



**Universal ADS-B Receiver
Equipment Supplement**

Revision A
17-Mar-2016

Revision Notes

Revision	Date	Change Description
A	05/03/17	Initial Release

Table of Contents

Section 1: Introduction

1.1 About ADS-B Receivers..... 4

1.2 Data Port and Hardware Requirements..... 5

Section 2: Installation & Wiring

2.1 Electrical Connections..... 5

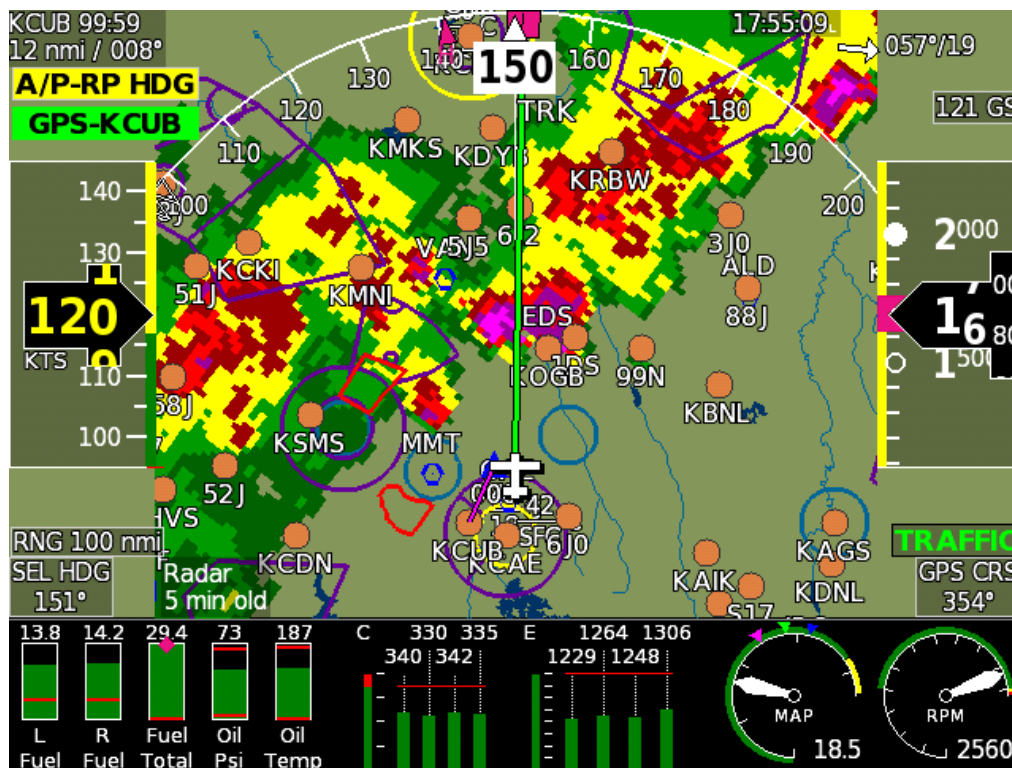
Section 3: Setup & Programming

3.1 Display Unit Settings..... 6

3.2 Post-Installation Checkout..... 6

Section 4: Using ADS-B Data

4.1 Weather & Traffic Options..... 7



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

Section 1: Introduction

1.1 About ADS-B Receivers

ADS-B receivers are typically capable of receiving 978 MHz UAT and/or 1090 extender squitter data. When configured with a 978 MHz UAT function, the provides FIS-B weather and TIS-B traffic data and displays it via a serial port connection to all models of on GRT Horizon HX, Hxr, Sport SX, and Mini (versions with moving map), EFIS display units, as well as the WS, HS, and Sport HS legacy display units. Some receivers are also equipped with a wi-fi adapter capable or transmitting this data to a large variety of tablet-based apps on Ipad and Android devices.

WARNING: Do not expect or rely on any traffic information unless your aircraft is also participating in ADS-B OUT.

The RS-232 serial interface between the 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.

ADS-B Radar image on a Sport SX . This is displayed using the "Layers" selection, and selecting "RADAR".

(Image courtesy of James Clark)



1.2 Serial Port and Hardware Requirements

A high-speed serial port is required on each display unit that will be used to display weather, with the exception that traffic will transfer over the inter-display link, and weather can transfer over the Ethernet inter-display link. For Sport SX, or Horizon HX/Hxr, a USB connection can also be used if the ADS-B receiver provides GDL90 via a serial port emulation (this is not common).

Antennas: The use of an externally-mounted antenna is optional. GRT beta testers in Van’s RV aircraft have reported good signal with the included antenna when the unit is within view of the sky (typically on the instrument panel glare shield). Signal reception may be improved by mounting an antenna on the belly of the aircraft. The included antenna may be removed and a dedicated passive transponder or DME antenna may be connected in its place.

Section 2: Installation & Wiring

2. Electrical Connections

Typically only one electrical connection is required for serial data, as described here. Serial data ground is generally not required.

ADS-B Receiver	EFIS Connection	EFIS Setting
Serial Data Out	Any Unused high-speed serial input	Set baud to 38400 (115200 may be used in the future) Set Serial Port Function to "ADS-B" Requires a high-speed serial port. These are*: Hx, Hxr - All ports Sport SX - All ports WS/HS - Horizon - Ports 1 & 2 WS/HS - Sport Port 4 *Except when using the serial port pass-thru via an ARINC Module
Serial Data Ground	None	Generally this connection is not provided and is not required.

Section 3: Setup & Programming

3.1 Display Unit Serial Port Setup

1. Select the "Set Pages", "General Setup" to configure the serial port used to receive the ADS-B data as "ADS-B", with the baud rate that corresponds to the serial output from the ADS-B receiver. Typically this is either 38,400, or 115,200.
2. Note that the ADS-B data must be in the GDL-90 format. This is a common standard, supported by most receivers.
3. Stay on General Setup screen. Scroll down to Traffic Altitude Filter. Use this to filter out traffic beyond a certain reported altitude from your position, excluding irrelevant traffic from the map. Other settings, as shown in the table below, should also be made to prevent traffic alarms from being generated by ADS-B traffic data that includes your airplane.
4. Press SAVE softkey.

Setting	Value	Notes
Flight ID and Address*	–	Press to activate menu
Flight ID*	Enter actual value	Enter aircraft registration/N-number
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.
USB ADS-B	On /Off	Set to "ON" when using the USB port to receive ADS-B data.
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.		

3.2 Post-Installation Checkout

1. Pull the aircraft outside and power up the EFIS system and ADS-B receiver.
2. Verify any LED status lights on the ADS-B receiver indicate it is receiving power. Note that ADS-B often cannot be received on the ground unless a ground station is nearby.
3. Go to Set Menu > Display Unit Maintenance. Scroll to ADS-B Status. If the Valid Frames counter is counting, data packets are being received.

- 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.

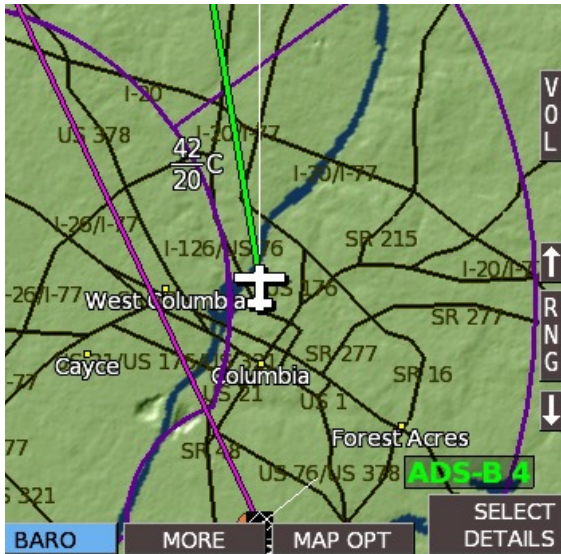
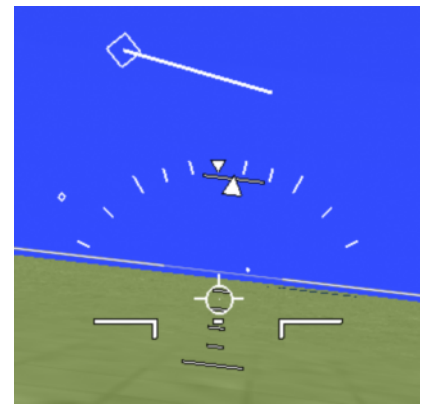
4.0 Using the ADS-B Data

- 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.
- 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.
- 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		

- TFRs** are currently not shown, but will be available with a future software update.
- 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.

Traffic as it appears on the Primary Flight Display Screen



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



Traffic as it appears on the moving map screen. The digital value indicates the difference in altitude from your airplane in hundreds of feet. The line segment indicates the direction of travel of the traffic.

