

ADS-B: The Latest on Compliance, Installation and Operation

Webinar Presented By:

Rotorcraft ADS-B Challenges Review

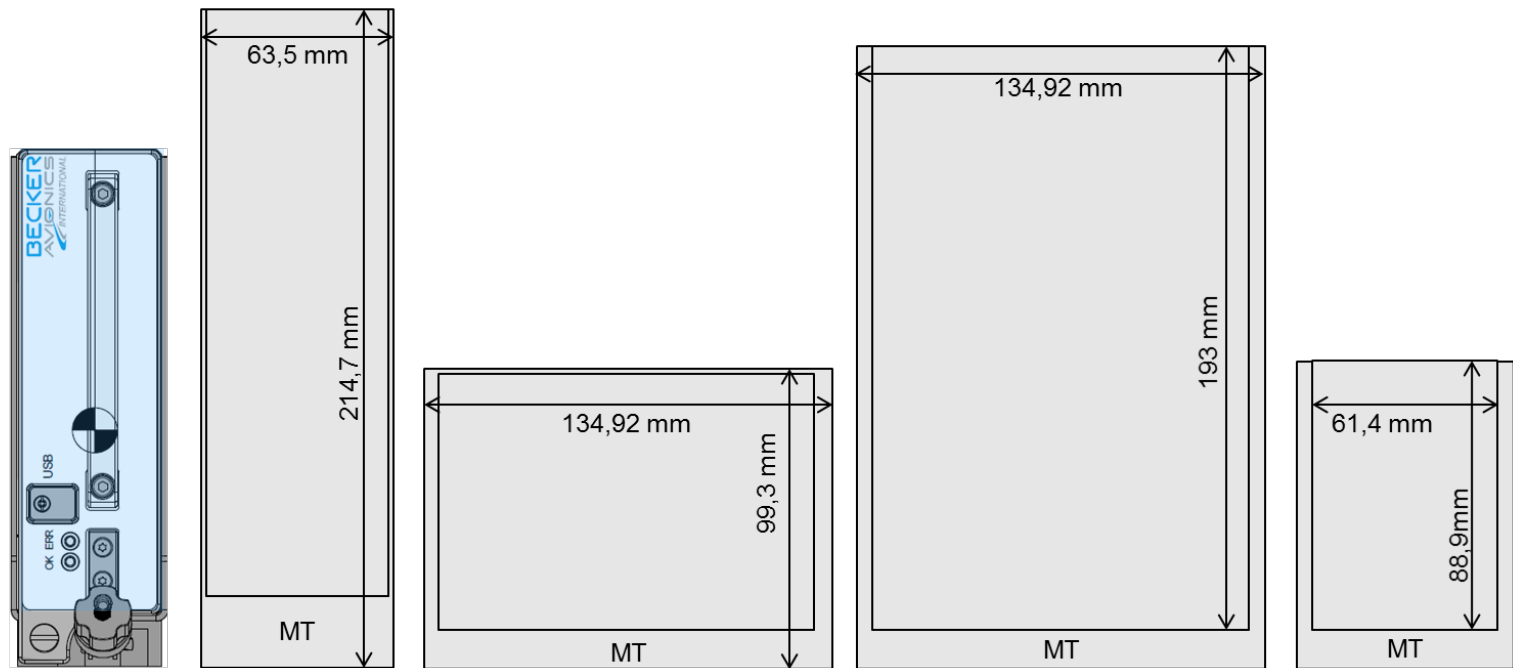
- Global ADS-B Requirements = Mixed or Emerging or None
- Interoperability With Fixed Wing, UAS, sUAS
- Special Rotorcraft Operations = **See & Be Seen Challenge**
 - Emergency Medical Operations
 - Special Mission - Government Normal & Enforcement, 1st Responders, VIP
 - Military Operations - Mode S and Mode S/ IFF ADS-B Compatibility & Equipage
 - ATC Coordinated “Cloaking” Capability For Special Mission & Military
- Initial & Continuing ADS-B Focus Is On Fixed Wing
- Fixed Wing ADS-B Progress Is More Advanced In All Areas
- Major & Regional Commercial Air Transport Impact More Public = ADS-B Focus
- Rotorcraft Outreach - Large, Diverse Ownership, Much Like General Aviation

Rotorcraft ADS-B Transponder Challenges

- Configuration Proliferation – Design, Installation, Approvals
- Large, Diverse RW Fleet
 - New, Old, Large, Small, Very Small
 - Fitted With 3-4 Generations Of Avionics
 - Limited, Outdated or No Mode S On Sizeable Portion of RW Fleet
- Diverse Avionics Installations
- Limited Number of Stand-Alone Transponder Solutions
- Mixture of GNSS/ GPS, Air Data, FMS/Navigator, RadAlt/ WOW
 - AC 20-165B Compatibility (i.e. GPS Integrity Performance)
- SWaP & A (Size, Weight and Power – Affordability)

Rotorcraft Transponders = Significant Retrofit Effort

- Physical Installations Rationalization?
- I/O Interface Challenges – A429, RS-232/422, Ethernet, CAN?



BXT6513 MST-67A /
Depth: 319mm **NXT-700**
Depth: 433 mm

TDR-94D
(NXT-600 similar)
Depth: 393 mm

TPR-901
(TRA-67A similar)

TDR-90
Depth: 348 mm

NEXTGEN PrimeLine BXT65XX Transponders

BXT65XX Mode S Family

- Non-TCAS/ Non-Diverse & Diverse
- BXT6513 TSO/ETSO (Line Fit Pilatus)
- BXT6553 TCAS II (1Q 2018)

BXT6513

- ADS-B OUT
- ADS-B IN (RX Data at Interface)
- eCloaking® & sCloaking®
- Enhanced Surveillance
- Non-Diverse or Diverse
- 250 W
- Helicopter vibration, environmental
- A429 – 14 Rx, 3Tx Channels
 - ✓ A718A-3 for Xpdr
 - ✓ A735B for TCAS (WIP)
 - ✓ A743A-5 for GNSS (GPS)
- CAN Bus
- Ethernet Bus
- Discretes
- Multiple GNSS, Control Panels



Becker has been providing
Rotorcraft Avionics for
over 30 Years
Mission ICS & CNS Systems

PrimeLine BXT65XX Mode S

Smaller - Lighter – Cooler - Cheaper !

- **Size**

- The BXT Occupies 13 - 47% Less Volume Compared To The TDR94D, MST67, NXT-700



- **Weight** - BXT Saves Up To 55% Of Weight

- ~3.75 Lbs. Less Than MST-67A
- ~1.75 Lbs. Less Than NXT-700



- **Power Dissipation**

- BXT Has No Fans Or Holes
- Designed For Energy Efficiency, NO Passive Cooling



- **Affordability**

- Target Market Price Half Of Current Offerings
- Simplified Installation, Configuration & Updating ON WING
- Cost Of Ownership Less Due To Reliability, Extended Warranty Period



PrimeLine BXT65XX Special “**Cloaking**” Feature

Contingent On ATC Cooperation & Approval – Special Missions

- **eCloaking**®
 - Discrete Input To **Disable ADS-B Out** Functionality
 - No Transmission Of DF17 Message
 - No Transmission Of Airborne/Surface Position Message, Aircraft Identification And Category, Airborne Velocity Message, Event-driven Message
 - Mode S Is Still Transmitted

Are Aircraft Visible? For example, on Flightradar 24?

- Aircraft Are **Not Visible**, While Flying At Low Altitude
- Aircraft Are Visible Above ~3000ft Over Ground. Some Online Flight Tracking Tools Also Use Multilateration (MLAT) Techniques (Above This Height The Transponder May Be In Sight Of More Than 4 Receivers And Thus MLAT Is Possible)

- **sCloaking**®
 - Mode S Disabled and Mode A/C ONLY

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