



Reliable, Accurate wind measurements

Compatible with all Campbell
Scientific dataloggers

Overview

The Wind Monitors* are lightweight, sturdy instruments for measuring wind speed and direction in harsh environments. Its simplicity and corrosion-resistant construction make it ideal for a wide range of wind measuring applications.

Benefits and Features

- › Rugged enough for harsh environments
- › 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
- › Compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network

Wind Speed

The wind speed sensor for all the Wind Monitors is 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

All of the Wind Monitors use a potentiometer to measure wind direction. The datalogger applies a known precision excitation

voltage to the potentiometer element. The output is an analogue voltage signal directly proportional to the azimuth angle.

*The Wind Monitors are manufactured by RM Young (Traverse City, MI) and cabled by Campbell Scientific for use with our dataloggers.

Other models

05103 Wind Monitor

The 05103 Wind Monitor is a sturdy instrument for measuring wind speed and direction in harsh environments. Its simplicity and corrosion-resistant construction make it ideal for a wide range of wind measuring applications.



05103 Wind Monitor

05103-45 Alpine Wind Monitor

The 05103-45 Wind Monitor is a rugged instrument designed for harsh alpine conditions. The 05103-45 has a smaller propeller than the other wind monitor models, which minimizes vibration at high wind speeds. To discourage ice buildup, the sensor's housing is black and covered with an ice-resistant coating.



05103-45 Alpine Wind Monitor

05106 Wind Monitor-MA

The 05106 Wind Monitor-MA is a robust instrument designed for offshore and marine applications. It features waterproof bearing lubricant and a sealed, heavy-duty cable pigtail instead of the standard junction box to make it more durable at marine and off-shore locations.



05106 Wind Monitor-MA

05108 Wind Monitor-HD

The 05108 Wind Monitor-HD (heavy-duty) is designed to greatly extend its service life and improve its survivability in severe wind measurement applications. It has oversized ceramic bearings, oversized propeller shaft, high-pitch propeller, and locking propeller nut. The ceramic bearings have a significantly longer service life than the stainless-steel bearings and are more resistant to some types of corrosion.



05108 Wind Monitor-HD

05108-45 Wind Monitor-HD-Alpine

The 05108-45 is a heavy-duty Wind Monitor designed specifically for harsh alpine conditions. To extend its service life and survive better in severe wind, the 05108-45 has oversized ceramic bearings, oversized propeller shaft, high pitch propeller, and locking propeller nut. To discourage ice buildup, the sensor's housing is black and covered with an ice-resistant coating.



05108-45 Wind Monitor-HD-Alpine

Wind Display Unit

The R M Young Wind Tracker is a compact wind speed and direction display unit, specially modified for use with Campbell Scientific equipment.



It incorporates advanced features, including serial input/outputs and alarm functions.

The Wind Tracker can be connected directly to the 05103 Wind Monitor to provide an immediate, direct display of wind speed and direction, and can also be used in conjunction with a datalogger. It is designed for indoor use, but can be used outdoors if it is mounted in a suitable weatherproof enclosure.

A waterproof marine version of the wind tracker is available for use in marine and other severe environments - further details are available on request.

Mounting

The instrument mounts on standard 25 mm (1") nominal bore pipe, outside diameter 33 mm (1.3"). Campbell Scientific include a suitable mounting post with standard versions of the 05103 suitable for use with the CM200 series mounting arms. An orientation ring is provided so the instrument can be removed for maintenance and reinstalled without loss of wind direction reference. Both the mounting post assembly and the orientation ring are secured to the mounting pipe by stainless steel band clamps. Connections to a datalogger are made in a junction box at the base of the sensor mount.

NB: Maximum cable length is 304 m (1000 feet)

Ordering Information

Wind Monitors

- 05103** Wind Monitor with user-specified cable length.
- 05103-45** Wind Monitor, Alpine Version with user-specified cable length.
- 05106** Wind Monitor-MA for marine applications with user-specified cable length.
- 05108** Heavy duty Wind Monitor-HD
- 05108-45** Alpine version Heavy duty Wind Monitor

Mounts

- 008285** 1 in x 1 in NU-RAIL fitting for attaching the Wind Monitor to a CM202, CM202SS, CM204, CM204, CM204SS or CM206 crossarm
- CM220** Right angle Mounting Bracket for attaching the Wind Monitor to a CM202, CM202SS, CM203, CM204, CM204SS or CM206 crossarm.
- CM216** Sensor Mounting Kit for attaching the 03002 or 03101 to the top of a CM110, CM115 or CM120 stainless-steel tripod.

Wind Profile Accessory

- LLAC4** 4-Channel Low-Level AC Conversion Module

Specifications

Wind Speed

	05103 Wind Monitor	05103-45 Wind Monitor-Alpine	05106 Wind Monitor-MA	05108 05108-45
Range	0 to 100 m s ⁻¹ (0 to 224 mph)			
Accuracy	±0.3 m s ⁻¹ (±0.6 mph) or 1% of reading			
Starting Threshold	1.0 m s ⁻¹ (2.2 mph)		2.4 mph (1.1 m s ⁻¹)	1.0 m s ⁻¹ (2.2 mph)
Distance Constant (63% recovery)	2.7 m (8.9 ft)			
Output	ac voltage (3 pulses per revolution); 1800 rpm (90 hz) = 8.8 m s ⁻¹ (19.7 mph)			

Wind Direction

	05103 Wind Monitor	05103-45 Wind Monitor-Alpine	05106 Wind Monitor-MA	05108 05108-45
Range	0° to 360° mechanical, 355° electrical (5° open)			
Accuracy	±3°			
Starting Threshold	1.1 m s ⁻¹ (2.4 mph)			
Distance Constant (50% recovery)	1.3 m (4.3 ft)			
Damping Ratio	0.3			0.25
Damped Natural Wavelength	7.4 m (24.3 ft)			
Undamped Natural Wavelength	7.2 m (23.6 ft)			
Output	analogue dc voltage from potentiometer - resistance 10 kΩ; linearity 0.25%; life expectancy 50 million revolutions			
Power	switched excitation voltage supplied by datalogger			

Physical

	05103 Wind Monitor	05103-45 Wind Monitor-Alpine	05106 Wind Monitor-MA	05108 05108-45
Operating Temperature Range	-50° to +50°C, assuming non-riming conditions			-50° to +60°C, assuming non- riming conditions
Overall Height	37 cm (14.6 in)			40 cm (15.7 in)
Overall Length	55 cm (21.7 in)			57 cm (22.4 in)
Main Housing Diameter	5 cm (2 in)			
Propeller Diameter	18 cm (7.1 in)	14 cm (5.5 in)	18 cm (7.1 in)	
Mounting Pipe Description	33 mm (1.3 in) outer diameter; standard 1.0 in IPS schedule 40			
Weight	1.5 kg (3.2 lb)			1 kg (2.2 lb)