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WHEN MEASUREMENTS MATTER

05108-L
Wind Monitor-HD

Reliable, Accurate Measurements with Low Maintenance

Suitable for marine applications

Overview

The 05108-HD is a lightweight, robust instrument that measures wind speed and direction, designed specifically for your applications where sensor access is limited and conditions are rough. Manufactured by R. M. Young, this wind monitor is cabled for use with Campbell Scientific data loggers.

Benefits and Features

❯ Compatible with most Campbell Scientific data loggers

❯ Extremely long-wearing, corrosion-resistant, oversized ceramic bearings to increase service life many times longer than standard stainless-steel bearings

❯ Oversized propeller shaft

❯ High-pitch propeller

❯ Locking propeller nut

❯ Sealed, heavy-duty cable pigtail

❯ Rugged enough for harsh environments

❯ Constructed with thermoplastic material that resists corrosion from sea-air environments and atmospheric pollutants

❯ Compatible with the LLAC4 4-channel Low-Level AC-Conversion Module, which increases the number of anemometers one data logger can measure

❯ Compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network

Detailed Description

The 05108 Wind Monitor-HD is made from rigid UV-stabilized thermoplastic with stainless steel and anodized aluminum fittings. The thermoplastic material resists corrosion from sea air environments and atmospheric pollutants.

To make it more durable, the HD uses extremely long-wearing, oversized ceramic bearings to increase service life many times longer than standard stainless-steel bearings. The wind monitor's ceramic bearings are resistant to corrosion in environments that are hostile to steel bearings, making the

05108-L suitable for marine applications. The HD also has an oversized propeller shaft, high-pitch propeller, locking propeller nut, and sealed, heavy-duty cable pigtail instead of the standard junction box—all features that further enhance the long-term reliability of the sensor.

The 05108 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

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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	❭ Extreme (Blowing sand. Very little maintenance required. Will handle salt spray.) ❭ Marine (Heavy rains. Light snow. Constant humidity. Salt spray. Little or no ice or blowing sand.)		1800 rpm (90 Hz) = 14.9 m/s (33.3 mph)
		Resolution	(0.1666 m/s)/(scan rate in seconds) or (0.3726 mph)/(scan rate in seconds)
Sensor	Helicoid-shaped, 4-blade propeller and fuselage-shaped sensor body		
Measurement Description	Wind speed and direction	**Wind Direction**	
Operating Temperature Range	-50° to +60°C (assuming non-riming conditions)	Mechanical Range	0 to 360°
		Electrical Range	355° (5° open)
Mounting Pipe Description	❭ 34 mm (1.34 in.) OD ❭ Standard 1.0-in. IPS schedule 40	Accuracy	±3°
		Starting Threshold	1.0 m/s (2.2 mph) at 10° displacement
Housing Diameter	5 cm (2.0 in.)	Distance Constant	1.3 m (4.3 ft) 50% recovery
Propeller Diameter	18 cm (7.1 in.)	Damping Ratio	0.25
Height	37 cm (14.6 in.)	Damped Natural Wavelength	7.4 m (24.3 ft)
Length	55 cm (21.7 in.)		
Weight	1.0 kg (2.2 lb)	Undamped Natural Wavelength	7.2 m (23.6 ft)
Wind Speed			
Range	0 to 100 m/s (0 to 224 mph)	Output	❭ Analog dc voltage from potentiometer (resistance 10 kohm) ❭ Linearity is 0.25%. ❭ Life expectancy is 50 million revolutions.
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	Voltage	Power switched excitation voltage supplied by data logger
Output	AC voltage (3 pulses per revolution)		

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