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**PART#: S1104W
S1104Z
S1104ZR**

SENSOR

Wind Monitor 5103

- **Extremely Rugged • Helicoid Propeller • 220 mph Survival •**
- **Easy Maintenance or Replacement •**

Principle of Operation

Originally developed for ocean data buoy use, the wind monitor is well suited for a wide variety of wind measuring applications. Simplicity and lightweight corrosion resistant construction were principal design considerations. Slip rings and brushes have been eliminated resulting in improved reliability with lower cost. Extensive use of modern thermoplastic materials improves resistance to corrosion from the sea air environment and from atmospheric pollutants.

The wind speed sensor is an injection molded helicoid shape propeller. The propeller is four blade, 18 cm diameter x 30 cm pitch with a distance constant of 3.3 m (10 ft). Wind speed threshold is 1.0 m/s (2.2 mph). Propeller rotation produces an AC sine wave voltage signal with frequency directly proportional to wind speed. The AC voltage signal is induced in a centrally mounted coil by a six pole magnet mounted on the propeller shaft. The coil is located on the non-rotating central portion of the main mounting assembly, eliminating the need for slip rings and brushes.

Vane position is transmitted to a precision conductive plastic potentiometer which is located in a sealed chamber just below the wind speed transducer coil. The potentiometer requires a regulated excitation voltage with a constant voltage applied to the potentiometer element, the output signal is an analog voltage directly proportional to azimuth angle. All transducer leads terminate in a junction box on the mounting post for convenience in making sensor cable connections. Five conductors are required. Construction is principally of rigid U.V. stabilized thermoplastic with stainless steel and anodized aluminum fittings. Propeller shaft bearings and vertical shaft bearings are stainless steel precision grade ball bearings.

Technical Specifications

Speed

Range: 0 to 60 m/s (116 Kts)
Survival: 100 m/s (220 mph)
Threshold: 1.0 m/s (2.2 mph)
2.0 Kts with select bearings
Distance Constant: 2.7 m (8.9 ft)
Signal Output: sine wave - 90 Hz/8.8 m/s
Resolution: 0.1 mph
Accuracy: 0.25 mph

Direction

Range: 360° mechanical
<355° electrical
Resolution: 1 degree
Accuracy: 2 degrees
Survival: 100 m/s (220 mph)
Threshold: 0.9 mph
Delay Distance: 1.3 m (4.3 ft)
Signal Output: Analog DC voltage from a precision low-torque conductive plastic potentiometer
Power: Regulated reference voltage for 10K potentiometer

Physical

Height Overall: 37 cm (14.6 in)
Length Overall: 55 cm (includes vane & prop, 21.7 in)
Prop Diameter: 18 cm (7.1 in)
Weight: 1.0 kg (2.2 lbs)

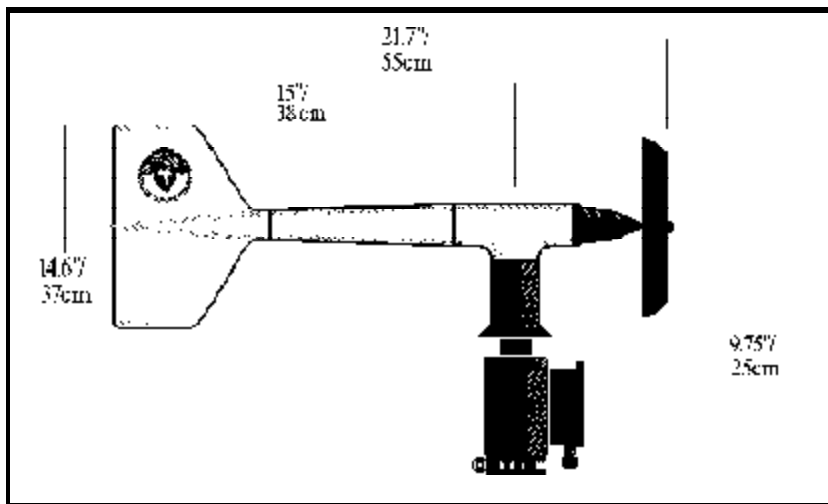


Figure 1 - Schematic Diagram of Wind Monitor 5103.