



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"> › 34 mm (1.34 in.) OD › Standard 1.0-in. IPS schedule 40
Compliance with Standards	<ul style="list-style-type: none"> › 2011/65/EU RoHS Directive › 2015/863/EU RoHS Phthalates Amendment
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 ⁻¹) / (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"> › Analog dc voltage from potentiometer (resistance 10 kohm) › Life expectancy is 50 million revolutions. › Linearity is 0.25%.
Voltage	Power switched excitation voltage supplied by data logger

For comprehensive details, visit: www.campbellsci.com/05103-l 



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