



WIND MONITOR

FEATURES:

- Rugged
- Corrosion-Resistant
- Polypropylene Helicoid Propeller
- Elements Composed of Thermoformed or Molded Plastic
- Stainless Steel Ball Bearings
- Quick Disconnect Cable Assembly

OPTIONAL FEATURES:

- High Response Model (AQ)

The Wind Monitor (P/N 101283) meets the demands for high reliability, superior durability, and low cost. Exhaustive tests under severe ocean conditions originally qualified it for deployment on data buoys. Now the Monitor's simplicity and lightweight corrosion-resistant construction are available for general wind investigations.

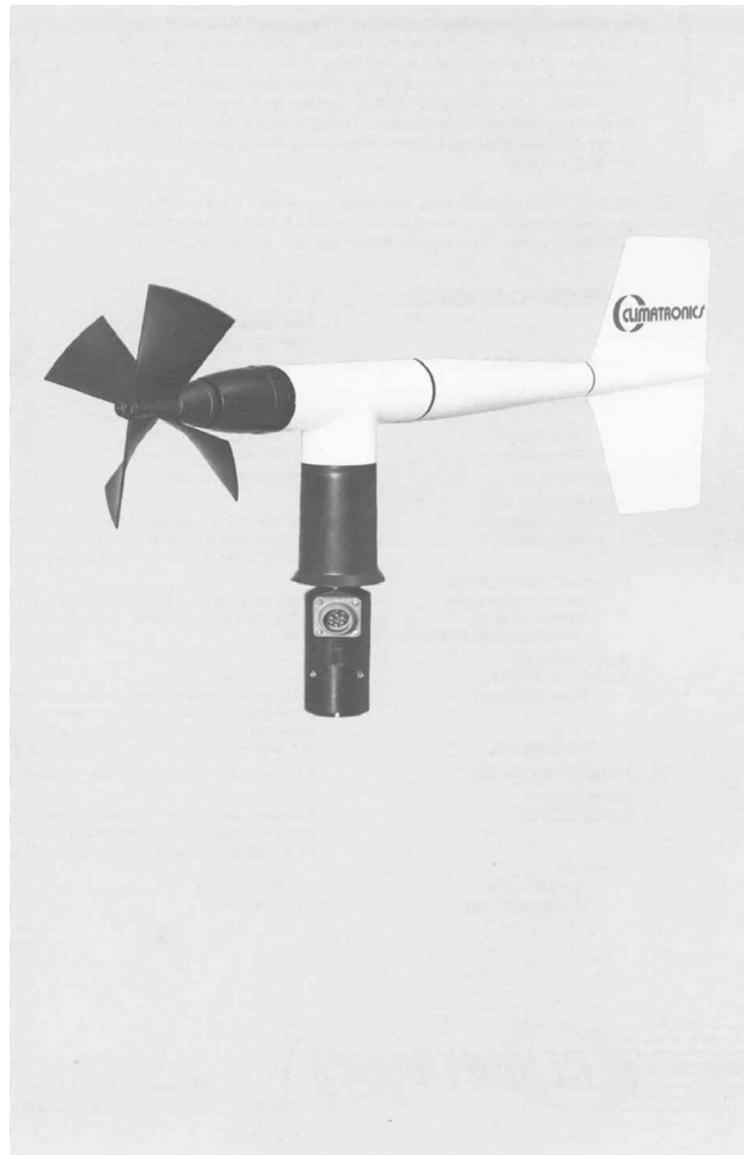
Speed is sensed with a four-blade helicoid propeller, 7.1" diameter x 11.8" pitch (18 cm diameter x 30 cm pitch), molded of polypropylene plastic. Its rotation produces an AC sine wave with a frequency directly proportional to wind speed. This signal is induced in a coil by a six-pole magnet mounted on the propeller shaft. Since the coil is located in the nonrotating central portion of the main housing assembly, traditional slip rings and brushes are unnecessary. High reliability and $\pm 1\%$ accuracy are the results.

Vane position is transmitted through a coupling to a precision conductive plastic potentiometer located in a sealed chamber, at the center of the main housing beneath the wind speed transducer coil. Applying a constant excitation voltage to the potentiometer, while the Monitor measures direction, yields an output analog voltage directly proportional to azimuth angle. All transducer leads terminate on the mounting post for convenience in making sensor cable connections.

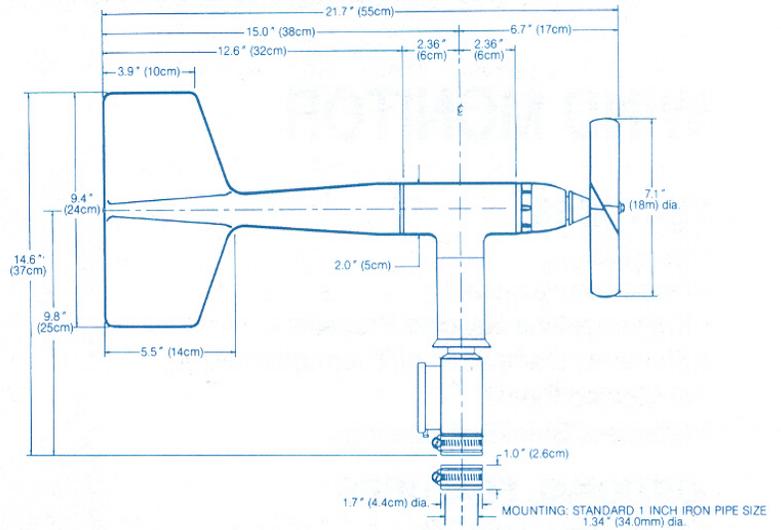
Both the main housing and the tail section are thermoformed of rigid UV stabilized plastic. Internal parts, the nose cone assembly, and the propeller are injection molded. Stainless steel precision grade ball bearings are employed in the propeller and vertical shafts for sensitivity and longevity.

The Wind Monitor mounts on standard 1-inch IPS pipe and is keyed after installation so that future removal and reinstallation of the sensor can be performed with no need for reorientation.

The Quick Disconnect Cable Assembly option allows for rapid deployment of the sensor. The terminal strip on the sensor housing is replaced by a military-type, weatherproof connector, which has excellent contact integrity.



The High Response model is longer from the vertical centerline to the end of the tailfin. The overall height of the tailfin is greater, and the weight is less. The results of these changes are an increase in damping ratio (≈ 0.4), a decrease in threshold speed, and a slightly shorter delay distance. The propeller is also changed on this version to a high-strength, lightweight carbon fiber design. This propeller decreases the threshold speed in addition to improving the distance constant to 6.9 ft. (≈ 2.1 m).



SPECIFICATIONS:

PERFORMANCE	Standard P/N 101283-G0	Air Quality P/N 101283-G1 (AQ)
RANGE		
Wind Direction	360° mechanical, 355° electrical (5° open), continuous rotation	360° mechanical, 355° electrical (5° open), continuous rotation
Wind Speed	0 - 134 mph (0- 60 m/s)	0 - 112 mph (0- 50 m/s)
Survivability	0 -220 mph (0 -100 m/s)	
THRESHOLD:	2.2 mph (≤ 1.0 m/s)	1.0 mph (≤ 0.5 m/s) (vane) 0.9 mph (≤ 0.4 m/s) (propeller)
ACCURACY		
Wind Direction	$\pm 3^\circ$ electrical less deadband	$\pm 3^\circ$ electrical less deadband
Wind Speed	± 0.3 m/s (0.6 mph)	± 0.2 m/s (0.4 mph) or 1% of reading
DYNAMIC RESPONSE:		
Distance Constant	63% recovery of propeller: 8.9 ft (2.7 m)	63% recovery of propeller: 6.9 ft (2.1 m)
Delay Distance	50% recovery of vane: 4.3 ft (1.3 m)	50% recovery of vane: 3.9 ft (1.0 m)
Damping Ratio of Vane	0.3	0.45
ELECTRICAL		
SIGNAL OUTPUT		
Wind Direction	Analog DC voltage from precision low torque conductive plastic potentiometer (requires regulated excitation voltage); potentiometer resistance 1.0K ohms, linearity 0.25%, life expectancy 50 million revolutions (3- 5 years normal operation)	
Wind Speed	AC sine wave frequency proportional to wind speed	
POWER REQUIRED:	8 to 14 VDC regulated supply voltage recommended	
PHYSICAL:		
DIMENSIONS:	Overall height 14.6" (37 cm); overall length of main housing, including vane and propeller 21.7" (55 cm); propeller diameter 7.1" (18 cm)	Overall height 15.0" (38 cm); overall length of main housing, including vane and propeller 25.6" (65 cm); propeller diameter 7.9" (20 cm)
WEIGHT		
Wind Monitor	2.2 lbs. (1.0 Kg)	1.5 lbs. (0.7 Kg)
Shipping Weight	5 lbs. (2.3 Kg)	6 lbs. (2.7 kg)



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