

3-D Ultrasonic Anemometer



Description

The Model 81000 Ultrasonic Anemometer is a 3-axis, no moving parts wind sensor. It is perfectly suited for applications requiring fast response, high resolution and three dimensional wind measurements.

The sensor features durable, corrosion-resistant construction with 3 opposing pairs of ultrasonic transducers supported by stainless steel members. The transducers are arranged so that measurements are made through a common volume. A fast, 160 Hz internal sampling rate ensures superior measurement resolution. Output rates from 4 to 32 Hz may be selected. Each 81000 is individually wind-tunnel tested and calibrated to compensate for wind shadow effects of the support structure.

Model 81000 features four voltage output channels. Serial RS-232 and RS-485 outputs are available as well. For applications requiring synchronized analog measurements, **Model 81000V** includes four voltage input channels instead of voltage outputs. Wind, sonic temperature and voltage input data are transmitted serially. For each model, a variety of preset or custom output format options may be selected by the user.

Both models install on standard 1 inch pipe. Wiring connections are housed in a convenient weatherproof junction box.

Technical Document

Wind Speed: 0 to 40 m/s (0 to 90 mph)

Resolution: 0.01 m/s

Threshold: 0.01 m/s

Accuracy: $\pm 1\%$ rms ± 0.05 m/s (0 to 30 m/s)

$\pm 3\%$ rms (30 to 40 m/s)

Wind Direction: 0 to 360 degrees

Elevation Range: ± 60 degrees

Resolution: 0.1 degree

Accuracy: ± 2 degrees (1 to 30 m/s)

± 5 degrees (30 to 40 m/s)

Speed of Sound: 300 to 360 m/s

Resolution: 0.01 m/s

Accuracy: $\pm 0.1\%$ rms ± 0.05 m/s (0 to 30 m/s)

Sonic Temperature: -50 to +50 °C

Resolution: 0.01 °C

Accuracy: ± 2 °C (0 to 30 m/s)

Serial Output: RS-232 or RS-485, 1200 to 38400 baud

4 to 32 Hz (user-selected) User Programmable ASCII output configuration (Select from U, V, W, Speed of sound, Sonic temperature, 2D speed, 3D speed, Azimuth, Elevation)

Preset outputs: NMEA- Marine Standard RMYT- Young Wind Tracker

Units: m/s, cm/s, MPH, Knots, Km/hr

Analog Voltage Outputs (81000): 4 voltage outputs, 0 to 5000 mV (select from U, V, W, Sonic temperature or Speed, Azimuth, Elevation, Sonic temperature)

Voltage Input (81000V): Range: 0 to 5000 mV, V1 & V2 0 to 1000 mV, V3 & V4 Resolution: 1 part in 4000 Accuracy: $\pm 0.1\%$ of full scale

Power Requirement: 12 to 24 VDC, 110 mA

Operating Temperature: -50 to +50 °C

Dimensions: 56cm high x 17cm radius (3 support arms)

Weight: 1.7 kg (3.8 lb)

Shipping Weight: 4.5 kg (10 lb)