

Reliable, Competitively Priced

Good all purpose wind set

Overview

R. M. Young's 03002 Wind Sentry Set accurately measures wind speed and direction. The 03101 provides just the anemometer for customers who only want wind speed measurements. These sensors interface directly with our dataloggers; no signal conditioning is required.

Benefits and Features

- › Compatible with all Campbell Scientific dataloggers
- › 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 datalogger can measure
- › Campbell Scientific version uses shielded bearings, which lowers the anemometer's starting threshold
- › 03002 is compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network

Wind Speed

The Wind Sentry 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 datalogger pulse count channel, then converted to engineering units (mph, $m\ s^{-1}$, knots). Campbell Scientific's version uses shielded bearings, which lowers the anemometer's threshold.

Wind Direction

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

Mounting

The 03002 is supplied with a 12-in.-long x 1-in. IPS unthreaded aluminum pipe, which mounts to a crossarm via a CM220 Mount or 17953 NU-RAIL fitting. When purchased separately, the 03101 anemometer is supplied with a galvanized 10-in.-long x $\frac{3}{4}$ -in. IPS threaded pipe, which mounts to a crossarm via a CM220 mount or 1049 NU-RAIL fitting. The 03002 or 03101 can also be mounted to the top of a stainless-steel tripod via the CM216.



Recommended Cable Lengths

CM106	CM110	CM115	CM120	UT10	UT20	UT30
4 m (13 ft)	4 m (13 ft)	6 m (19 ft)	7 m (24 ft)	4 m (13 ft)	7 m (24 ft)	10 m (34 ft)
<i>These cable lengths assume the sensor is mounted atop the tripod/tower via a CM202 crossarm.</i>						

Ordering Information

Wind Sensors

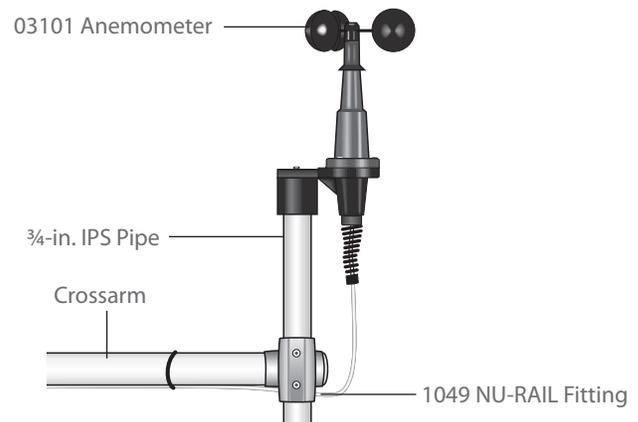
- 03002-L** Wind Sentry Set; enter lead length, in feet, after the -L. A cable termination option is required (see below).
- 03101-L** Wind Sentry Anemometer only; enter lead length, in feet, after the -L. A cable termination option is required (see below).

Cable Termination Options (choose one)

- PT** Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
- PW** Cable terminates in a connector for attachment to a prewired enclosure.
- CWS** 03002 cable terminates in a connector for attachment to a CWS900 interface. Connection to a CWS900 interface allows the 03002 to be used in a wireless sensor network. Option not available for the 03101.

Mounts

- CM220** Right Angle Mounting Bracket for attaching a 03002 or 03101 to a crossarm, such as a CM202, CM204, or CM206.
- 17953** 1-in. x 1-in. NU-RAIL Fitting for mounting the 03002 Wind Sentry Set to a crossarm, such as a CM202, CM204, or CM206. This mount is for only the 03002 Wind Sentry Set.
- 1049** 3/4-in. x 1-in. NU-RAIL Fitting for mounting the 03101 anemometer to a crossarm, such as a CM202, CM204, or CM206. This mount is for when the 03101 Wind Sentry Anemometer is mounted separately.
- CM216** Sensor Mounting Kit for attaching the 03002 or 03101 to the top of a CM110, CM115, or CM120 stainless-steel tripod.



Specifications

Wind Sentry Assembly

- Operating Temperature Range: -50° to +50°C; assuming non-riming conditions
- Overall 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

- Range: 0 to 50 m s⁻¹ (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 (1.1 mph)
- Turning Factor: 75 cm (2.5 ft)
- Distance Constant (63% recovery): 2.3 m (7.5 ft)
- 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⁻¹ per Hz
- Cup Wheel Diameter: 12 cm (4.7 in)
- Weight: 113 g (4 oz)

Wind Direction (Vane)

- Range
 - Mechanical: 360°
 - Electrical: 352° (8° open)
- Accuracy: ±5°
- Sensor: Balanced vane; 16 cm turning radius
- Damping Ratio: 0.2
- Threshold
 - With 10° Displacement: 0.8 m s⁻¹ (1.8 mph)
 - With 5° Displacement: 1.8 m s⁻¹ (4 mph)
- Transducer: Precision conductive plastic potentiometer; 10 kohm resistance; 1.0% linearity; life expectancy of 50 million revolutions. Rated 1 W at 40°C, 0 Watts at 125°C.
- 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 datalogger
- Vane Length: 22 cm (8.7 in)
- Weight: 170 g (6 oz)

