

# General Install

**Q: Can I use Stratus ESG's WAAS GPS signal to feed other avionics such as a navigator or emergency locator?**

No, the WAAS GPS position is only available to the transponder for ADS-B out purposes, and, if connected, a Stratus portable ADS-B in receiver.

**Q: Can I use an existing WAAS GPS antenna with Stratus ESG?**

If the antenna meets the specifications outlined in our [installation instructions](#) and is not being used for any other avionics, then yes you can.  
Must meet TSO-C144 OR TSO-C190 requirements

**Q: Can I use an existing transponder antenna with Stratus ES and Stratus ESG?**

If the antenna meets the specifications outlined in our [installation instructions](#) and is not being used for any other avionics, then yes you can.

**Q: How does the resolution of a serial altitude encoder affect its configuration with Stratus ES and Stratus ESG?**

If the altitude encoder resolution is **25 ft or better** (e.g. 10 ft), choose "SERIAL-TRIM/GAR-25FT" or "SERIAL-SHAD/RMS-25FT."

If the altitude encoder resolution is **25 ft or worse** (e.g. 100 ft), choose "SERIAL-TRIM/GAR" or "SERIAL-SHAD/RMS."

**Q: What are the dimensions of Stratus ES and Stratus ESG?**

Designed with the common 1.65" tall form factor, it's an easy replacement for existing transponders.

Bezel Width

6.38 inches (162 mm)

Bezel Height	1.69 inches (43 mm)
Rack Width	6.32 inches (160.4 mm)
Rack Height	1.65 inches (42 mm)
Depth*	10.75 inches (273 mm)

*\*Depth from back of bezel to end of strain relief on rack (not compensating for wire bend radius)*

## What types of altitude encoders work with Stratus ES/ESG?

The altitude encoder must meet the performance requirements of TSO-C88 (a or b). Serial altitude encoders must have Trimble/Garmin or Shadin/RMS protocol.

Most parallel grey code encoders will work with Stratus ES/ESG. Most ACK and Trans-Cal encoders will also work, but their capabilities depend on the model.

- ACK models A-30.1 through A-30.5 are parallel encoders only. The last digit in these models indicates what Mod level they are. We recommend replacing any Mod 1-3 and using a Mod 4-5 or update to Mod 8-9.
- ACK models A-30.8 through A-30.9 are both parallel and serial encoders. If these are existing encoders being re-used, confirm what they are internally configured for and change it to 9600 baud rate. See configuration requirements listed below.

If the encoder is an A-30.9, then it is factory-set for Stratus ES/ESG's format with 10' increments. Configure Stratus ES/ESG's altitude source settings to TRIM/GAR -25.

**NOTE:** You may need to contact the encoder manufacturer for assistance to open the encoder and set the jumpers correctly.

- Trans-Cal SSD120-(RS-232)-35C is both parallel and serial. It is factory-set for 1200 baud rate and will not work with Stratus ES/ESG until configured internally with jumpers. Set Jumper J4 closed, J5 Open and J6 Closed. Then configure Stratus ES/ESG's altitude source settings to **TRIM/GAR -25**.
- Other serial models of Trans-Cal encoders require wiring the D-sub connectors in the correct format. Some have both a 9 pin and 15 pin connector on them. On the 9 pin, jumper pins 7 & 2 to Pin 1 (Gnd) for it to work with the TRIM/GAR -25 encoder setting on Stratus ES/ESG. On the 15 pin connector, you only need power (8 or 14) and ground (15) connected.

ACK and Trans-Cal manuals and tech support are available on their websites.

## My altitude encoder isn't working. What should I check?

Older altitude encoders might have a longer power up time than Stratus ES/ESG. While the altitude encoder powers up, the altitude field will be replaced by dashes. If the altitude encoder has not powered up within five minutes, an **Alt Input** error message will appear. Once the altitude encoder is completely powered on and transmitting data, the error message will disappear.

Otherwise, check the following:

- If you're using a grey code (parallel) encoder, make sure that the enable pin is grounded to power ground. Otherwise, there will be no altitude output.
- Make sure that the D4 pin is left open unless the aircraft flies above 30,700 feet.
- Pin 37 on the ESG Altitude common is only used for encoders that have an "Altitude Common" or "Signal Common" to connect.

- If you're using a serial encoder, it must be able to provide Trimble/Garmin 9600 baud format in 100' or 10' resolution. (Trim/Gar = 100' & Trim/Gar -25 = 10').
- If you're using a parallel encoder, it must be a Shadin/RMS or Shadin/RMS -25 which is 9600 baud rate.
- Shadin F/ADC (Format Z) and Shadin (Format C) will not work.

## ADS-B Receivers

**Q: Does my customer need the Stratus portable connection kit?**

They may continue to use their Stratus portable receiver independently, but purchasing the connection kit will allow them to take the Stratus portable receiver off the glare shield or window and stow it out of the way. The portable receiver will use the aircraft's mounted antennas for excellent GPS and ADS-B reception, and will be supplied power from Stratus ES or Stratus ESG.

**Q: How do I configure Stratus 2 or Stratus 2S to automatically power on when Stratus ES or Stratus ESG is powered on?**

1. Open ForeFlight Mobile.
2. Tap **More** in the bottom right corner.
3. Tap **Devices**.
4. Tap your device.
5. Scroll down to Settings. Enable **Turn On When Plugged In**.

## Troubleshooting

**Q: Why is my customer's Stratus receiver reporting poor GPS accuracy when connected to Stratus ESG?**

A firmware update may be required for the Stratus receiver to ensure data is reported properly. If their Stratus firmware version is older than what is listed below, please have them perform an update using the instructions found [here](#).

Stratus 2S: Version 1.1  
Stratus 1S: Version 1.1  
Stratus 2: Version 2.1

## Q: Why am I hearing a ticking noise in my audio/intercom system after installing Stratus ES or Stratus ESG?

A ticking noise may be noticed after installing a new digital transponder on an aircraft with older audio/intercom systems. The ticking occurs when transmissions from the transponder are absorbed by existing audio cables and connectors with inadequate filtering and/or shielding.

The noise has also been reported on aircraft with other brands of transponders installed. Moving the transponder antenna as far away from other equipment as possible may reduce the noise level, but the only true solution is to upgrade the audio panel to newer equipment with higher connector and cable shielding standards.

## Q: Why am I seeing a “transmitter fail” error message on my transponder?

The transmitter fail message is typically caused by an impedance problem between the transponder and the external antenna/coax. Try the following troubleshooting steps:

1. Verify that the transponder is completely seated in the rack, that the RF connector on the transponder's back plate C-clip is locked in place, and that the RF connector is not pushed back.
2. Check all BNC connectors for opens or shorts.
3. If you used existing wiring, ensure that it's not hard, brittle, melted, or otherwise damaged. Consider upgrading to RG142 or RG400 coax.
4. Ensure that the transponder antenna is not broken, cracked, or otherwise damaged.
5. Verify that the transponder antenna is securely bonded to the airframe.
6. Verify that the transponder antenna is connected to the port labeled XPNDR ANT and that the GPS antenna is connected to the port labeled GPS.
7. If you are using RG400 coax for the GPS antenna, the minimum length is 10 feet for the correct DB loss.

8. Replace RG58 (black coax) with RG142 or RG400, especially if you are getting an intermittent “Transmitter Fail” error.

## Can I troubleshoot a “Transmitter Fail” error on the bench?

Connect Stratus ES/ESG directly to the proper input on a ramp tester or bench test set with a proper load to determine if it is a transponder problem or an aircraft coax or antenna problem.

If you don't have a proper bench set up, use a 5-8 feet piece of coax with a pulse antenna attached to a ground plane.

## Q: Why does the transponder's display start flashing after going from SBY to ON or ALT mode?

If a King KT-76A, Collins TDR-950, or Narco AT-50A or AT-150 was installed before Stratus ES or Stratus ESG in a 28 volt airplane, ensure that you removed the dropping resistor that was installed with these models. Stratus ES or Stratus ESG should be connected directly to the power bus.

## Q: I cannot see the transponder display. What should I check?

- Connect the transponder on the bench and ensure that the unit has a current draw.
- The display may be on, but very dim. Cup your hands over the display to see if display is on. If the transponder was configured to adjust brightness using the external dimming bus and there isn't any voltage on the dimming bus inputs, then the transponder's display is illuminating; it's just not very bright. Either apply dimming voltage or re-configure the transponder to use the built-in ambient light sensor.
- Put voltage on the dimmer input.
- Press the PWR button twice. If the unit boots up, ensure that you're on the newest firmware version as shown on the [service bulletin](#) page.

## Q: Why does my Stratus 2i have a flashing yellow GPS light and no GPS reception even though the transponder has good satellite reception?

1. Stratus 2i might need a factory reset. Perform a factory reset by pressing and holding the power button on top for 30 seconds. After it reboots, the GPS light will turn solid green if GPS lock is achieved.
2. There might be loose wiring. Verify that all wiring between the transponder's 37-pin DSUB connector and the Stratus 2i 9-pin DSUB connector is secure.

## Q: How do I stop my COMM radio from blocking GPS reception?

1. Install a GPS notch filter on the back of the COMM radio's antenna as close as possible to the COMM radio. These GPS notch filters may need to be installed at a VHF COMM radio's antenna output or at an older 121.5 ELT transmitter's antenna output.
2. Check all coaxes, BNC connectors and pigtailed from the back of the COMM radio for broken shielding, poor solder connections, loose RF fittings, broken tabs on King RF feedthroughs, or other damage.
3. Inspect VHF COMM radio antennas for cracks, poor bonding, or other damage.
4. In rare occurrences, if you're using an older COMM radio, it may be radiating a harmonic with a frequency similar to that of the GPS satellites. This can cause the satellite signal to be overpowered and not received by the GPS antenna. You will need to replace the COMM radio.

## Q: When installing Stratus ES/ESG, the transponder isn't seating completely in the rack and isn't aligning with the D-sub connector on the backplate.

Pre-fit the transponder into the mounting rack before installing the rack in the aircraft.

1. With the backplate and connectors removed, slide the transponder into the tray and secure it by tightening the locking mechanism.
2. Install the backplate and connectors, then tighten the backplate into

position.

3. Remove the transponder, then install the rack.

## I'm not getting good GPS reception. What should I check?

- Check that there are 5 volts on the coax center conductor at the GPS antenna.
  - **If there are 5 volts:** Try connecting another GPS antenna. Garmin GA35, GA56, or another Antcom/RAMI antenna will work for testing. You do not need to mount it for testing.
  - **If there aren't 5 volts:** Troubleshoot the coax, the transponder, and its connections.
- Perform the GPS oscillator reset procedure in the next FAQ.

## How do I reset the GPS oscillator?

**IMPORTANT:** Make sure that the GPS antenna IS NOT connected during reset.

1. Create a bench top harness using 22 AWG wiring for doing software updates.
2. Connect the software update harness to the transponder.
  1. Connect the power and ground to a power supply capable of 28 volts and 1.5 amps.
  2. Connect an RF load to the transponder antenna port. Leave all other cables, ports, and pins unconnected.
3. Power on the transponder into test mode.
  1. Power on the unit into configuration mode (while holding the **FUNC** key, press and release the **PWR** key) with the software update pin disconnected from ground.
  2. Ground the software update pin within 10 seconds of powering on the unit.
  3. Confirm that you are in test mode by pressing the left arrow key. You should see the LCD test screen.
4. Reset the GPS oscillator.
  1. Navigate to the registration screen.
  2. Enter "OSC" into the registration screen.
  3. Press ENT to save the registration.

4. Press the right arrow key.
5. Press the left arrow key to return to the registration screen. Confirm that it now reads "ACK."
6. Re-enter your aircraft's registration information, and confirm that all other configuration settings are correct.
7. Verify that GPS satellites can acquire in a timely manner.

## Are the BIT codes for Stratus ES and Stratus ESG different?

Yes, some BIT codes are only for Stratus ES, and some are only for Stratus ESG. There are also differences in BIT codes between software version R06 and R07. Refer to the Stratus ES & ESG Installation Instructions for BIT codes.

## Why is my Garmin 430W/530W not working as a GPS position source?

If you're using a Garmin 430W/530W as a GPS position source, it requires main SW version 5.02 or higher. GPS SW must be 5.0 or higher

Connect Stratus ES to an open RS232 serial port (out) on the GPS position source and use the GPS position source to configure the port to use the ADSB+ protocol.

## I have BIT Codes triggered, how do I clear/reset these BIT codes?

Press the 'enter' button when on the BIT code page to clear/reset any triggered codes.