



Reliable, Competitively Priced

Good, all-purpose wind set

Overview

The 03002, manufactured by R. M. Young, measures wind speed and direction with a three-cup anemometer and a wind vane mounted on a small crossarm. It interfaces directly with

your Campbell Scientific data loggers, so no signal conditioning is required.

Benefits and Features

- ▶ Compatible with most Campbell Scientific data loggers
- ▶ Designed for continuous, long-term, unattended operation in adverse conditions
- ▶ Small size, simplicity, and rugged construction provide a quality instrument for a modest price
- ▶ 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
- ▶ Campbell Scientific version uses shielded bearings, which lowers the anemometer's starting threshold
- ▶ Compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network

Detailed Description

The 03002 uses a cup wheel assembly to measure wind speed. Rotation of the cup wheel produces an ac sine wave that is directly proportional to wind speed. The frequency of the ac signal is measured by a data logger pulse count channel, then converted to engineering units (mph, m/s, knots). Campbell Scientific's version uses shielded bearings, which lowers the anemometer's threshold.

Wind direction is sensed by a potentiometer. With the precision excitation voltage from the data logger applied to the potentiometer element, the output signal is an analog voltage that is directly proportional to the azimuth angle of the wind direction.

Specifications

Applications	General (Rain with light snow. Little or no riming or blowing sand. No salt spray.)
Sensor	3-cup anemometer and vane
Measurement Description	Wind speed and direction
Operating Temperature Range	-50° to +50°C (assuming non-riming conditions)
Height	32 cm (12.6 in.)
Crossarm Length	40 cm (15.7 in.) between instruments (center-to-center)
Mounting Diameter	34 mm (1.34 in.); mounts on standard 1-in. IPS pipe

Wind Speed (Anemometer)

Range	0 to 50 m/s (0 to 112 mph)
Gust Survival	60 m/s (134 mph)
Sensor	12-cm diameter cup wheel assembly, 40-mm diameter hemispherical cups
Accuracy	±0.5 m/s (1.1 mph)
Turning Factor	75 cm (2.5 ft)
Distance Constant	2.3 m (7.5 ft) 63% recovery
Starting Threshold	0.5 m/s (1.1 mph)
Transducer	Stationary coil (1300 ohm nominal resistance)
Transducer Output	AC sine-wave signal induced by rotating magnet on cup wheel shaft 100 mV peak-to-peak at 60 rpm (6 V peak-to-peak at 3600 rpm)
Output Frequency	1 cycle per cup wheel revolution (0.75 m/s per Hz)

Cup Wheel Diameter	12 cm (4.7 in.)
Weight	113 g (4 oz)
Wind Direction (Vane)	
Mechanical Range	360°
Electrical Range	352° (8° open)
Settling Time	20 ms
Sensor	Balanced vane; 16 cm turning radius
Accuracy	±5°
Damping Ratio	0.2
Delay Distance	0.5 m (1.6 ft) 50% recovery
Starting Threshold	<ul style="list-style-type: none"> › 1.8 m/s (4 mph) with 5° displacement › 0.8 m/s (1.8 mph) with 10° displacement
Transducer	<ul style="list-style-type: none"> › 1.0% linearity › Rated 1 W at 40°C, 0 W at 125°C. › Precision conductive plastic potentiometer (10 kohm resistance) › Life expectancy is 50 million revolutions.
Transducer Excitation	Requires regulated dc voltage. (15 Vdc maximum)
Transducer Output	Analog dc voltage proportional to wind direction angle with regulated excitation voltage supplied by the data logger
Vane Length	22 cm (8.7 in.)
Weight	170 g (6 oz)



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