



## Reliable, Accurate Wind Measurements

Compatible with most Campbell Scientific dataloggers

### 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 datalogger.

### 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 datalogger 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 datalogger applies a known precision excitation voltage to the potentiometer element. The output is an analog voltage signal directly proportional to the azimuth angle.

## Specifications

|                             |   |
|-----------------------------|---|
| 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> |
| 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)<br><br>90 Hz (1800 rpm) = 8.8 m/s (19.7 mph) |

|            |   |
|------------|---|
| Resolution | (0.0980 m s <sup>-1</sup> ) / (scan rate in seconds) <b>or</b> (0.2192 mph) / (scan rate seconds) |
|------------|---|

### 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>› Linearity is 0.25%.</li> <li>› Life expectancy is 50 million revolutions.</li> </ul> |
| Voltage                     | Power switched excitation voltage supplied by datalogger   |

For comprehensive details, visit: [www.campbellsci.com.au/05103-I](http://www.campbellsci.com.au/05103-I)



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