

TOTAL METEOROLOGICAL SENSOR MODEL TMS-7200

BULLETIN TMS-7200B

$$p = \frac{\rho RT}{m}$$

$$S(\lambda) = S_0(\lambda) e^{-m \cdot \delta(\lambda)}$$

$$B(T) = bT^4$$

General Description

The TMS-7200 Total Meteorological Sensor is a rapid setup wireless emergency response remote surface weather monitoring sensor for HAZMAT and homeland security applications. It is well suited for operation where mobility and reliability are critical. Minimally trained personnel can setup the system in minutes.

A typical RF-linked "cluster" consists of ten or more TMS-7200 wireless Weather Sensors, providing continuous one-minute average measurements of wind speed and direction, temperature, relative humidity and pressure. All data are time and location tagged via an internal GPS receiver. Optional RAD-7001 nuclear radiation detectors are available for alpha, beta or gamma radiation tracking, for support in nuclear emergencies.

A 5 to 7 mile radius on flat terrain is possible with line of sight (2 to 3 miles typical in urban areas). Real time data are transmitted on a dedicated FM link to a central data receiver.

Mechanical Configuration

The TMS-7200 Weather Sensor sits atop a quick-setup tower, 7 meters above the ground or roof. Site selection is critical—at sites with buildings or towers, the TMS-7200 can be clamped at much greater heights.

Setup

TMS-7200 sensors can be permanently roof-mounted or setup quickly on its supplied mast, and operate from 110 Vac or 12Vdc internal rechargeable battery supports temporary or emergency off-grid operation. All sensors are mechanically integrated with no external connectors, other than the RF antenna.

Features

- Rugged, simple construction
- Rapid setup and breakdown
- CPU-managed for rapid diagnostics
- Reliable "hands-off" RF digital telemetry
- 12 Vdc battery or AC line operation
- Complete turnkey system solution
- Drives HPAC T&D models in real time



TMS-7200 Weather Sensor, (Yagi antenna below)

Applications

TMS-7200 address applications where direct human observation is impractical or many stations are necessary to adequately characterize the real time wind field.

- Emergency response/HAZMAT NBC attacks
- Wildland fire weather support
- Military tactical weather
- Government meteorological agencies
- Regulatory compliance at industrial sites



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Specifications

Met parameters: 1 minute averages of Wind Speed and Direction, Air temperature, % Relative Humidity/Dew point, Atmospheric Pressure, and (optional) alpha/gamma/beta radiation.

Operating Speed Range: 0-60m/s (134 mph)

Wind Gust survival: 100 m/s (220 mph)

Wind Speed Accuracy: ± 0.5 m/s (1 mph) at speeds <10 m/s and 5% of reading at >10 m/s

Propeller Threshold: 0.7m/s (start); 0.3m/s (stall)

Wind Direction Range: 360° mechanical

Wind Direction Accuracy: ± 5 degrees

Wind Direction Pointing Sensitivity: 1.3 m/s

Wind Direction Threshold: 1.7 m/s (3.8 MPH)

Temperature Range: -40 to +50°C; ± 0.5 °C

Humidity/Dew Point Range: 0-100%RH; ± 2 %

Pressure Range: 750-1100 mB; ± 1.5 mB @25C

RF Telemetry: FM FSK redundant, time division multiplexed in 405-406 MHz, ± 40 KHz deviation*

Error Detection: Cyclical Redundancy Check

RF Range: 5-7 miles line of sight; 2-3 miles urban using supplied 3 element directional Yagi antenna.

Data latency: 1 minute maximum.

Power: 12 Vdc and includes 110 Vac transformer and 50' outdoor-rated line.

Mechanical: See drawing for sensor/wind set. Supplied with 7 meter multi-section mast/tripod.

(*Note: for government use only)

Mechanical Interface, dims in inches (cm)

Options

METDAS real-time display and model link software provides integration with HPAC T&D plume dispersion models, while RAD-7001 nuclear ionizing radiation detectors add nuclear emergency monitoring. Accumulated one minute counts are displayed add logged via METDAS, which provides 16 bit display of occupational exposures on a local area map.

Maintenance

YES recommends annual replacement of anemometer bearings, the %RH humidity sensor and internal backup batteries. Wind sensor performance can be verified via a two point calibration in the field. Sensors can be repaired and made functional in the field.



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