Section 4, item 5- Added note for display of TFRs.

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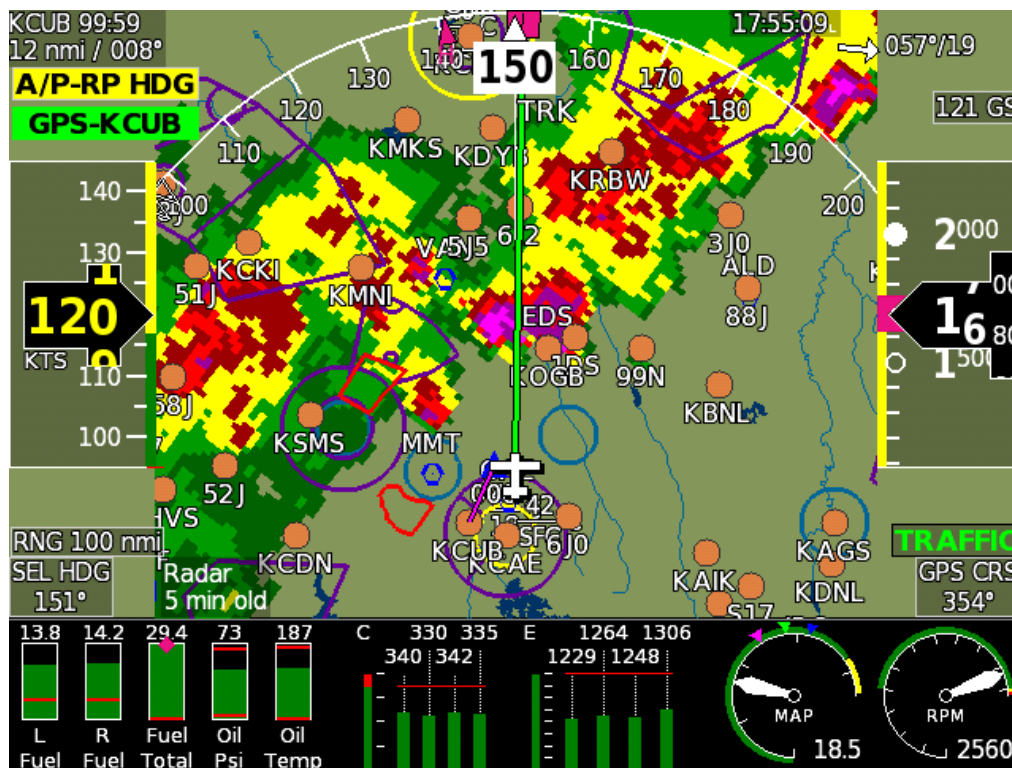
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Radar imagery on the Sport SX (courtesy of James Clark)

Section 1: Introduction

1.1 About the Pathfinder

The Flight Data Systems Pathfinder Remote is a permanent-mount 978 MHz ADS-B receiver that receives FIS-B weather and TIS-B traffic data and displays it via RS-232 serial on GRT Horizon and Sport EFIS screens. It also transmits data through WiFi to Android and Apple tablets and phones running apps that can display ADS-B information. See the Flight Data Systems website, <http://www.fdatasystems.com/faqs/#Pathfinder>, for current information on compatible apps.

WARNING: The Pathfinder Remote is a receiver ONLY. **Do not expect or rely on any traffic information unless your aircraft is also participating in ADS-B OUT.** GRT recommends the use of an ADS-B compliant Mode S extended-squitter transponder, such as the Trig TT22, coupled with an appropriate GPS for full ADS-B participation. Please read the [ADS-B page](#) on the GRT website for more information on current ADS-B options and how the system works.

Follow all installation and user instructions from Flight Data Systems thoroughly. This supplement is intended to support GRT users with information about connection and use with GRT EFIS systems, and may not be totally up-to-date with all Pathfinder specifications.

The interface between this receiver and GRT display units allows for:

- FIS-B subscription-free weather information displayed on a GRT display unit while within ADS-B ground coverage;
- TIS-B traffic information displayed on a GRT display unit while within ADS-B ground coverage;
- Direct airplane- to-airplane traffic information displayed on a GRT display unit from nearby aircraft participating in ADS-B OUT on 978 MHz UAT frequencies.

1.2 Data Port and Hardware Requirements

Display Unit Data Port	Any high-speed (115,200 baud) RS-232 serial port. NOTE: Serial Port 4 may be the only high-speed port on some older EFIS systems.
Power Connections	12-28 V aircraft power. Recommend wiring to Avionics bus.
ADS-B Antenna	Dedicated passive external antenna required, 36" or more away from transponder antenna. A Delta Pop UAT belly-mounted antenna is recommended.
GPS Receiver	There is no internal GPS receiver in the Pathfinder. A GRT EFIS GPS can be connected to it using the instructions in Section 2 of this manual. Connection to a puck-style GPS is optional.

Multiple-Screen Systems: Due to the large data packets for ADS-B, it does not transfer across the serial inter-display link. When using a serial inter-display link, wire the receiver to the screen you wish to view it on. Data can transfer over Ethernet inter-display link (HX, HXr).

Section 2: Wiring & Connectivity

2.1 GRT EFIS Connections

Display Unit Connection	Display Unit Function	Pathfinder Pin	Pathfinder Function
Serial IN/Rx*	ADS-B data IN	Pin 6	ADS-B Out/Tx
Serial OUT/Tx	GPS to Pathfinder	Pin 5	GPS In/Rx (optional- see Section 2.2)

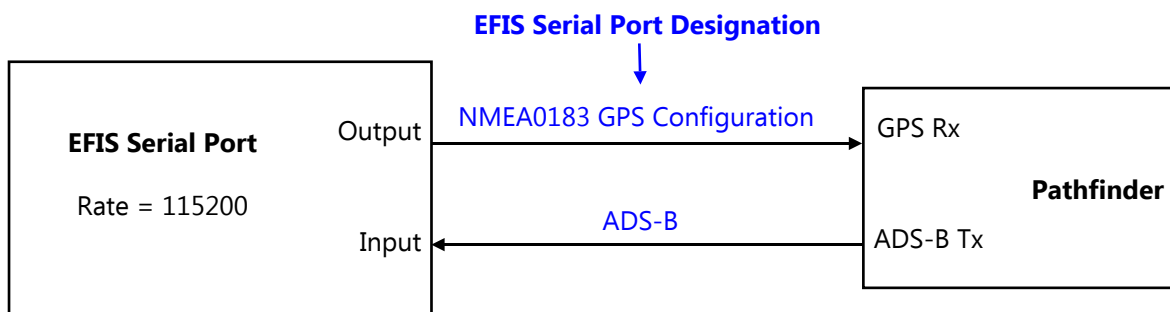
*A high-speed serial port (115,200 baud rate) is required- Use Serial Port 1 or 2 on older Horizon WS/HS units, or Serial Port 4 on older Sport WS/HS units.

2.2 GPS Connection

The Pathfinder requires a GPS position to relay ADS-B data to a tablet app. This can come from the GRT EFIS or an external GPS receiver with NMEA formatting at 4800 or 9600 baud rate. **NOTE:** This is **not** required for display of ADS-B on the GRT EFIS if the EFIS already has GPS.

Option 1: GRT EFIS GPS- If your EFIS has a free serial port OUT that is set to a 9600 or 4800 baud rate, you can wire it to the Pathfinder’s GPS input.

For simplicity of wiring, a single EFIS serial port (IN + OUT) can be wired to both connections of the Pathfinder, as shown below. The “Rate” setting for the serial port must be set at 115200, the required baud rate of ADS-B data transfer. Even though the GPS signal is normally transmitted and received at a rate of 4800 or 9600, the Pathfinder will automatically detect the GPS baud rate and receive its data at 115200.

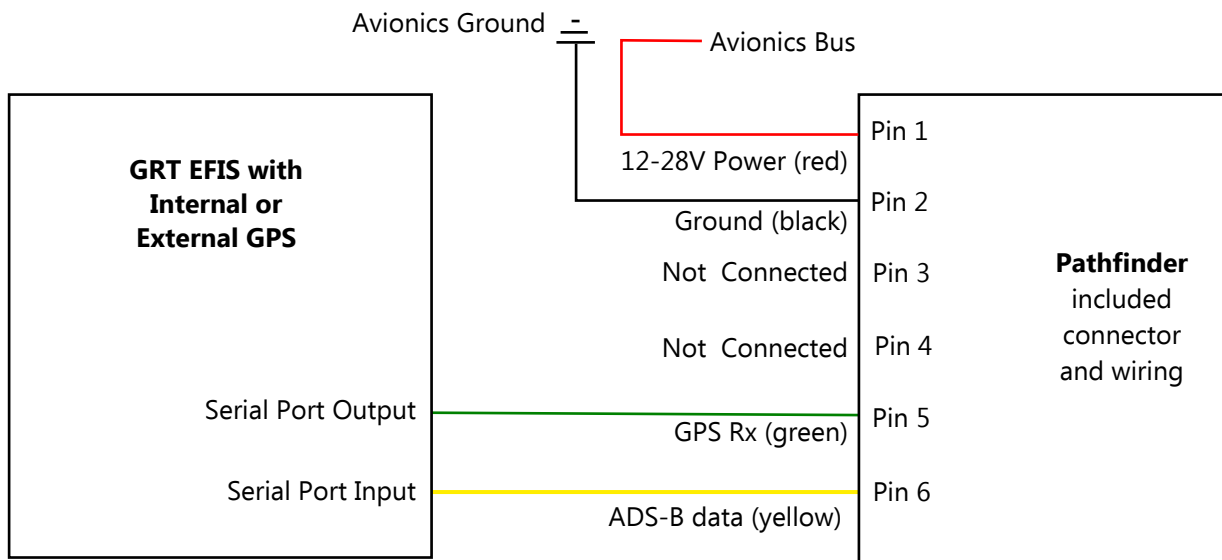


Option 2: External “puck” style serial GPS- The recommended puck receiver (GlobalSat 07-BR-355-S4) comes furnished with a round serial connector that must be cut off, with the wires stripped and inserted into a spade connector. See Pathfinder installation instructions and the wiring diagram on the next page for more information.

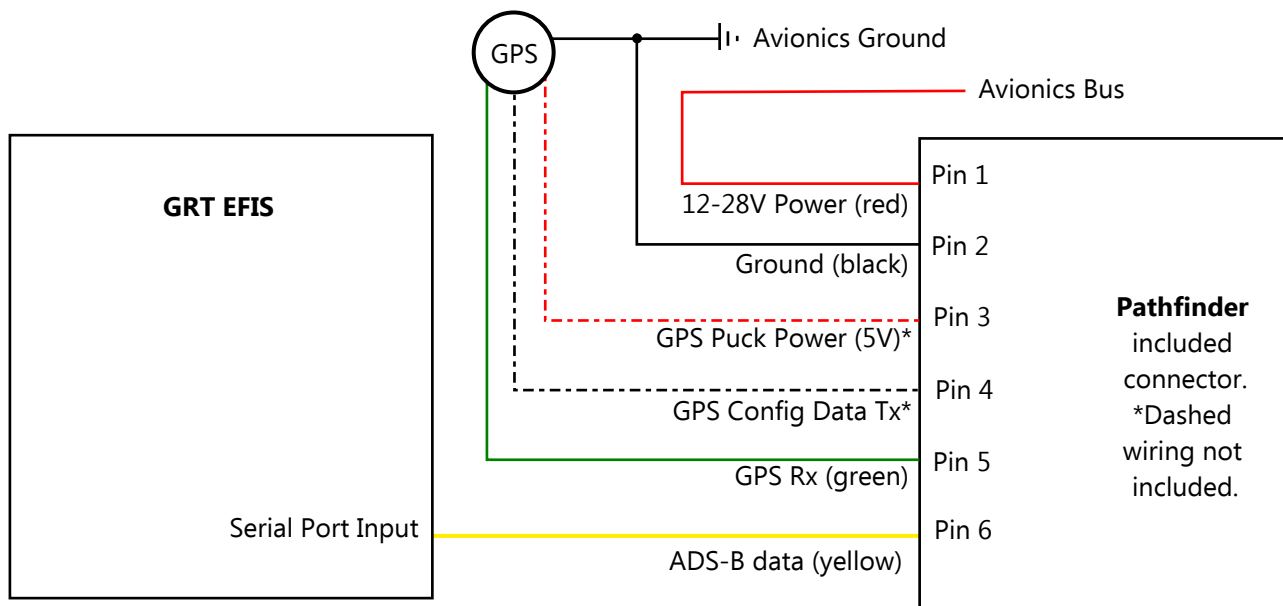
Option 3: Aviation GPS such as Garmin handheld or panel-mount unit with NMEA or Aviation format serial output. No modification to the Pathfinder wiring harness is necessary- Connect the supplied green wire in the Pathfinder harness (Pin 5) to the serial output of the GPS. Serial port configuration may be necessary within the GPS unit.

Note: EFIS and Aviation GPS power and ground connections are omitted for clarity.

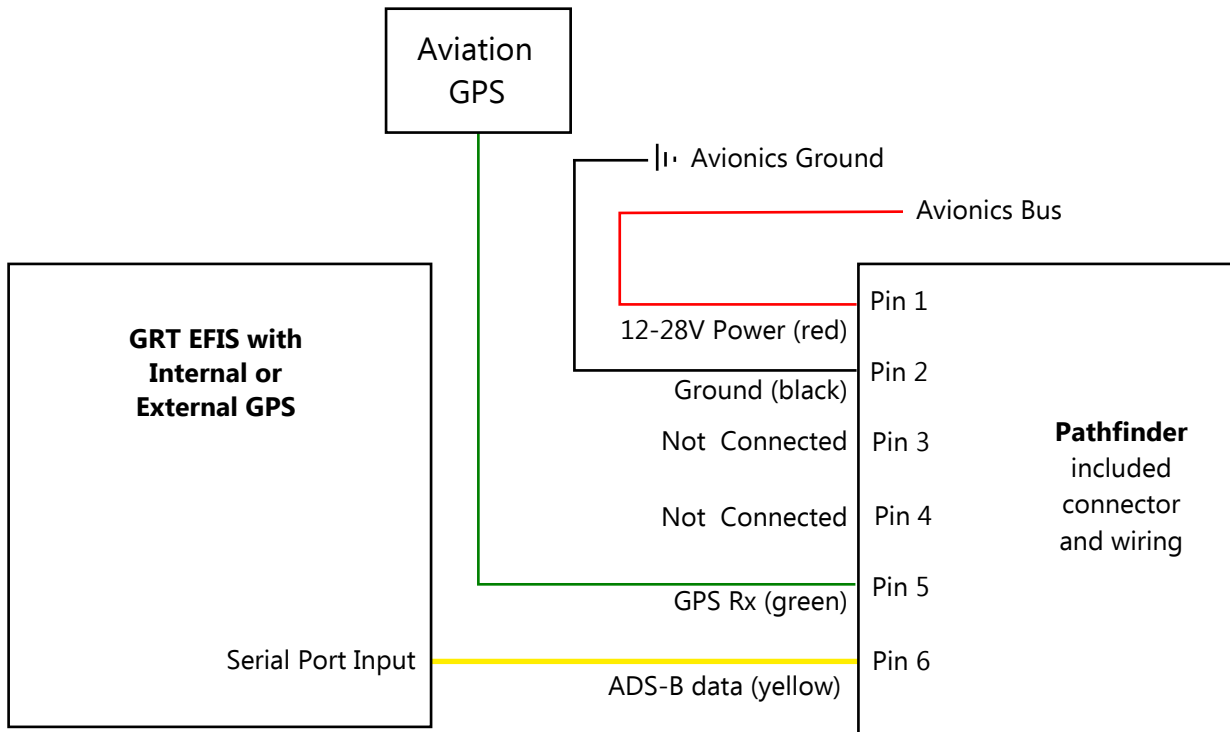
GPS Option 1- GRT EFIS GPS



GPS Option 2- Serial GPS Puck



GPS Option 3- External Aviation GPS



2.3 WiFi Connection to Tablets

When provided with a GPS position as described in Section 2.2, the Pathfinder Remote can transmit ADS-B information via WiFi to iPad and Android tablets running Electronic Flight Bag (EFB) apps such as WingX Pro7, Flight Pro (Avilution), and Avare. See the Flight Data Systems website, <http://www.fdatasystems.com/faqs/#Pathfinder>, for current information on compatible apps.

Section 3: Setup & Programming

3.1 Display Unit & Receiver Setup

After the receiver, antenna, and GPS connections are installed and wired, use the following procedure to program the display unit to communicate with it.

1. Power up the EFIS system. Access the Setup Menu on the display unit that the Pathfinder Remote is connected to.
2. Under General Setup, scroll to the Serial Port setup options. Set up the serial ports as described below. The applicable serial port is the one wired to the Pathfinder.

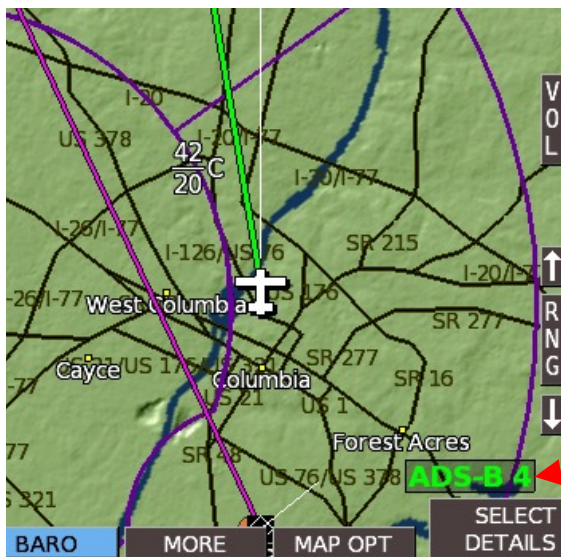
Set Menu Page	Setting	Value	Notes
General Setup	Flight ID and Address*	–	Press to activate menu
General Setup	Flight ID*	Enter actual value	Enter aircraft registration/N-number
General Setup	Mode S Address*	Enter actual value	Mode S code (base 16-Hex). Find by looking up N-number on FAA website. Note: The 6-digit Mode S code is only listed for aircraft with an airworthiness certificate, and not for reserved N-numbers.
General Setup	Serial Port ___ Rate	115200	Baud rate of port wired to Pathfinder Pin 6
General Setup	Serial Port ___ Input	ADS-B	Input of port wired to Pathfinder Pin 6
General Setup	Serial Port ___ Output	NMEA0183 GPS Config	Optional if using EFIS GPS (See Section 2)
General Setup	USB ADS-B	OFF	Used only for ADS-B receivers connected to the USB port
General Setup	Traffic Altitude Filter	Set to preference	Excludes traffic alerts outside of the selected altitude.
*Set this up to receive traffic data if you are transmitting ADS-B Out using an extended-squitter transponder.			

3. Press SAVE softkey.
4. If your transponder is being used for ADS-B Out and it has not already been programmed, set it up using the transponder manufacturer’s instructions and its GRT supplement if applicable.
Note to Trig Users: In the TT22 setup menu, answer “1090ES Receiver On Board?” with NO.

3.2 Post-Installation Checkout

Verify Device Communications

1. Pull the aircraft outside and power up the EFIS system and ADS-B receiver.
2. Go to Set Menu > Display Unit Maintenance. Scroll to ADS-B Status. If the Valid Frames counter is counting, data packets are being received.
3. When the receiver is within range of one or more ADS-B ground towers, a green **ADS-B x** icon will appear on the side of the moving map, with the "x" representing the number of towers received. See image below.



The receiver is communicating with 4 ADS-B ground towers.

Section 4: Using the Pathfinder Remote

1. **WEATHER:** Bring up the MAP screen. Under the SHOW softkey, there is a list of items to choose from. (RADAR, SHADE, TERRAIN, WIND, METARS, etc.) Note that only one of the map features can be selected; Radar information will replace Terrain because the color shading of both features together is confusing. (On HXr, access SHOW softkey by pressing SCREEN, then MAP OPTIONS softkeys.) When selected on the MAP screen, radar will also be displayed in the HXr map inset.
2. **METARS and TAFS**, if available, are shown on the WPT DETAILS page of the airport. Select METARS on the moving map SHOW menu to display color-coded METAR symbols.
3. Go to the Moving Map Setup Menu for traffic alert and AIRMET, METAR, & TAF viewing options:

Setting	Value	Notes
Traffic Alert Window	On or Off	Traffic inset automatically appears when traffic is a threat.
Show AIRMET	Choose to show on all MAP pages, on North-Up page only, or never.	
Color airports using METARS		
METAR Text	Choose to display weather report text in Raw or Translated (English) form	
TAF Text		

4. **TFRs** are displayed as a red outline. Select with Map Selection Tool cursor for details. (HX, HXr and SX only. Requires latest display unit software as of 8-Oct-2014.
5. **Traffic** is shown as a black diamond icon with the altitude above or below you in hundreds of feet, an arrow that shows if it is climbing or descending, and a vector line that shows the approximate direction of flight. In addition to the moving map and geo-referenced charts, traffic icons can also be displayed in 3D on the PFD. To turn PFD traffic on or off, go to Set Menu > Primary Flight Display and scroll to Traffic In View. Select ON or OFF.

