

Cirrus SR2X: Installing a Remote Transponder AXP322 and a SkyTrax200

IMPORTANT — READ BEFORE PROCEEDING

This document is a guideline and has not been approved by any regulatory authority. It is intended as a planning aid to help installers navigate the full installation documentation — it does not replace, supersede, or substitute for any approved installation manual, service bulletin, or regulatory requirement.

All installation work must be performed in accordance with the approved installation manuals for the referenced products. References to those sections are included against the Installation Manual Revisions listed in the Manuals Section. In any case of conflict or ambiguity between this guide and an approved document, the approved document governs.

This guide does not capture all requirements, limitations, or safety-critical steps. Installers are reminded that responsibility for airworthiness rests with the certificated individual or repair station performing the installation.

This guide outlines the steps to install an AXP322 remote transponder and a SkyTrax200 ADS-B UAT Receiver in a Cirrus SR20 or SR22 G1, G2, or G3 aircraft equipped with an IFD540/550 (IFD5XX). Check the Avidyne website to ensure you have the latest Revision of this document.

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1. Introduction

The Avidyne AXP322 transponder is a remote mount transponder controlled by an IFD5XX. The SkyTrax200 is an ADS-B receiver that receives messages from other ADS-B Out equipped aircraft and TIS-B and ADS-R messages from ADS-B Ground Stations. It also receives FIS-B weather data from ADS-B Ground Stations. It can also blend active traffic data from a Skywatch 497 TAS system to provide a unified traffic view. Traffic and weather are displayed on both IFDs, Vantage 12 PFDs and MFDs, and Entegra MFDs. The SkyTrax200 utilizes the Cirrus factory whip transponder antenna, while the AXP322 utilizes a new transponder antenna installed on the belly of the aircraft.

2. Parts and Documents Needed

Here is the list of products, manuals, and documents needed to complete and log the installation. Note that the hyperlinks require you to be logged into the [Avidyne Dealer portal](#) (or Cirrus Tech Pubs for the Service Bulletins) to view them.

- Products:
- 850-00222-000 AXP322 Transponder & Install Kit
 - 850-00228-100 SkyTrax200 Dual-Band ADS-B Receiver & Connector Kit
 - 850-00146-000 Vantage Readiness Kit
 - Comant CI105-16 Transponder antenna
 - Adhesive copper sheet (for ground plane)
 - USB-C data communications cable
- Manuals:
- [600-00312-000 AXP322 Mode S Remote Transponder Installation Manual](#)
 - [600-00335-000 SkyTrax Series ADS-B Receiver Installation Manual](#)
 - [600-00760-000 Vantage System Design Guide](#)
 - [600-00299-000 IFD5XX Installation Manual](#)
 - SB2X-34-19 DME Antenna Installation Instructions (no longer available)
 - [SB2X-23-05R1 Rear Transponder Antenna Installation Instructions](#)
- Documents:
- [600-00300-001 Pilot Guide IFD5XX](#)
 - [700-00190-100 SkyTrax Series UAT ADS-B STC](#)
 - [SkyTrax Series UAT ADS-B STC AML](#)
 - [STC SA00352BO AXP340 & AXP322 STC](#)
 - [200-00269-XXX Remote Transponder AML for STC SA00352BO](#)
 - [STC Permission Letter](#)

3. Add a New Transponder Antenna

You need to add a transponder antenna for the AXP322, as the existing whip antenna up by the engine firewall will be used by the SkyTrax200. This is also beneficial as many owners report transponder noise on certain model Bose headsets with the factory transponder antenna.

A good transponder antenna choice is the Comant CI105-16. It has extra-long studs which can accommodate wide variations in fiberglass thickness (Figure 1).



Figure 1: Comant CI105-16 Transponder Antenna

G3 Installation

On a G3, there is an existing spot in the cavity behind the baggage bulkhead to mount it (Figure 2). This can be accessed through the large inspection panel on the rear right side of the fuselage. A copper ground plane needs to be added (**Error! Reference source not found.**). A video showing how to do this installation in a G3 can be found here:

<https://www.youtube.com/watch?v=CAyNLxPMFKI&list=PLyf5rhC3l1IK-RbCSyrD2PmybiOjW1iTG&index=4&t=2s>



Figure 2: G3 Rear Empennage Antenna Location

A copper ground plane needs to be added (Figure 3). A video showing how to do this installation in a G3 can be found [here](#).

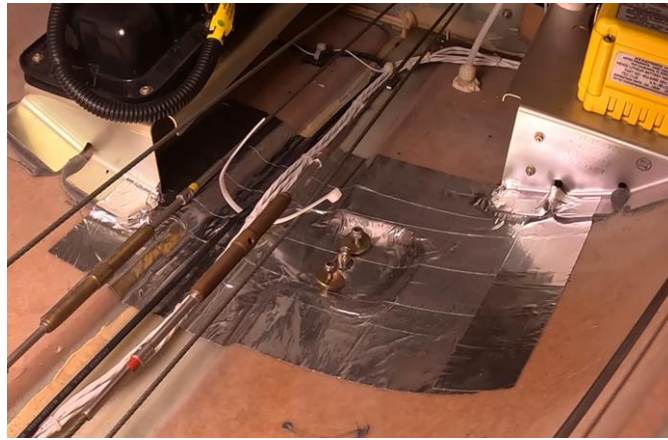


Figure 3: G3 Rear Empennage Antenna Ground Plane

G1/G2 Installation

On a G1/G2, there is no pre-molded antenna spot as in the G3, nor is there a side inspection panel to easily access the space behind the baggage bulkhead. There are two Cirrus service bulletins that discuss this issue. Cirrus [SB2X-23-05R1](#) specifies a location in the center inspection space under the rear seat for a transponder antenna installation (Figure 4). Another option is Cirrus SB2X-34-19, which is no longer available on the Cirrus Tech Pubs site (Figure 5). It describes installing a DME antenna behind the baggage bulkhead. This is a bit challenging on a G1, as there is no side access panel like on a G3. No fiberglass work is needed in either case – just the addition of the holes for the antenna and a **copper ground plane**.



Figure 4: G1 Rear Seat Antenna Installed with Ground Plane

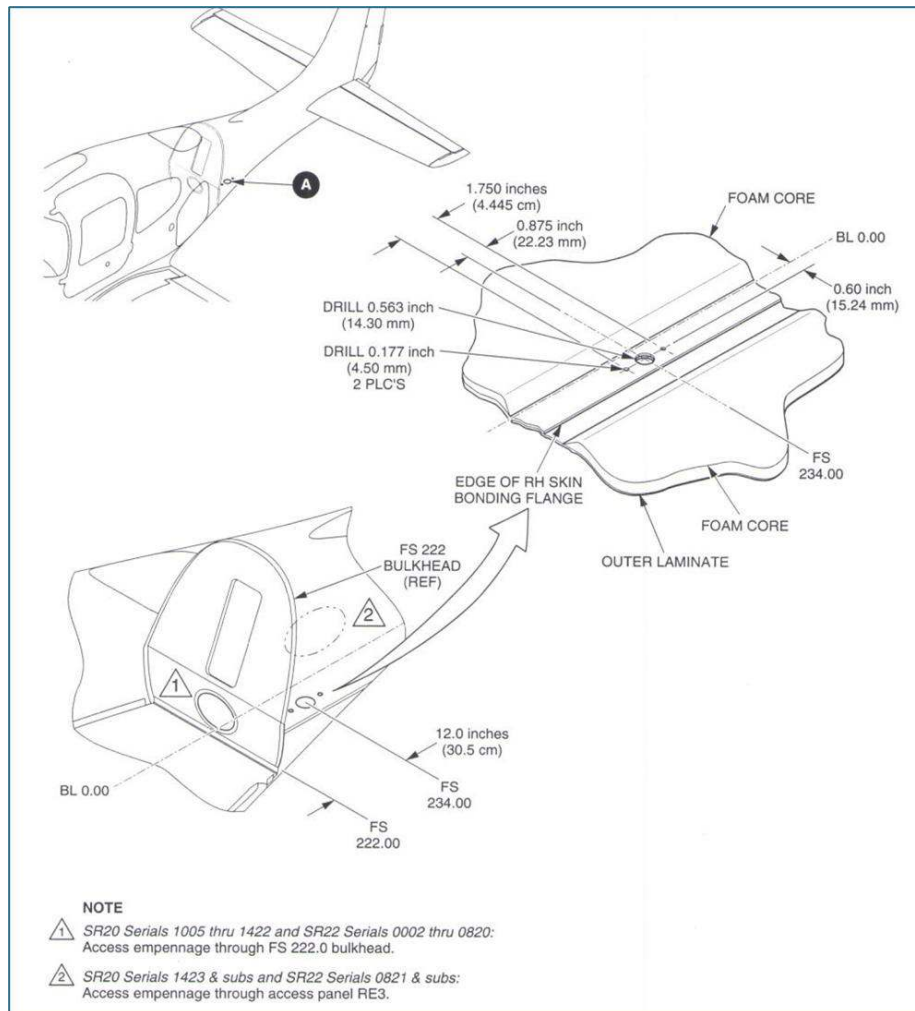


Figure 5: Cirrus SB2X-34-19

4. Mount Both Boxes

SkyTrax200

One location for the SkyTrax200 that many dealers use is on the plate that creates a cavity in front of either the copilot seat (if no A/C) or pilot seat (if with A/C) for the Skywatch 497 traffic box (Figure 6).



Figure 6: Skytrax Mounting Location on Skywatch 497 Plate

The SkyTrax200 box is mounted in this location with either flush head screws or with Click Bond standoffs (after removing the Velcro under the mounting location).

AXP200

Some dealers have mounted the AXP322 transponders next to the SkyTrax200 on G1/G2 aircraft, as the connection from this location to the new transponder antenna is less than the 15 feet specification in either antenna mounting option (rear seat or rear empennage)..

That said, some installers prefer to mount the AXP322 in the rear seat footwell area on G3 aircraft to minimize the transponder cable distance. The AXP322 box can be mounted to the center spar in the rear seat footwell cavity (Figure 7) that has the rudder bungee cables (removed per SB2X-27-18R2 with Click Bond fasteners, or alternatively with screws to the underside of the access panel to one of the cavities in the rear seat footwell space.



Figure 7: AXP322 Mounting Location in a G3

5. Wiring

Device Connections

The suggested wiring is:

- Connect the AXP322 to the IFD5XX using RS232. The IFD5XX will provide control of the remote AXP322.
- Connect the SkyTrax200 to the IFD440 using RS232. The IFD440 will share the traffic and weather data from the SkyTrax200 with the IFD5XX and the Vantage 12 system (if installed), so no additional connections to the IFD5XX or Vantage are required.
- Connect the Skywatch 497 to the Skytrax200 and AXP322 to facilitate blending of the active traffic with ADS-B traffic.

There is a good example wiring diagram at the end of the Vantage 12 System Design Guide which follows these guidelines (Figure 8). This diagram shows connecting both the AXP322 and SkyTrax200 to the IFDs through the J/P5170 connector that is part of the Vantage Readiness kit. The wiring harness in this kit adds the ethernet connections to both IFDs that connect to the Vantage system – eliminating the need to remove the center console when doing a future Vantage installation. The same DB25 connector (J/P5170) in the Vantage Readiness harness is used to route the AXP322 & SkyTrax200 wires to the IFDs. Unused pins on this connector can also be used for items such as a remote avionics cooling fan.

Ground Traffic Audio Muting

You can optionally add an audio mute line from **pin 11 on Skytrax P1 connector** to **pin 13 on the Vantage Readiness P5170 connector**. Then connect **pin 13 on J5170** to **pin 10 on J5170**. This connects the WOW signal to the traffic mute input. This will suppress audible traffic alerts when on the ground. You will still get traffic and alert messages, just not audible alerts when on the ground. If the customer wants traffic alerts on the ground, just disconnect one of the pins on the P5170 connector.

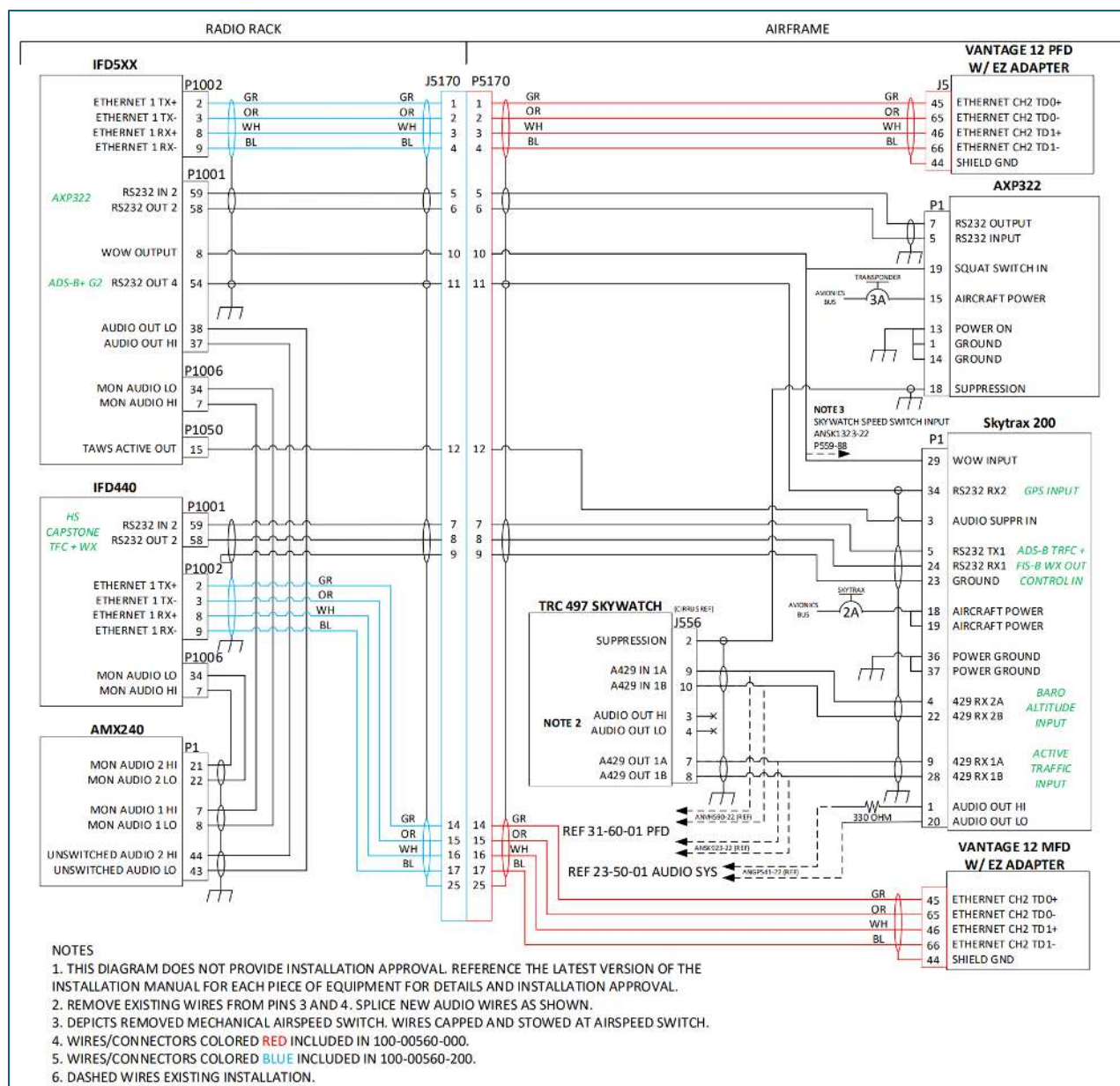


Figure 8: AXP322, Skytrax200, Skywatch 497, and IFD wiring diagram with the Vantage Readiness harness

Note: The 330 ohm summing audio resistor shown on **Skytrax P1 pin 1** may not be needed if a dedicated audio panel input is used.

Harness Fabrication

For an aircraft with the two boxes mounted to the Skywatch 497 metal plate, fabricate an **84-inch** harness and route it through the center console and up behind the center avionics rack to the top of the rack, where it will connect to J/P5170 on the Vantage Readiness harness connector. If the AXP322 is mounted in a different location, you will have to fabricate two harnesses.

It may be easier to splice into the Skywatch 497 connections from the P559 connector on the Skywatch 497 box, as they are going to the SkyTrax200 box located next to it. You can find the details of the Skywatch 497 wiring in section 34-40-02 of the Cirrus SR2X wiring manual.

Cooling

Both IFDs need **direct cooling** to operate correctly. A **3 port avionics fan** feeding the cooling ports on the IFD backplanes through 5/8" SCAT tubing ([Spruce Part# 05-29901-5](#)) and connected with 0.59-0.67 plastic hose clamps ([Spruce Part# 05-02705](#)) is an ideal solution. Note that, while it has a small vent port, the DFC90 does not require external cooling.

6. IFD Configuration

All programming for the **AXP322** is done on the **IFD5XX**. The first step is to configure the IFD ports used by the AXP322. Figure 8 lists in **GREEN** example RS232 port data formats to set on the IFD5XX. Refer to section 7.5.17 of the IFD installation manual for configuration details. Figure 9 shows the IFD 5XX RS232 settings associated with the wiring diagram in Figure .

Stormscope (WX-500), traffic, and weather inputs should only be configured on **one IFD**. Turn the input off on the other IFD if both have it on. The IFDs and the Vantage displays will share the traffic and weather information over the ethernet bus.

You need to configure the IFD440 per section 7.5.4 of the IFD installation manual. Note the example port settings in **GREEN** in Figure 8. Figure shows the IFD440 RS232 settings associated with the wiring diagram in Figure .

7. SkyTrax200 Configuration

You will need a Windows laptop and a **USB-C cable** to program the SkyTrax box. Section 3.7.4 of the SkyTrax Installation Manual describes how to confirm communication with the IFD440. Program it per section 3.7.5 of the SkyTrax Installation Manual.

Note that all USB-C cables are **not the same**. Some only do charging, while others can also do data communications. If you are having trouble connecting to the box, try other USB-C cables until you find one that works.

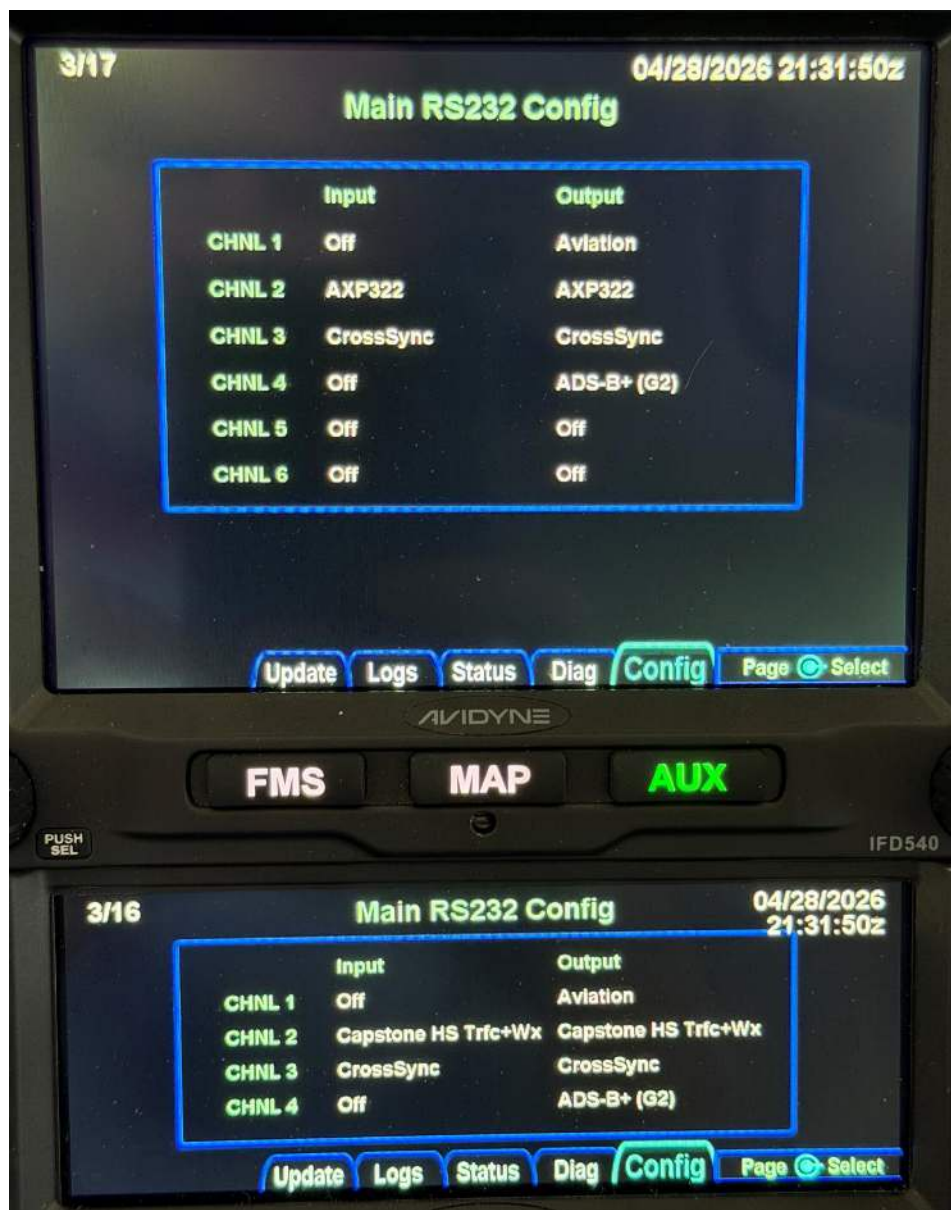


Figure 9: IFD RS232 Configuration

8. Add the Transponder Data Block to the IFD5XX

Finally, you need to add a **transponder data block** to the IFD5XX display. This data block lets you set the squawk code and transponder mode. Putting it on the left side is preferred so that it is always visible. See pages 1-33 and 5-40 of the IFD5XX Pilots Guide for instructions on how to set up the data blocks (Figure). To add it to the left side of the display (Figure 11) it must be in the first block below the frequency boxes and not be configured in any other data blocks.



Figure 10: IFD 5XX Transponder Data Block Configuration



Figure 11: IFD5XX Transponder Control Block

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