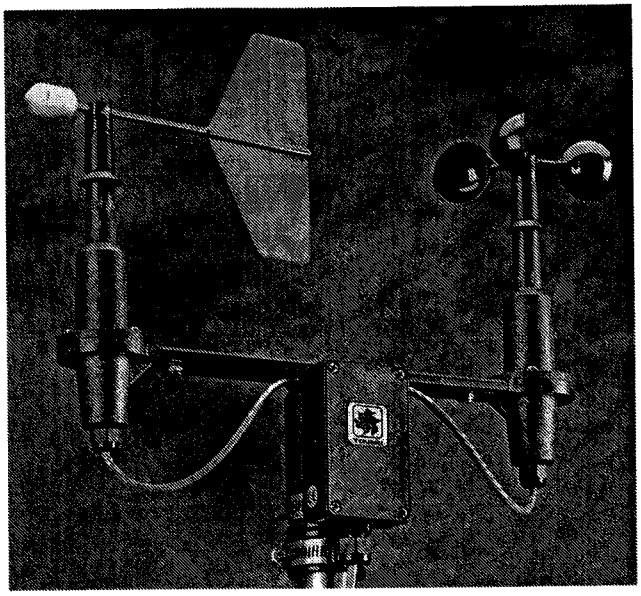
MODEL 03005
WIND SENTRY
INCLUDES MODELS 03105 & 03302

YOUNG



WIND SPEED SPECIFICATION SUMMARY

Range	0 to 50 m/s (112 mph), gust survival 60 m/s (134 mph)
Sensor	12 cm diameter cup wheel assembly, 40 mm diameter hemispherical cups
Turning Factor	75 cm (2.46 ft)
Distance Constant (63% recovery)	2.3 m (7.5 ft)
Threshold	1.1 m/s (2.5 mph)
Transducer	Reed Switch
Transducer Output	Contact closure
Output Frequency	1 contact closure per cup wheel revolution. 0.75 m/s per Hz

WIND DIRECTION (AZIMUTH) SPECIFICATION SUMMARY

Range	360° mechanical, 352° electrical (8° open)
Sensor	Balanced vane, 16 cm turning radius.
Damping Ratio	0.2
Delay Distance (50% recovery)	0.5 m (1.6 ft)
Threshold	1.3 m/s (2.9 mph) at 10° displacement 1.9 m/s (4.2 mph) at 5° displacement
Transducer	Precision conductive plastic potentiometer, 10K ohm ±20% resistance 1.0% linearity, life expectancy 50 million revolutions Rated 1 watt at 40°C, 0 watts at 125°C
Transducer Excitation Requirement	Regulated DC voltage, 15 VDC max
Transducer Output	Analog DC voltage proportional to wind direction angle with regulated excitation voltage applied across potentiometer

INTRODUCTION

The Wind Sentry Anemometer and Vane measure horizontal wind speed and wind direction. The small size, simplicity, and corrosion resistant construction provide a professional quality instrument at a modest cost. The cup wheel and vane shafts use stainless steel precision instrument grade ball bearings which are lubricated with a wide temperature range high quality instrument oil. Standard bearings have light contacting seals to exclude contamination and help retain lubricant for longer service life.

Cup wheel rotation produces contact closures with frequency directly proportional to wind speed. The Reed Switch contact closure is activated by a two pole ring magnet mounted on the cup wheel shaft. One complete sine wave cycle is produced for each cup wheel revolution.

Wind vane position is transmitted by a 10K ohm precision conductive plastic potentiometer which requires a regulated excitation voltage. With a constant voltage applied to the potentiometer, the output signal is an analog voltage directly proportional to azimuth angle.

The sensor mounts on standard 1 inch pipe, outside diameter 34mm (1.34") and is supplied with a crossarm and junction box for cable connections. Wind Sentry anemometers and windvanes are available separately with similar mounting and junction box.

INITIAL CHECKOUT

When the Wind Sentry is unpacked, check it carefully for any signs of shipping damage. Place the cup wheel on the anemometer shaft and secure it by tightening the set screw on the side of the hub. The instrument is aligned, balanced, and fully calibrated before shipment; however, it should be checked both mechanically and electrically before installation. The vane and cup wheel should easily rotate 360° without friction. Check vane balance by holding the instrument so the vane surface is horizontal. It should have near-neutral torque without any particular tendency to rotate. A slight imbalance will not degrade performance.

The wind direction potentiometer requires a stable DC excitation voltage. Do not exceed 15 volts. When the potentiometer wiper is in the 8° deadband region, the output signal is "floating" and may show varying or unpredictable values. Azimuth signal conditioning electronics should properly process this condition. (All YOUNG signal conditioning electronics clamp the signal to excitation level.) Avoid a short circuit between the azimuth signal line and either the excitation or ground reference lines. Although there is a current limiting resistor in series with the wiper for protection, damage to the potentiometer may occur if a short circuit condition exists.

Before installation, connect the Wind Sentry to a signal conditioning device and check for proper wind speed and direction values. Make electrical connections to the sensor cables as shown in the wiring diagram. To check wind speed, temporarily remove the cup wheel and connect an Anemometer Drive to the cup wheel shaft. Details appear in the CALIBRATION section.

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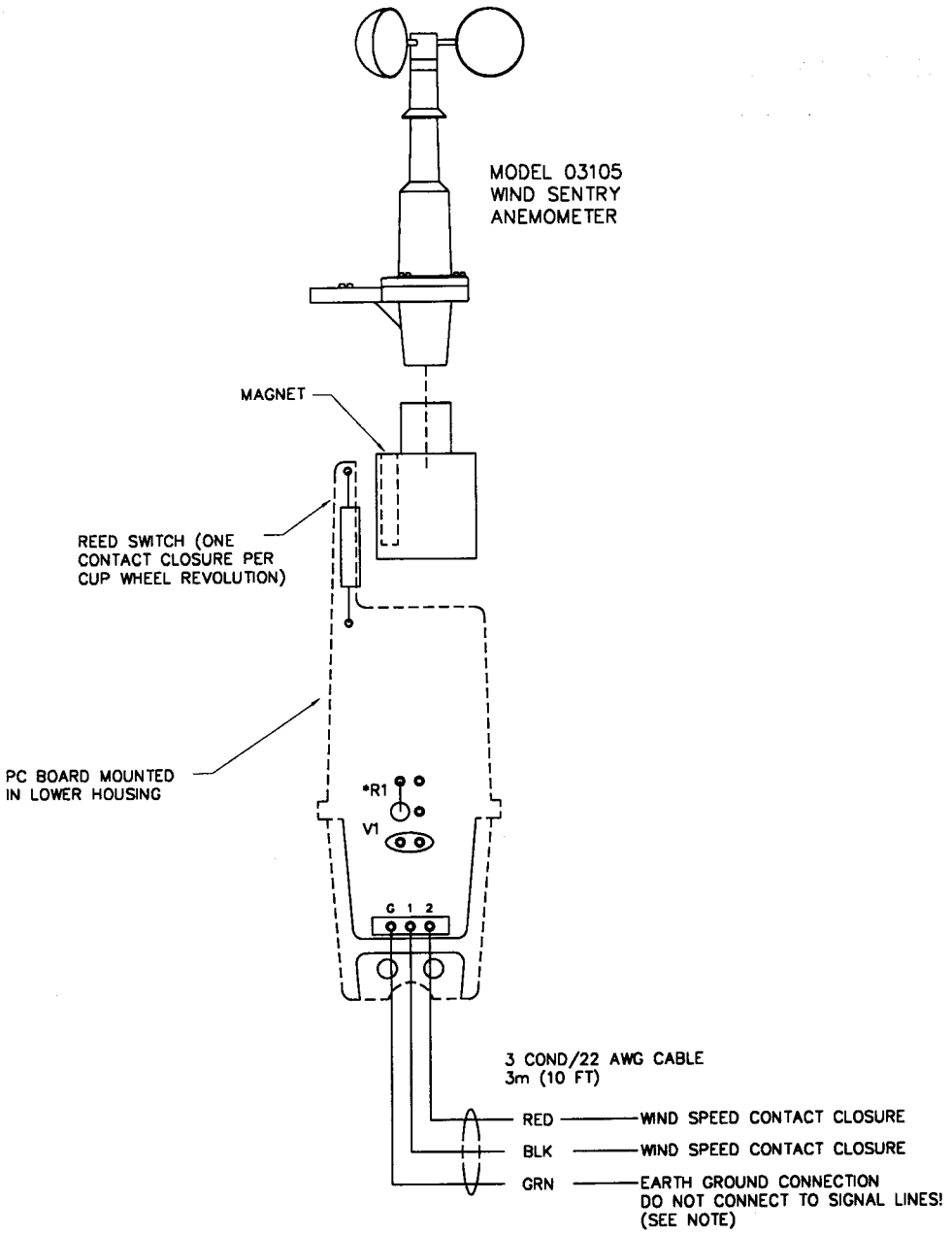
MODEL 03105 WIND SENTRY ANEMOMETER
WITH CONTACT CLOSURE



NOTE: THE EARTH GROUND TERMINAL MUST BE CONNECTED TO EARTH GROUND TO PROVIDE A STATIC DISCHARGE PATH.

NOTES:

1. CUT TRACE WHERE R1 IS INSTALLED.
2. SEE DWG K03155-01 FOR CIRCUIT BOARD MODIFICATIONS & REED SWITCH POSITION.
3. BREAK MAGNETS (43445C-03) IN HALF.

MODEL 03105 WIND SENTRY ANEMOMETER	DWG A	PRD 03/97
WITH CONTACT CLOSURE	DWN KL	DWG 10/99
CABLE & WIRING DIAGRAM	CHK YL	W03105
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