

SUPPLEMENT 7

TO THE AIRPLANE FLIGHT MANUAL (AFM)

DA42 L360

GARMIN GTX 33 ES WITH ADS-B OUT

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This Flight Manual Supplement 7 has been verified by the Transport Canada Civil Aviation (TCCA) Authority as primary certification authority in accordance with the valid certification procedures and is approved.

RECORD OF REVISIONS

Revisions to this Supplement are recorded in the following table.

New or amended text will be indicated by a bold black vertical line in the left hand margin of a revised page. The Revision No. and Date will be shown on the footer of the page.

		Approved	
Rev. No.	Affected Pages	Date	Name
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LIST OF EFFECTIVE PAGES

Chapter	Page		Date
0	DOT-approved	9-S7-1	10-Apr-16
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CHAPTER 9

SUPPLEMENT 7

GARMIN GTX 33 ES WITH ADS-B OUT

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1. GENERAL

This aircraft supplement (Supplement 7) supplies the information necessary for the efficient operation of the DA42 L360 airplane when the optional Garmin GTX 33 ES transponder is installed with the ADS-B Out function

All Garmin GTX transponders are a radio transmitter/receiver that operates on radar frequencies, receiving ground radar or TCAS interrogations at 1030 MHz and transmitting a coded response of pulses to ground-based radar on a frequency of 1090 MHz. Each unit is equipped with IDENT capability and will reply to ATRBS Mode A, Mode C and Mode S All-Call interrogation. Interfaces to the GTX 33 ES are shown in the following block diagrams.

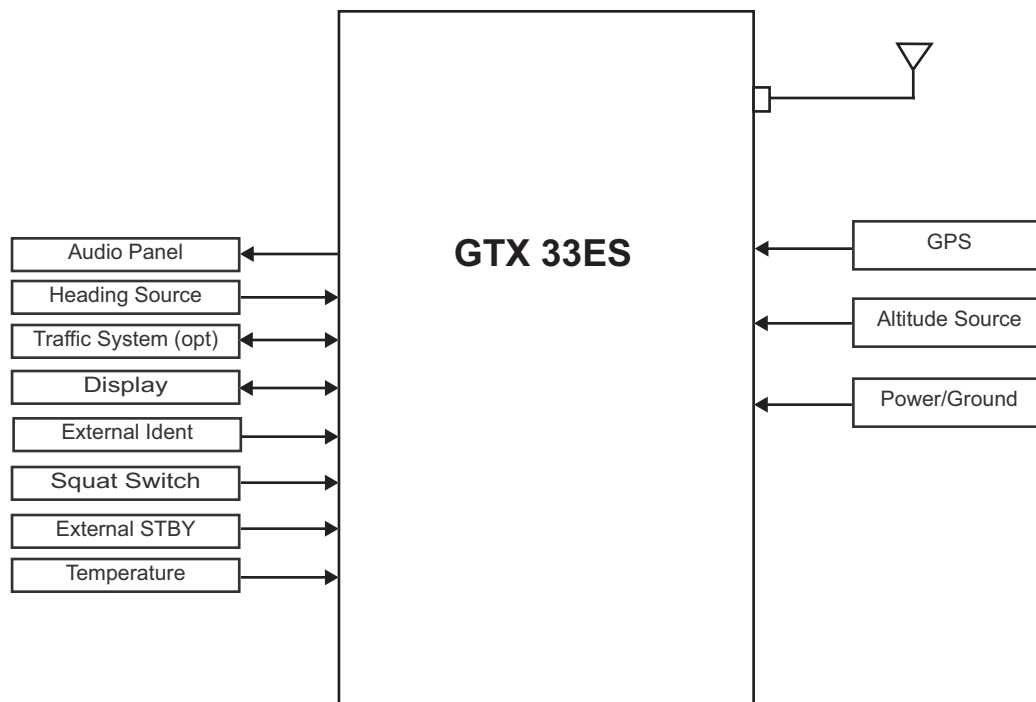


Figure S7-1 GTX 33 ES Interface

The GTX 33 ES performs the following ADS-B Out functions:

- Transmission of ADS-B out data on 1090 extended squitter (1090ES) (1090 MHz)
- Integration of data from internal and external sources to transmit the following data:
 - GPS Position, Altitude, and Position Integrity

- Ground Track and/or Heading, Ground Speed, and Velocity Integrity
- Air Ground Status
- Flight ID, Call Sign, ICAO Registration Number
- Capability and Status Information
- Transponder squawk code, IDENT, and emergency status
- Pressure Altitude Broadcast Inhibit

1.1 Capabilities

The Garmin GTX 33 ES with ADS-B Out functionality as installed in this aircraft has been shown to meet the equipment requirements of the following:

- 14 CFR 91.227
- CS-ACNS.D.ADSB.

A detailed description of the system operation can be found in the Garmin Cockpit Reference Guide, 190-01062-03 and the Pilots Guide, 190-01061-03 or later revisions.

2. OPERATING LIMITATIONS

2.1 Minimum Equipment

In order provide the proper ADS-B data the GPS source and Altitude source must be fully functional.

2.2 ADS-B Out

The GTX 33 ES only complies with the integrity requirements for ADS-B Out when all required functions are operational. When the system is not operational, ADS-B Out transmit failure messages will be present on the G1000 display.

2.3 Applicable Software

This AFMS is applicable to the G1000 software versions V1.00 and GTX 33 software version V7.04 or later approved versions.

2.4 Pressure Altitude Broadcast Inhibit

Pressure Altitude Broadcast Inhibit (PABI) shall only be enabled when requested by Air Traffic Control while operating within airspace requiring an ADS-B Out compliant transmitter. PABI is enabled by selecting the GTX to ON mode.

3. EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures with the GTX 33ES is installed.

4A. NORMAL OPERATING PROCEDURES

NOTE

The Cockpit Reference Guide will provide additional operating information specific to the displays or other traffic systems.

ADS-B Out functionality resides within the GTX transponders. All GTX functions are controlled through the G1000 display units thereby providing a single point of entry for Mode 3/A code, Flight ID, IDENT functionality and activating or deactivating emergency status for both transponder and ADS-B Out functions. Details on performing these procedures are located in the G1000 Pilot's Guide.

4.1 Unit Power On

The ADS-B function is enable on power cycle and **ADS-B TX** will be displayed.

4.2 Before Takeoff

ADS-B TX..... DISPLAYED

NOTE

The ADS-B TX annunciation must be displayed for the system to broadcast the ADS-B Out signal.

4B. ABNORMAL OPERATING PROCEDURES

4B.1 Abnormal Indications

The loss of an interfaced input to the GTX 33 ES may cause the transponder to stop transmitting ADS-B Out data. Depending on the nature of the fault or failure, the GTX may no longer be transmitting all of the required data in the ADS-B Out messages.

If the GTX 33 ES detects any internal faults or failures with the ADS-B Out functionality, the G1000 display will annunciate this event via the **XPDR1 ADS-B FAIL** message. When this message appears in the display, one of the following failures or faults have occurred:

- Loss of adequate GPS position data
- Internal failure of the ADAS-B function

No transponder data will be transmitted when there is a failure.

When a **XPDR1 ADS-B FAIL** annunciation is received, verify proper operation of all interfaced equipment (refer to Section 1.) as the failure of one of these devices could be the cause of the abnormal indication.

4B.2 Loss of GPS Navigation Data

When the GPS/SBAS receiver is inoperative or GPS position information is not available or invalid, the GTX will no longer be transmitting ADS-B Out data.

XPDR1 ADS-B FAIL annunciator illuminated:

GPSVERIFY VALID POSITION

5. PERFORMANCE

There is no change to the airplane performance when the GTX 33ES is installed.

6. MASS AND BALANCE / EQUIPMENT LIST

There is no change to the airplane mass and balance when the GTX 33 ES is installed.

7. DESCRIPTON OF THE AIRPLANE AND SYSTEMS

The Garmin G1000 Cockpit Reference Guide, 190-01062-03 and the Pilot's Guide, 190-01061-03, or later contain additional information regarding GTX system description, control, and function.

8. AIRPLANE HANDLING, CARE AND MAINTENANCE

There is no change to the airplane handling, care and maintenance when the GTX 33 ES is installed.

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