

*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 simplicity and 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, reinforced polystyrene, 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 Sensor Interface** provides calibrated voltage output signals for wind speed and direction. Low power circuitry makes it ideal for field studies and remote data-logging applications.

The **Wind Line Driver** provides separate 4-20 mA current loops for wind speed and direction. This unit is useful in high noise areas or to drive lines up to several kilometers in length.

## Specifications

### Range:

Wind speed: 0-40 m/s (90 mph)  
Gust survival: 45 m/s (100 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) 8.8 m/s (19.7 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 05603 Wind Sensor Interface

### Power Requirement:

8-24 VDC (3 mA @ 12 VDC)

### Operating Temperature:

-40 to 40° C

### Output Signals:

0-1.00 VDC full scale  
0-5.00 VDC optional

## MODEL 05631 Wind Line Driver

### Power Requirement:

12-30 VDC (load dependent)

### Operating Temperature:

-40 to 40° C

### Output Signals:

4-20 mA full scale

### Weatherproof Enclosure:

Included with Sensor Interface and Line Driver  
110 mm (4.3 in) W x 75 mm (2.9 in) H x 56 mm (2.2 in) D

## Ordering Information

## MODEL

WIND MONITOR-AQ .....	05305
WIND SENSOR INTERFACE .....	05603*
WIND LINE DRIVER .....	05631*

\*SPECIFY SUFFIX FOR DESIRED WIND SPEED SCALE:

0-50 M/S .....	M
0-100 MPH .....	P
0-100 KNOTS .....	N
0-200 KM/HR .....	K

