

200-05103 Wind Monitor



The **Model 200-05103 Wind Monitor** is a high performance, rugged wind sensor. Its simplicity and corrosion-resistant construction make it ideal for a wide range of wind measuring applications. The instrument is made of UV stabilized plastic with stainless steel and anodized aluminum fittings. Precision grade, stainless steel ball bearings are used. Transient protection and cable terminations are in a convenient junction box. The instrument mounts on standard 1" pipe.

The wind speed sensor is a four blade helicoid propeller. Propeller rotation produces an AC sine wave voltage signal with frequency directly proportional to wind speed. Slip rings and brushes are eliminated for increased reliability. The wind direction sensor is a rugged yet lightweight vane with a sufficiently low aspect ratio to assure good fidelity in fluctuating wind conditions. Vane angle is sensed by a precision potentiometer housed in a sealed chamber. With a known excitation voltage applied to the potentiometer, the output voltage is directly proportional to vane angle. A mounting orientation ring assures correct realignment of the wind direction reference when the unit is removed for maintenance.

For offshore and marine use, Model 200-05106 Wind Monitor-MA features special waterproof bearing lubricant and a sealed, heavy duty cable pigtail in place of the standard junction box. Separate signal conditioning for voltage or current outputs is available.

The Wind Monitor is available with two additional output signal options. Model 200-05103V offers calibrated 0-1 Vdc outputs (0-5 Vdc optional), convenient for use with many data loggers. Model 200-05103L 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: 0-100 m/s (224 mph)
Azimuth: 360° mechanical, 355° electrical (5° open)

Accuracy

Wind speed: ± 0.3 m/s (0.6 mph)
Wind direction: $\pm 3^\circ$

Threshold*

Propeller: 1.0 m/s (2.2 mph) 05103, 1.1 m/s (2.4 mph) 05106
Vane: 1.1 m/s (2.4 mph) 05103, 1.3 m/s (2.9 mph) 05106

Dynamic Response*

Propeller distance constant (63% recovery) 2.7 m (8.9 ft)
Vane delay distance (50% recovery) 1.3 m (4.3 ft)
Damping ratio: 0.3
Damped natural wavelength: 7.4 m (24.3 ft)
Undamped natural wavelength: 7.2 m (23.6 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 ohms, linearity 0.25%, life expectancy- 50 million revolutions

Power Requirement

Potentiometer excitation: 15 Vdc maximum

Dimensions

Overall height: 37 cm (14.6")
Overall length: 55 cm (21.7")
Propeller: 18 cm (7") diameter
Mounting: 34 mm (1.34") diameter (standard 1" pipe)

Weight

Sensor weight: 1.0 kg (2.2 lbs)
Shipping weight: 2.3 kg (5 lbs)

*Nominal values, determined in accordance with ASTM standard procedures.

200-05103V (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

200-05631 (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

Ordering Information

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|--------------|---|
| 200-05103 | Wind Monitor, less cable |
| 200-05103L* | Wind Monitor, 4-20mA output |
| 200-05103V* | Wind Monitor, specify 0-1 Vdc or 0-5 Vdc |
| 200-05103-45 | Alpine Wind Monitor |
| 200-05106 | Wind Monitor-MA (Marine Model), 10' cable |
| 200-05603B* | Wind Sensor Interface, specify 0-1 Vdc or 0-5 Vdc |
| 200-05631B* | Wind Line Driver, 4-20 mA current loop |
| 330-0524 | Signal Cable, per foot |

*Specify wind speed scaling:

| | |
|-------------|----------------|
| 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" |