



Transponder Surveillance/Mode Ground Station

The Transponder Surveillance/Mode Ground Station (TSMGS) provides capability of generating Interrogations for Mode 1, 2, 3/A, 4, 5, and S. The TSMGS was designed for the United States Air Force for elementary and enhanced interrogations of Mode S aircraft. The TSMGS Interrogator interfaces with a controller that provides the operator with a capability of transmitting a single interrogation to a specific aircraft (Mode S address) or a sequence of interrogations.

The TSMGS system has been designed for mobile or stationary operation. The Interrogator is mounted in rack mount case. An accessory transit case carries all the RF cables, antennas, and controller.

The Interrogator has been designed to work with either a directional sector, omni-directional or scanning antenna.

The controller is a rugged notebook computer that meets MIL-STD-810F requirements.



The controller can be connected to a secondary surveillance radar for capturing, logging, and parsing of Asterix data.

The received data from the interrogator can be captured, logged, and parsed for contents.

The operator has the capability of generating reports from the logged data.

Interrogator Transmitter Specifications:

Frequency: 1030 MHz +/- 10KHz
Power: 550/275/84/42 Watts Peak
57.4/54.4/49.2/46.2 dBm Peak
Rate: 10 different Interrogations every 1
Seconds
Modulation Modes:
Mode S UF4, 5 (Elementary and
Enhanced)
Mode 1,2,3/A,4, and 5

Interrogator Receiver Specifications:

Frequency: 1090 +/- 3 MHz
Coverage Area: Minimum 50 Nautical Miles
Decodes: Mode 1,2, 3/A,4, and 5
Mode S DF4, 5, 11, 17, 20, 21

Interrogator Antenna Interface:

Ports: Sum and Diff (N-Type RF Port)
GPS (SMA Type RF Port)
GPS Mode 5 (SMA Type RF Port)
Antenna: Omni-directional, Directional Sector or
Scanning

Interrogator Interface:

Control: Ethernet (RJ-45 or Fiber) or USB
Antenna Sense: Scanning Antenna Information
Fill Connectors: GPS and Mode 5 Key

Capabilities:

**Mode 1,2,3/A,4,5 and S Interrogations and
Receptions**
GPS Decoding
System Simulation (Training)

Physical Characteristic:

Power: 115/230 VAC, 50/60 Hz
Chassis: Rugged Rackmount Case
Height: 14.59 inches
Width: 22.47 inches
Depth: 34.5 inches
Weight: < 100 lbs
Operating Temp: -20 to 60 Degrees Celsius
Altitude: 10,000 Feet
Cooling: Convection

Antenna:

Power: 5000 Watt Peak (Omni)
400 Watt (Directional Sector)
Pattern: Omni-directional , Directional
Sector or Scanning
Gain: 2.8 dBi Minimum
VSWR: < 1.5:1

Controller:

Interrogator Interface: Ethernet or USB
Asterix Interface: Ethernet
Operating System: Windows XP
Chassis: Rugged Mil-STD-810F
Magnesium alloy case
Interfaces: Ethernet (RJ-45)
Ethernet (Fiber Type ST)
USB
1394
Display: Sunlight readable
Weight: 6.4 lbs
Height: 1.65 inches
Width: 13.1 inches
Depth: 11.6 inches

Controller Application:

Interrogator: Mode S ELS and EHS
Manual/Periodic Sequence
Displays DF11/17 Squitters
Decodes Position Information
Receiver: Mode 1, 2, 3/A, 4, 5, and S
Decode/Parse Data
Data Logging
Asterix: Decode/Parse Data
Data Logging
Simulation Mode: 32 Aircrafts
Mode A/C/S (ADS-B/BDS)



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**ISO 9001-2000
Certified**

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