

# MDS

## MDS Specifications

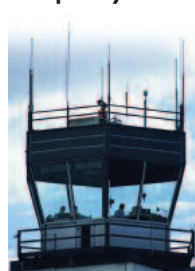
Equipment Specifications:	Outdoor Equipment:	Indoor Equipment:
<b>Temperature</b>	-40 to 55° C	10 to 35° C
<b>Relative Humidity</b>	5 to 95%, non-condensing	10 to 80%, non-condensing
<b>Wind Speed</b>	95 kts (operation), 120 kts (survivability)	n/a
<b>Lightning Protection</b>	All external interfaces	
<b>Input Power Voltage</b>	18-30 VDC or 100-240 VAC +/- 10%	
<b>Input Power Frequency</b>	50 to 60 Hz nominal +/- 3%	
<b>Power Consumption</b>	< 90W w/o heater, < 150W w/ heater	
<b>Safety Certifications</b>	CSA, cTUVus, UL 60950, EN 55022, 61000, 60215, 60950, IEC 60950, CE	
<b>RF Compatibility</b>	FCC Part 15, Class B	

## System Performance

### Dependent on system configuration:

<b>Transponder Types</b>	Mode S, Mode S ES, Mode A/C
<b>RMS Position Error (accuracy)</b>	surface: < 5 m airborne: < 30 m
<b>Target Capacity</b>	250 targets
<b>Track Initiation</b>	5 seconds max
<b>Target Update Rate</b>	1-12 seconds (Adaptable)
<b>Probability of Detection</b>	>97%
<b>System Latency</b>	250 msec
<b>SSR Interrogation</b>	ICAO Annex 10 compliant
<b>Data Output Format</b>	ASTERIX CAT 010, 011, 34/48, CD2 (MLAT), Asterix CAT 21 (ADS-B)

### Interfaces to other Airport Systems

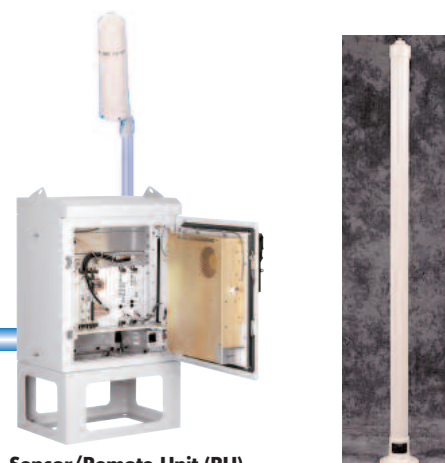


- ← ATC Tower Displays
- ← Mode S A/C Datalink
- ← A-SMGCS
- ← Air Traffic Management System
- ← Airline Operations
- ← Airport Operations
- ← Remote Control for Monitoring System



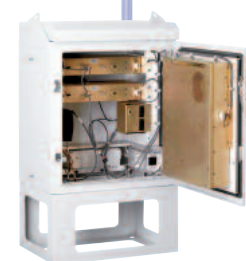
### Target Processor (TP)

- Computes and tracks target positions (2D/3D)
- Performs time synchronization of Remote Sensors
- Reports targets in multiple output formats and output modes
- Manages data communications over wired and wireless media
- Schedules interrogations



### Sensor/Remote Unit (RU)

- Receives, timestamps and decodes transponder reply signals and ADS-B messages
- Interrogates transponders for identification, altitude and data link (optional)



### Reference Transmitter (REFTRAN)

- Synchronizes system timing
- Stimulates system's self-test functionality



### Embedded Local Control & Monitoring Software (ELCMS)

- Provides field trouble shooting capabilities

### Maintenance Display Terminal (MDT)

- Provides user interface for system control and adaptation
- Displays system health and status
- Provides recording, playback and analysis of data



While every effort is made to ensure data accuracy, please note that data may be subject to change.

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# MDS



## Airport Surface, Terminal and Wide Area Surveillance

Effective surveillance contributes to increased safety, capacity and efficiency of airspace and airports alike. Unfortunately, traditional radar alone does not provide the performance required to obtain these benefits. Sensis Corporation offers a proven solution to this problem – its Multistatic Dependent Surveillance (MDS) multilateration system.

MDS offers accurate surveillance and identification of all transponder-equipped aircraft in the air as well as on an airport's surface. It provides highly reliable data for further processing by Air Traffic Control (ATC) displays, Advanced – Surface Movement Guidance and Control Systems (A-SMGCS), decision support tools, flow management systems and airline/airport operation applications. Controllers receive seamless surveillance data which enables increased operations in low visibility conditions and enhances safety.

Certified for ATC use, Sensis MDS is deployed around the world for surface, enhanced terminal and wide area surveillance. Sensis MDS has been the solution of choice for more than 20 locations throughout Europe, Canada and Asia. Additionally, it is a core component of the FAA's Airport Surface Detection Equipment, Model X (ASDE-X) system which Sensis is installing at 35 airports across the U.S.

*Multistatic – Multiple sensors for high accuracy*

*Dependent – Relies on transponders*

*Surveillance – Provides position and identification*



# MDS

Sensis MDS, a transponder based multilateration system, uses multiple sensors to capture aircraft transponder pulses and calculate position and identification. Low cost, non-rotating sensors receive, decode, timestamp, and transmit the data from the transponder to a Target Processor (TP). The TP compares the reports to derive the target position based on the time of receipt of the signals at each sensor.

- **Improved Accuracy** – The multilateration process, with its typical update rate of once per second, allows the MDS system to provide an accuracy of five meters or better for surface surveillance, and 30 meters or better for wide area surveillance.
- **No Additional Avionics Required** – An important feature of MDS is that it works with any transponder-equipped aircraft without additional avionics. Additionally, MDS supports Automatic Dependent Surveillance – Broadcast (ADS-B) with no equipment modifications.
- **Minimal Installation Requirements** – Unlike traditional radar, MDS relies on small equipment enclosures and non-rotating antennas that are installed on existing communication towers, terminals and other structures. Additionally, MDS sensors can communicate with the TP via a wide variety of communication options.

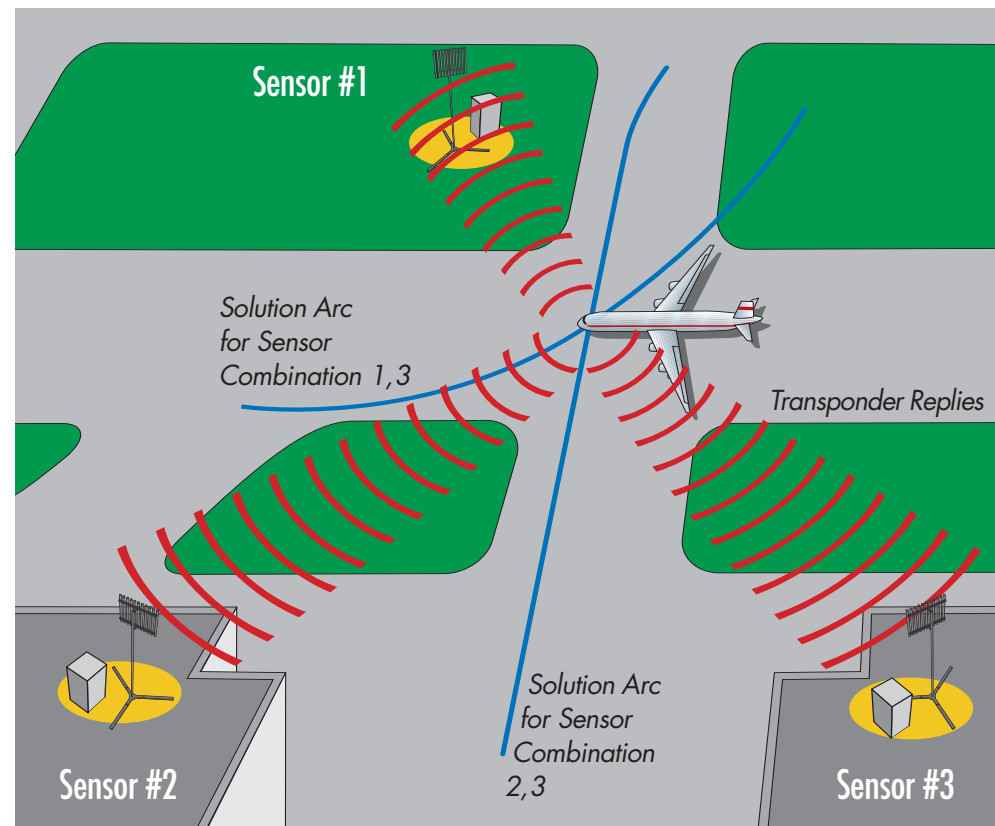
MDS supports ADS-B long squitter with no equipment modification.

## Airport Surface Surveillance

**Sensis MDS offers an ideal solution for the complexity of airport surface surveillance.** At larger airports, MDS complements the existing surface movement radar system, providing considerably improved and more reliable data than that from a single surveillance sensor. For smaller airports that rely on visual surveillance, MDS provides a cost effective surveillance system to enhance safety. The flexibility in configuring the system allows coverage over the entire airport area, including the ramp and approach/departure areas, or just the movement area. Airport vehicles can also be equipped with low-cost transmitters enabling aircraft and vehicle tracking in a single system.

### Benefits

- Improved situational awareness in all weather conditions
- Enhanced safety
- Reduced runway incursions
- Improved airline operations management
- Increased capacity
- Improved airport efficiency



## Terminal and Wide Area Surveillance

**Sensis MDS is being used worldwide for terminal, enroute, and gap filler surveillance.** The system can cost-effectively scale from small airport applications to cover hundreds of thousands of square miles. The small, low-cost sensors are easy to install in rough terrain where traditional radar systems often experience coverage gaps due to terrain blockage. Sensis MDS provides controllers with positive identification, high update rates and accurate positional information in all weather conditions.

### Benefits

- Better accuracy and update rate than existing radar systems
- Adaptable, low altitude coverage in challenging environments
- Low maintenance, low power consumption for remote sites

**Sensis MDS accurately tracks targets at both low and at high altitudes simultaneously.** Sensis MDS is being used to track flights in a number of challenging air surveillance applications including terminal area surveillance and precision runway monitoring (PRM) for ATC, military range surveillance and enroute flight following.

Sensis MDS provides a bridge to the future of surveillance – ADS-B. Each MDS sensor is equipped to provide both multilateration and ADS-B positions. Installing MDS in a wide area configuration establishes the infrastructure required for today’s surveillance needs as well as tomorrow’s ADS-B equipage.

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