AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST

Supplying ATM systems around the world for more than 90 years.

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The Indra’s ADS-B ground station is an equipment which brings the benefits of the Automatic Dependent Surveillance Broadcast with the best cost-performance ratio in the market. This system has been entirely developed and manufactured by Indra complying with the most exigent and recognized standards.

The increasing air traffic aims for new automatic equipments

The meaning of ADS-B:

Automatic: the target sends information automatically, without any external stimulus up to 5 times per second

Dependent: all information relies on target. No measurements are done in ground equipment.

Surveillance: provides ASTERIX data for surveillance purposes

Broadcast: data is broadcasted by targets without any reception confirmation.
System description

The Indra ADS-B ground station consists of an antenna that receives RF signals, an ADS-B receiver and processor unit that receives, process and decode ADS-B information and an ADS-B processor that process correlates and creates ASTERIX reports to be sent to the final ATM system. The Indra ADS-B system is superior to the rest of systems in the market because it contains three independent reception channels. In heavy load environments this is translated in better performances at longer distances.

Key benefits

- Includes new ADS-B functionalities developed inside SESAR projects
- Decodes new DO-260B squitters
- Provides updated information transmitted by surface and airborne targets.
- Support enhanced traffic situational awareness for ATC, flight crews and others (ex. airport scenario agents)
- Separation standards: system use contributes to separation procedures (ITP, ASAS and ATSAw)
- Approaches in low-visibility conditions
- Enhanced capability to "see and avoid" adjacent traffic
- Provide surveillance coverage in non-radar airspace
- Used for Aircraft and vehicle surface traffic management
- Fleet tracking for airlines

Due to the flexibility of the Indra ADS-B system this can be configured from the simplest ADS-B receiver with a unique omni antenna with a single processing unit to a fully redundant system including three elements sectorized antennas and redundant process chain. Indra ADS-B is based in COTS elements and includes BITE and CMS functionalities that detect events and stores all relevant data. As recommended on related standards, ADS-B system CMS functionalities use SNMP protocol.
System features

- Provides ADS-B service as described in ED-129
- Use of latest-generation signal and data processors for signal processing. The decoder provides enhanced probability of detection for low level signals, which translates into better long range performance and coverage.
- In the core Europe area with more than 400 targets, the system tracks targets over 300NM.
- Compact equipment based in PC Architecture
- Omnidirectional or sectorized antennas for short and long range (>250 nm) applications. In core Europe the system has detected tracks over 300NM.
- Operates with new generation of transponders DO-260B.
- Low-cost system that can be networked to provide terminal, approach and en-route surveillance.
- Local and remote control and supervision based on COTS products and using SNMP protocol.
- Intelligent BITE (Built-in Test Equipment)

**High technology**
- Fault resistant
- The ADS-B assembly corresponds to a modern station architecture, unmanned, with a user-friendly latest-generation equipment, full local and remote management

**Reliability and low life-cycle cost**
- Reliable operation with simple maintenance
- All maintenance tasks can be performed by a single operator.
- Lower annual cost in servicing time and spares which greatly reduces the life-cycle cost

**Communality**
- Conceived with the same concepts that have provided optimum results for other equipments developed by Indra
- The ADS-B station can be easily integrated with surveillance systems like MSSR and MLAT
- Is an essential part for A-SMGCS

**Operative capability**
- Massive digital processing, compared to other traditional implementations
- In line with future SESAR functionalities
Main technical features

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<td>REPORTING MODES</td>
<td>Data driven, Positional data driven, Periodic, throttled</td>
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<tr>
<td>Coverage</td>
<td>&gt; 250NM</td>
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<tr>
<td>RF channels</td>
<td>3 independent reception channels</td>
<td></td>
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<tr>
<td>Latency</td>
<td>&lt; 250ms</td>
<td></td>
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<tr>
<td>Target Capability</td>
<td>&gt; 500 aircrafts/s</td>
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<tr>
<td>Maximum Gain</td>
<td>12 dBi at +8º</td>
<td></td>
</tr>
<tr>
<td>Vertical pattern</td>
<td>Cosine square type (less silence cone than DME antennas)</td>
<td></td>
</tr>
<tr>
<td>Maximum Power</td>
<td>≤ 20dBm</td>
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<tr>
<td>Frequency</td>
<td>1090MHz ±5MHz</td>
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</tr>
<tr>
<td>SWR</td>
<td>&lt; 1.50</td>
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<tr>
<td>Impedance</td>
<td>50 Ω</td>
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<tr>
<td>Connector</td>
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<td>Polarization</td>
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<td>Lifetime</td>
<td>15 years</td>
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<td></td>
<td>Acquisition Squitters (DF11)</td>
<td>Acquisition Squitters (DF11)</td>
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<td>Extended Squitters from transponder devices (DF17)</td>
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<td>Extended Squitters from military transponders (DF19)</td>
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<td>RMA</td>
<td>MTBF: ≥ 23418 hrs , MTTR: 19 min</td>
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<td>STANDARDS</td>
<td>Follows ED-129</td>
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Control and Monitoring

- HTTP based
- Uses SNMP protocol

Includes Configurable parameters:
- Supervision of the status of each LRU, Network interfaces
- Supervision of the working mode of each channel (in case of redundant configuration)
- Statistics
- Access control by user and password
- Alarms management
- Reports management
- Visual Alarms
- Control of reporting mode
- Control of operational parameters
- Versions installed in the elements of the system
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