



Wind Speed & Direction

S1146Z

- **High wind speed survivability**
 - **Rugged**
 - **Economical**

The Cup & Vane is a professional quality wind sensor, suitable for a wide range of wind measurement applications. The cup and vane is primarily constructed of thermoplastic, providing excellent corrosion resistance, low sensor weight, and minimal parts count.

The cup has three hemispherical molded plastic cups. Cup wheel rotation produces an AC sine wave voltage signal with frequency directly proportional to wind speed. This AC voltage signal is induced in a coil by a two-pole circular magnet mounted on the cup wheel shaft. One complete sine wave cycle is produced for each cup wheel revolution.

Vane position is determined using a 10 k ohm precision potentiometer. Both a precise excitation voltage and a constant voltage is applied to the potentiometer. The output signal is an analog voltage directly proportional to azimuth angle. The plastic vane is molded directly on an anodized aluminum shaft.





Technical Specifications

S1146Z

Range

Wind Speed:	0 - 60 m/s (134 mph)
Gust Survival:	80 m/s (180 mph)
Azimuth:	360 degrees mechanical 355 degrees electrical (5 degrees open)

Threshold

Cup:	0.5 m/s (1.1 mph)
Wind Vane:	0.8 m/s (1.8 mph)

Dynamic Response

Cup Wheel Distance Constant (63% recovery):	2.4 m (7.9 ft)
Vane Delay Distance (50% recovery):	0.5 m (1.6 ft)
Damping Ratio:	0.2

Signal Output

Wind Speed:	Magnetically induced AC voltage / 1 pulse per revolution. 1800 rpm (30 Hz) = 22.8 m/s (51 mph)
Azimuth:	Analog DC voltage from conductive plastic potentiometer - resistance 10 k, linearity 0.5%, life expectancy 20 million revolutions

Power Required

Potentiometer Excitation:	5 to 15 VDC regulated (recommended)
Sensor Interface Circuit:	5 to 15 VDC unregulated
Line Driver Circuit:	12 to 30 VDC unregulated (depending upon line and load resistance)

PHYSICAL

Dimensions

Cup Wheel:	12 cm (4.7 in) diameter
Vane Length:	22 cm (8.7 in)
Height (Cup):	15 cm (5.9 in)
Overall Height:	32 cm (12.6 in)
Cross-arm Length:	28 cm (11.0 in) in between instrument centers
Cup Size:	4 cm (1.57 in)

Weight

Cup:	0.2 kg (0.5 lbs)
Vane:	0.4 kg (0.8 lbs)
Cup & Vane:	0.7 kg (1.6 lbs)