



## 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"> <li>› 1.8 m/s (4 mph) with 5° displacement</li> <li>› 0.8 m/s (1.8 mph) with 10° displacement</li> </ul>   |
| Transducer            | <ul style="list-style-type: none"> <li>› 1.0% linearity</li> <li>› Rated 1 W at 40°C, 0 W at 125°C.</li> <li>› Precision conductive plastic potentiometer (10 kohm resistance)</li> <li>› Life expectancy is 50 million revolutions.</li> </ul> |
| 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)  |

For comprehensive details, visit: [www.campbellsci.com/03002-wind-sentry](http://www.campbellsci.com/03002-wind-sentry) 



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