

AIMMS-20 Aircraft-Integrated Meteorological Measurement System



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VENDOR DESCRIPTION

The AIMMS-20 is a modular system that measures wind, turbulence, temperature and relative humidity from a wide variety of airborne platforms in real time. The wind measurement problem is solved by independently measuring vehicle attitude, inertial velocity, angle-of-attack, sideslip angle and Pitot-static pressure with aerodynamic corrections applied to remove host vehicle dynamic errors from the air data. The four intelligent modules comprising the AIMMS-20, interconnected using a CAN bus for maximum flexibility, are:

- 1) Dual-antenna/dual-processor GPS for high-precision attitude from 5Hz differential carrier-phase data, and 5Hz PVT data
- 2) Six-degree-of-freedom inertial measurement unit (IMU)
- 3) DSP-based data processing module for real-time reduction of GPS, inertial and air data
- 4) Externally-mounted air-data probe (ADP)

The ADP tube can be mounted to the airframe in different ways given that all sensors and electronics are contained inside the 1.5" diameter ADP tube. High-precision attitude and aerodynamic state data can also be shared with flight navigation and control functions. Module 1-3 weights are quoted with GRP enclosures included, which can be eliminated by custom-mounting the sensor boards inside the air vehicle.



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Business Category: Small Business

MET

Hardware	
Power: 11 watts	Operating Temp.: -40°C to 50°C
Weight: 0.80, 0.73, 0.6, 0.41 kg for modules 1-4 (0.53 kg enclosure mass included for each module 1-3; mount not included for module 4)	Storage Temp.: -40°C to 90°C
Dimensions: Modules 1-3: 120mm x 120mm x 76mm Module 4 (ADP tube): 38mm dia. x 610mm	Interface: Controller Area Network, RS-232
Internal Volume: 1200 cm ³ for sensors + electronics, modules 1-3	Bandwidth Required: 2.4 kbps with 5Hz vehicle state data included
Operating Altitude: 0 to 25,000 ft AGL	TCDL Compatibility: No
Operating Speed: 50 to 300 knots	

Performance	
Wind Speed: ±1 knot	True heading: ±0.1°
Wind Direction: ±5° (10 knot wind speed)	Bank angle: ±0.1°
Temperature: ±0.3°C accuracy, ±0.05°C precision	Pitch angle: ±0.25°
Barometric Pressure: ±1 millibar	Angle of attack: ±0.05°
Relative Humidity: ±2% RH	Sideslip angle: ±0.05°
Turbulence bandwidth: 0.1 to 10 Hz	Inertial velocity: ±0.1 m/s