Garmin GTX 345: ADS-B “In” for Flight Training Aircraft

Joe Stewart
Aviation Regional Sales Manager, Garmin International

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Garmin GTX 345: ADS-B “In” for Flight Training Aircraft

Joe Stewart
Aviation Regional Sales Manager
Garmin International
Today’s Agenda

• New Product: GTX 335/345
• What was the previous solution?
• GTX 345 ADS-B “In” displayed on:
  • GTN 750 & 650
  • G1000
  • G600/G500
ADS-B Definitions

• **ADS-B “Out”** – GPS position data sent from your aircraft to ATC; “The Mandate”

• **ADS-B “In”** – Receiving weather & traffic information into your aircraft; “The Benefit”

• **1090 ES** – Frequency required for “Out” mandate if flying above 18,000’ MSL

• **978 UAT** – Receive FIS-B & TIS-B on compatible display; US only frequency

• **“AutoSquawk”** Patented Garmin UAT technology to communicate with existing transponder without an upgrade. Single-point data entry. A.K.A. “Own-Ship Interrogation”

• **“TargetTrend”** Relative Motion Trend Vectors attached to ADS-B Traffic Targets.

• **“Terminal Traffic” (SURF)** ADS-B Traffic Overlaid on SafeTaxi Diagrams.
What is the required equipment?

That depends… Where do you fly??

Above 18,000 feet?

Or below 18,000 feet?
What was the previous solution?

Above 18,000 feet:
- Approved WAAS Position Source
- Mode S Transponder with Extended Squitter
- UAT Transceiver for Traffic and Weather
- Wireless Gateway to Connect a Tablet

Below 18,000 feet:
- Approved WAAS Position Source
- Mode C Transponder
- UAT Transceiver
- Wireless Gateway to Connect a Tablet
Introducing…
GTX 335 - Economical ADS-B “Out” Compliance

- ADS-B “Out” Compliant (Mode S 1090 ES)
- Industry Standard 1.65 inch Form Factor
- Optional Versions include:
  - Remote Mount
  - WAAS GPS
  - NVG Compatible Model
- List Prices Starting at $2,995
GTX 345 - All-In-One ADS-B Transponder

- ADS-B “Out” Compliant (1090 ES)
- Industry Standard 1.65 inch Form Factor
- Standard on the GTX 345:
  - Dual Link ADS-B “In” (1090 ES & 978)
  - AHARS
  - Connext™ (Bluetooth)
- Optional Versions Include:
  - WAAS GPS
  - Remote Mount
- List Prices Starting at $4,995
GTX 335/345 - Simple, Complete Solution

- Bright, Sunlight Readable Display
- Dedicated squawk entry buttons
- Timers – Trip, Flight, Climb & Decent
- 1090 ES ADS-B “Out” - covers requirements at all altitudes and around the globe
- Optional integrated WAAS GPS for aircraft without a WAAS position source
GTX 335/345 - Preserve Your Existing Panel
GTX 345 - Synchronised ADS-B “In” on All Screens
One Transponder, Fleet Commonality: ADS-B “Out”, “In”, backup AHARS

**$3,795**
**GTX 335 w/ GPS**  
*ADS-B “Out” only

**$3,995**
**GDL 84 w/GPS + FS 110**  
ADS-B “Out & In”

**$5,795**  
**GTX 345 w/ GPS**  
ADS-B “Out & In” + backup AHARS!

**$2,995**
**GTX 335R**  
*ADS-B “Out” only

**$3,995**
**GDL 88**  
ADS-B “Out & In”

**$4,995**
**GTX 345R**  
ADS-B “Out & In” + backup AHARS!

*LIST Prices shown without Install*
<table>
<thead>
<tr>
<th>Feature</th>
<th>GTX 335</th>
<th>GDL 88</th>
<th>GDL 88 + FS 210</th>
<th>GTX 345</th>
<th>GTX 345 + FS 210</th>
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<tbody>
<tr>
<td>List Price:</td>
<td>$2,995</td>
<td>$3,995</td>
<td>$4,995</td>
<td>$4,995</td>
<td>$5,995</td>
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<tr>
<td>ADS-B “Out” above 18,000’</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>ADS-B “Out” Below 18,000’</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Dual-Link “ADS-B In”</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Built-In AHARS</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Bluetooth to iPad</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>2-way Flight Plan Transfer</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
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</table>
GTX 345 - Comprehensive Compatibility

- GTN 650/750 Series
- GNS 430W/530W Series
- Select G1000 Systems
- G500/G600 Coming Q2 2016
- G3X Touch Coming Q3 2016
- Output for GMX 200/MX 20
- GNS 480 as a Position Source
- Output for Third Party Displays
GTX 335/345 - GTN Series Integration

- Control Remote GTX 335/345 Transponder
- Display ADS-B “In” data from GTX 345
- GTN Provides Position Source for Standard GTX 335/345
GTX 345 - Unique ADS-B “In” Capabilities

- ADS-B “In” Weather – NEXRAD, METARs, TAFs, and More

- ADS-B “In” Traffic – Enhanced by TargetTrend™ & TerminalTraffic™ on Select Displays

- Audible Alerts – such as “Traffic: 10 O’Clock, same altitude, two miles”
Terminal Traffic

Positions other ADS-B aircraft or ground vehicles on Garmin’s SafeTaxi diagrams.
Benefits of ADS-B “Out” + Dual-Frequency “In” (1090 & 978 Mhz)

- No ADS-B Mode-C Radar Tracked
- GTX 345 (R)
  - 1090 ES “Out” +
  - 1090 & 978 “In”
- GTX 3000 + GDL 88W +FS210
  - 1090 ES “Out” +
  - 1090 & 978 “In”

Air to Air ADS-R (Rebroadcast) +/-3500’

15 NM
GTX 345 - Connext™ Capable

Capabilities:

• ADS-B “In” Weather & Traffic Information Displayed on Mobile Device

• Backup Attitude & Precise GPS Position Data

• TargetTrend™ and TerminalTraffic™ (Garmin Pilot Only)

Compatible Products:
GTX 345 - G1000 Correlated Traffic

- Merge ADS-B Targets with Active Traffic System Targets
- Compatible with Garmin GTS 8XX Series and Various Third Party Systems
GTX 335/345 - G1000 Integration

• Control Remote GTX 335/345 Transponder

• ADS-B Compliance with GTX 335/345

• Display ADS-B “In” data from GTX 345

• Optional Position Source for Non-WAAS G1000 Systems

• Select G1000 w/ WAAS Systems Provide Position Source for Standard GTX 335/345
### GTX 335/345 - G1000 Compatibility

**Garmin GTX 345 STC is complete:**

<table>
<thead>
<tr>
<th>Aircraft Make/Model</th>
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<th>Aircraft Make/Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cessna 172R / 172S</td>
<td>182S / 182T / T182T</td>
<td>Cessna 206H / T206H</td>
</tr>
<tr>
<td>Cessna 208 / 208B</td>
<td>Cessna 350 / 400</td>
<td>Costruzioni P2006T</td>
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<tr>
<td>Diamond DA-40 / DA-40F</td>
<td>Diamond DA-40NG</td>
<td>Diamond DA-40D</td>
</tr>
<tr>
<td>Diamond DA-42</td>
<td>Diamond DA-42NG</td>
<td>Diamond DA-42 L360</td>
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<tr>
<td>Hawker Beechcraft 58 / 58G</td>
<td>Hawker Beechcraft A36 / G36</td>
<td>Mooney M20TN / M20R / M20M</td>
</tr>
<tr>
<td>Piper PA-46 Matrix / Mirage / Meridian</td>
<td>Piper PA-28 Archer</td>
<td>Piper PA-34 Seneca</td>
</tr>
<tr>
<td>Piper PA-44 Seminole</td>
<td>Socata TBM 700</td>
<td>Socata TBM 850 / 900</td>
</tr>
<tr>
<td>Vulcanair P 68, P 68B, P 68C, P 68C-TTC</td>
<td>Vulcanair AP68TP 300 &quot;Spartacus&quot;</td>
<td>Vulcanair AP68TP 600 &quot;Aviator&quot;</td>
</tr>
</tbody>
</table>

Software version requirements may apply. TIS-B and/or FIS-B information may be limited or not displayed.
Flight Stream Overview

• The Flight Stream is a data concentrator and 2-way Bluetooth Transceiver

• Garmin equipment is wired directly to the Flight Stream

• Enables synchronized SVT & ADS-B “In” Traffic/Weather on all screens in cockpit.

• Uses external, certified antennas for optimized GPS/traffic reception.

<table>
<thead>
<tr>
<th>Product</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight Stream 110</td>
<td>$549</td>
</tr>
<tr>
<td>Flight Stream 210</td>
<td>$995</td>
</tr>
</tbody>
</table>
Flight stream 210 (or GTX 345)

TargetTrend™ on Garmin Pilot
Flight stream 210 (or GTX 345)

AHRS information on Garmin Pilot
Garmin Angle of Attack System

Audible Alerts

2 Display Options:
  External GI-206
  Integrated Display G3X/G3X Touch
**Video Flight Data Recorder System: GMA 350c + VIRB XE**

**Virb XE:**
- High Definition Video **Plus:**
- Groundspeed
- Altitude
- Accelerometer
- Receive ATC and intercom audio wirelessly from GMA 350c / 35c

**GMA 350c:**
- Bluetooth Audio Panel
Why Garmin ADS-B Solutions

- Industry Leader in ADS-B Technology

- More fielded ADS-B solutions than anyone else in the industry.

- Regardless of what type of aircraft you fly, where you fly or what you have in the panel – Garmin has your ADS-B solution.
Thank You.

Joe Stewart
Aviation Regional Sales Manager
Garmin International