

Aireon's space-based Automatic Dependent Surveillance-Broadcast (ADS-B) system provides unprecedented 100 percent global surveillance coverage to all aviation stakeholders. The system receives and processes ADS-B signals broadcast from aircraft equipped with 1090 MHz ADS-B transponders, without requiring additional Air Navigation Service Provider (ANSP) surveillance infrastructure or airline equipment.

The Aireon system is designed to address the safety, efficiency, availability and performance requirements that have been mandated by many air traffic organizations worldwide.

Aireon's ADS-B system is made up of two segments: the Aireon space segment and Aireon ground segment.

THE AIREON SPACE SEGMENT

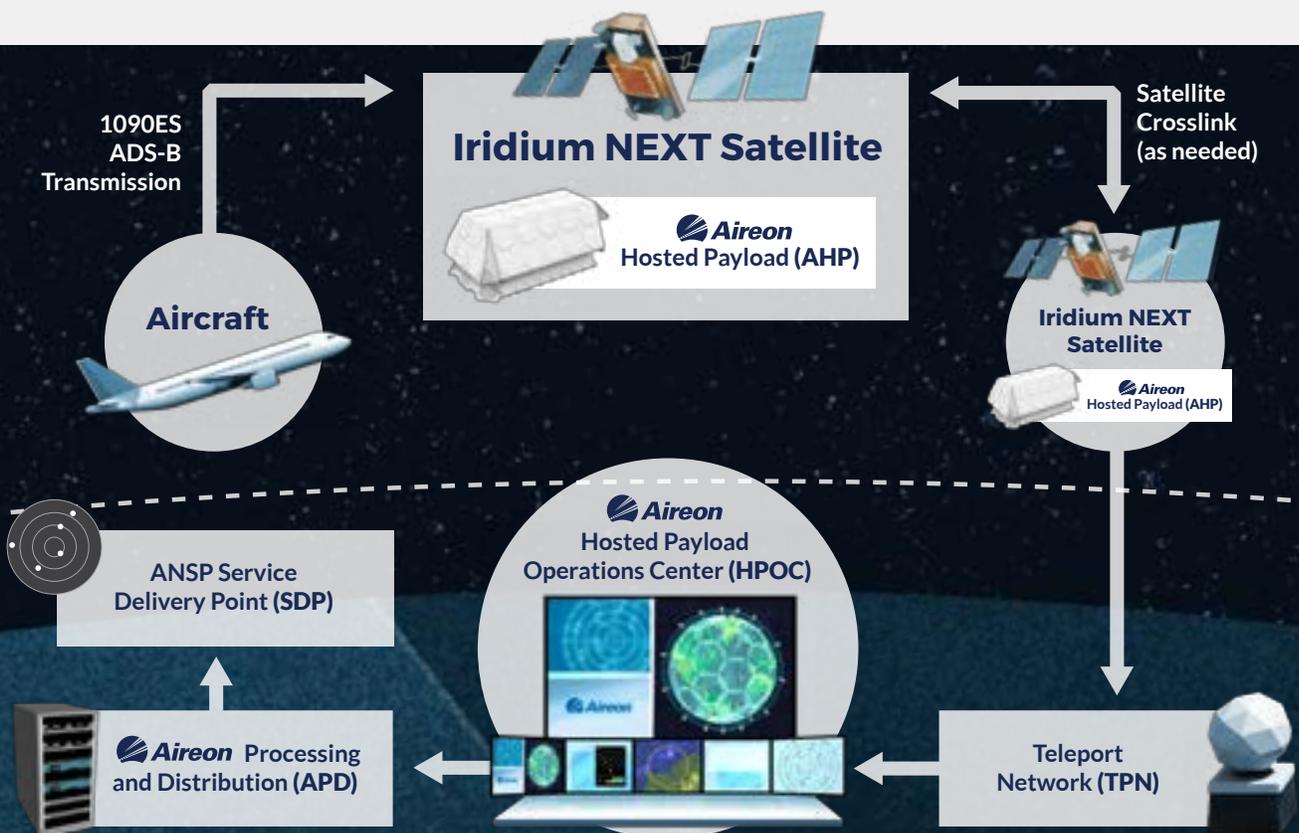
Iridium NEXT is hosting the Aireon system and is the only satellite constellation with the capability and reach to enable global air traffic surveillance due to its orbital configuration. This configuration provides complete global coverage, including oceanic and polar regions, without the need for ground stations. No other system, existing or planned, enables such an opportunity for aviation stakeholders.

The Aireon space segment consists of the Aireon receiver, known as the Aireon Hosted Payload (AHP), which is located on each of the 66 Iridium NEXT satellites distributed over six polar orbital planes. The AHP receives, demodulates and transfers received ADS-B messages through the Iridium NEXT main mission payload, which is routed over crosslinks between Iridium NEXT satellites and downlinked to an Iridium teleport network before reaching the Aireon ground segment.

THE AIREON GROUND SEGMENT

The Aireon ground segment is comprised of the Hosted Payload Operations Center (HPOC) and the Aireon Processing and Distribution (APD) system. The HPOC provides all the functions required to monitor and control the AHP, including telemetry monitoring, failure recovery and remote configuration. The HPOC processes data to/from the Iridium Teleport Network and manages link bandwidth.

The APD processes all ADS-B mission data, provides mission planning and payload tasking functions (such as antenna and target scheduling), and delivers mission and status data to the ANSPs. The APD acquires ADS-B targets and checks for duplicates, generates ANSP reports, calculates and stores Technical Performance Measures (TPM), and archives system data. The APD also provides the operator interface for system monitoring, control and analysis.



KEY TECHNICAL AND PERFORMANCE PARAMETERS

Surveillance Datalink	1090ES ADS-B (DO-260 versions 0,1,2)
Aircraft Transmitter Classes Supported	A1 or higher with a top-mount antenna
Data Format to ANSP	ASTERIX CAT021, CAT023, CAT025, CAT238 and FAA CAT033 and CAT023
System Coverage	Continuously Global
Availability	≥ 99.9% (ICAO GOLD Standard for surveillance)
Latency	≤ 2s to Service Delivery Point (SDP)
Update Interval	95% of reports ≤ 8s in most areas

ADS-B DATA

The Aireon system receives and processes data from all three versions of 1090 MHz ADS-B transponders. The supported standards are DO-260, DO-260A, and DO-260B (Link Versions 0, 1, and 2, respectively). The current standard is DO-260B/ED-102A and has the highest integrity value of the three versions of ADS-B.

Aireon derives ADS-B data from onboard aircraft sensors and equipment, including information such as horizontal position and altitude, velocity, navigation quality metrics, aircraft identification and call sign, as well as other parameters, such as selected heading and altitude from a flight management system.

Traditional radar equipment provides aircraft position information every five to 12 seconds, with accuracy determined by the type of radar and the range of the aircraft to the radar. ADS-B systems provide more frequent position updates at up to twice per second, with satellite-based GPS far more accurate than traditional radar surveillance.

RELIABILITY, REDUNDANCY AND PERFORMANCE

The Aireon system, Iridium NEXT and Aireon's ground data processing system are all designed and built with a redundant, fault-tolerant system architecture to provide high availability and resiliency.

Due to the polar orbit of Iridium's satellite constellation, Aireon's ADS-B system provides continuously overlapping surveillance coverage throughout global airspace as latitude increases. Additionally, because the Iridium NEXT low Earth orbit (LEO) satellites travel over the circumference of the earth in about 100 minutes (moving at about 3NM/s), the impact of any single satellite outage would be significantly minimized.

ADS-B position messages can be detected up to as often as they are transmitted by the aircraft (twice per second). The system is designed to meet the EUROCAE ED-129B and EUROCONTROL GEN SUR SPR specifications to provide a probability of update performance of greater than or equal to 95 percent within an 8-second time window. This surveillance performance exceeds the 12 second rotation period of currently operational en-route radars and potentially meets the application of (5 NM) en-route separation with the appropriate navigation and communications capabilities.



1750 Tysons Boulevard
McLean, VA 22102 USA
+1.703.287.7500
www.aireon.com | info@aireon.com

In partnership with NAV CANADA, the Irish Aviation Authority (IAA), ENAV, NATS and Naviair, as well as Iridium Communications, **the Aireon space-based ADS-B system will extend ADS-B capabilities to every FIR in the world** – including current procedural oceanic, polar, desert and mountainous airspace and provide accurate, real-time visibility of ADS-B equipped aircraft.