High Resolution Wind Sensor
for Air Quality Applications

Model 05305
Wind Monitor-AQ

The Wind Monitor-AQ is a high resolution wind sensor designed specifically for air quality applications. It combines simple, corrosion-resistant construction with low threshold, fast response and excellent fidelity.

The Wind Monitor-AQ meets the requirements of the following regulatory agencies:

U.S. Environmental Protection Agency- Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD).

U.S. Nuclear Regulatory Agency- NRC Regulatory Guide 1.23 Meteorological Programs in Support of Nuclear Power Plants.

American Nuclear Society- Standard for Determining Meteorological Information at Power Plants.

Wind speed is sensed by a lightweight, carbon fiber thermoplastic (CFT), helicoid propeller. Propeller rotation produces an AC sine wave voltage signal with frequency directly proportional to wind speed. Slip rings and brushes are not used.

The wind direction sensor is a lightweight vane with performance characteristics that assure excellent fidelity in fluctuating wind conditions. Vane position is sensed by a precision potentiometer. Output is a DC voltage directly proportional to vane angle.

The instrument body is UV stabilized plastic with stainless steel and anodized aluminum fittings. Precision grade, stainless steel ball bearings are used throughout. Transient protection and cable terminations are located in a convenient junction box. The instrument mounts on standard 1 inch pipe.

The Wind Monitor-AQ is available with two additional output signal options. **Model 05305V** offers calibrated 0-1 VDC outputs (0-5 VDC optional), convenient for use with many dataloggers. **Model 05305L** provides a calibrated 4-20 mA current signal for each channel, useful in high noise areas or for long cables (up to several kilometers). Signal conditioning electronics are integrated into the sensor junction box.

Specifications

Range:
Wind speed: 0-50 m/s (112 mph)
Azimuth: 360° mechanical, 355° electrical (5° open)

Accuracy:
Wind speed: ±0.2 m/s (0.4 mph)
Wind direction: ±3 degrees

Threshold:*
Propeller: 0.4 m/s (0.9 mph)
Vane: 0.5 m/s (1.0 mph) at 10° displacement

Dynamic Response:*
Propeller distance constant (63% recovery): 2.1 m (6.9 ft)
Vane delay distance (50% recovery): 1.2 m (3.9 ft)
Damping ratio: 0.45
Damped natural wavelength: 4.9 m (16.1 ft)
Undamped natural wavelength: 4.4 m (14.4 ft)

Signal Output:
Wind speed: magnetically induced AC voltage, 3 pulses per revolution. 1800 rpm (90 Hz) = 9.2 m/s (20.6 mph)
Azimuth: analog DC voltage from conductive plastic potentiometer- resistance 10K Ω, linearity 0.25%, life expectancy- 50 million revolutions

Power Requirement:
Potentiometer excitation: 15 VDC maximum

Dimensions:
Overall height: 38 cm (15.0 in)
Overall length: 65 cm (25.6 in)
Propeller: 20 cm (7.9 in) diameter
Mounting: 34 mm (1.34 in) diameter (standard 1 inch pipe)

Weight:
Sensor weight: 0.7kg (1.5 lbs)
Shipping weight: 2.3 kg (5 lbs)

*Nominal values- determined in accordance with ASTM standard procedures Shielded bearings lubricated with Type LO-1 light General Purpose Instrument Oil.

MODEL 05305V **0-1 VDC outputs**

Power Requirement:
8-24 VDC (5 mA @ 12 VDC)

Operating Temperature:
-50 to 50° C

Output Signals:
0-1.00 VDC full scale
0-5.00 VDC optional

Ordering Information   MODEL

WIND MONITOR-AQ **05305**
WIND MONITOR-AQ *0-1 VDC OUTPUTS* **05305V***
WIND MONITOR-AQ *4-20mA OUTPUTS*...**05305L***

* SPECIFY SUFFIX FOR DESIRED WIND SPEED SCALE:
0-50 M/S ....*ADD SUFFIX "M"*
0-100 MPH ....*ADD SUFFIX "P"*
0-100 KNOTS ....*ADD SUFFIX "N"*
0-200 KM/HR ....*ADD SUFFIX "K"*

MODEL 05305L **4-20 mA outputs**

Power Requirement:
8-30 VDC (40 mA max.)

Operating Temperature:
-50 to 50° C

Output Signals:
4-20 mA full scale

$C \in$ *Complies with applicable CE directives.*

Specifications subject to change without notice.