



## Reliable, Accurate Wind Measurements

Compatible with most Campbell Scientific data loggers

### Overview

The 05103 Wind Monitor is a lightweight, sturdy instrument for measuring wind speed and direction in your harsh environments. Its simplicity and corrosion-resistant

construction make it ideal for a wide range of wind measuring applications. Manufactured by R. M. Young, this wind monitor is cabled for use with your Campbell Scientific data logger.

### Benefits and Features

- › Rugged enough for harsh environments
- › Compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network
- › Constructed with thermoplastic material that resists corrosion from sea-air environments and atmospheric pollutants
- › Uses stainless-steel, precision-grade ball bearings for the propeller shaft and vertical shaft bearings
- › Ideal for wind profile studies
- › Compatible with the LLAC4 4-channel Low-Level AC-Conversion Module, which increases the number of anemometers one data logger can measure

### Detailed Description

The 05103 Wind Monitor is made out of rigid UV-stabilized thermoplastic with stainless steel and anodized aluminum fittings. The thermoplastic material resists corrosion from sea air environments and atmospheric pollutants. It uses stainless-steel precision-grade ball bearings for the propeller shaft and vertical shaft bearings.

The 05103 measures wind speed with a helicoid-shaped, four-blade propeller. Rotation of the propeller produces an ac sine wave that has a frequency directly proportional to wind speed. The ac signal is induced in a transducer coil by a six-pole

magnet mounted on the propeller shaft. The coil resides on the non-rotating central portion of the main mounting assembly, eliminating the need for slip rings and brushes.

Wind direction is sensed by the orientation of the fuselage-shaped sensor body, which is connected to an internal potentiometer. The data logger applies a known precision excitation voltage to the potentiometer element. The output is an analog voltage signal directly proportional to the azimuth angle.

## Specifications

Applications	Harsh (Rain with light snow. Little or no riming. Some blowing sand. No salt spray.)
Sensor	Helicoid-shaped, 4-blade propeller and fuselage-shaped sensor body
Measurement Description	Wind speed and direction
Operating Temperature Range	-50° to +50°C (assuming non-riming conditions)
Mounting Pipe Description	<ul style="list-style-type: none"> <li>› 34 mm (1.34 in.) OD</li> <li>› Standard 1.0-in. IPS schedule 40</li> </ul>
Compliance with Standards	<ul style="list-style-type: none"> <li>› 2011/65/EU RoHS Directive</li> <li>› 2015/863/EU RoHS Phthalates Amendment</li> </ul>
Housing Diameter	5 cm (2.0 in.)
Propeller Diameter	18 cm (7.1 in.)
Height	37 cm (14.6 in.)
Length	55 cm (21.7 in.)
Weight	1.5 kg (3.2 lb)

### Wind Speed

Range	0 to 100 m/s (0 to 224 mph)
Accuracy	±0.3 m/s (±0.6 mph) or 1% of reading
Starting Threshold	1.0 m/s (2.2 mph)
Distance Constant	2.7 m (8.9 ft) 63% recovery
Output	ac voltage (three pulses per revolution)

90 Hz (1800 rpm) = 8.8 m/s (19.7 mph)

Resolution	(0.0980 m s <sup>-1</sup> ) / (scan rate in seconds) or (0.2192 mph) / (scan rate in seconds)
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### Wind Direction

Mechanical Range	0 to 360°
Electrical Range	355° (5° open)
Accuracy	±3°
Starting Threshold	1.1 m/s (2.4 mph) at 10° displacement
Distance Constant	1.3 m (4.3 ft) 50% recovery
Damping Ratio	0.3
Damped Natural Wavelength	7.4 m (24.3 ft)
Undamped Natural Wavelength	7.2 m (23.6 ft)
Output	<ul style="list-style-type: none"> <li>› Analog dc voltage from potentiometer (resistance 10 kohm)</li> <li>› Life expectancy is 50 million revolutions.</li> <li>› Linearity is 0.25%.</li> </ul>
Voltage	Power switched excitation voltage supplied by data logger



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