Met One 034B-L Windset

1. General

The Met One 034B-L Windset is an integrated cup anemometer and wind vane. The anemometer consists of three cups that sense the wind speed. These cups rotate on a vertical shaft that magnetically activates a sealed reed switch. The read switch opens and closes at a rate proportional to wind speed. The wind direction is sensed by a vane. The vane drives a 10 kΩ potentiometer.

2. Specifications

Wind Speed

Operating Range: 0 to 49 m s^{-1} (0 to 110 mph)

Threshold: 0.4 m s^{-1} (0.9 mph)

Accuracy:

±0.12 m s^{-1} (±0.25 mph) for wind speed < 10.1 m s^{-1} (22.7 mph)
±1.1% of reading for wind speeds > 10.1 m s^{-1} (22.7 mph)

Output Signal: contact closure (reed switch)

Wind Direction

Range: 0 to 355°, open between 356° and 360°

Threshold: 0.4 m s^{-1} (0.9 mph)

Accuracy: ±4°

Resolution: 0.5°

Potentiometer Specifications:

Resistance: 0 to 10 kΩ open at crossover

General Specifications

Operating Temperature Range: -30° to +70°C

Weight: 907 g (2.0 lb.)

NOTE The black outer jacket of the cable is Santoprene® rubber. This compound was chosen for its resistance to temperature extremes, moisture, and UV degradation. However, this jacket will support combustion in air. It is rated as slow burning when tested according to U.L. 94 H.B. and will pass FMVSS302. Local fire codes may preclude its use inside buildings.

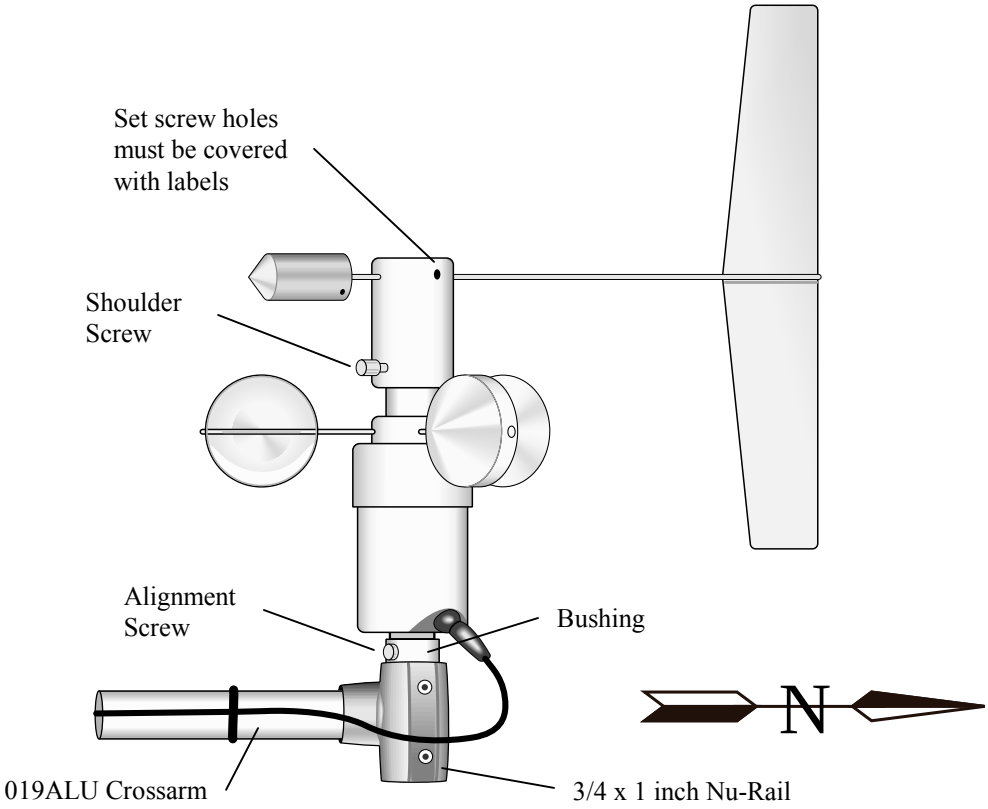

FIGURE 3-1. 034B-L Mounted on a 019ALU Horizontal Crossarm.

Attach the sensor cable to the six pin male connector on the 034B-L. Make sure the connector is properly keyed. Finger tighten the knurled ring. Route the sensor cable along the underside of the crossarm to the tripod/tower mast and down a tripod/tower leg to the instrument enclosure. Secure the cable to the crossarm and mast using cable ties.

4. Wiring

The connection to the datalogger for the 034B-L are shown in Figure 4-1. The wind speed is measured by a pulse input channel. The wind direction is measured by a single-ended analog input channel.

Connect the red lead to a pulse input channel (wind speed) and the black lead to a ground, labeled G on the CR10(X) or ⏚ on the 21X. Connect the green lead (wind direction) to a single-ended input channel, the blue lead to an excitation channel, and white lead to an analog ground, labeled AG on the CR10(X), or ground, labeled ⏚ on the 21X. Connect the clear lead to ground, labeled G on the CR10(X) or ⏚ on the 21X.

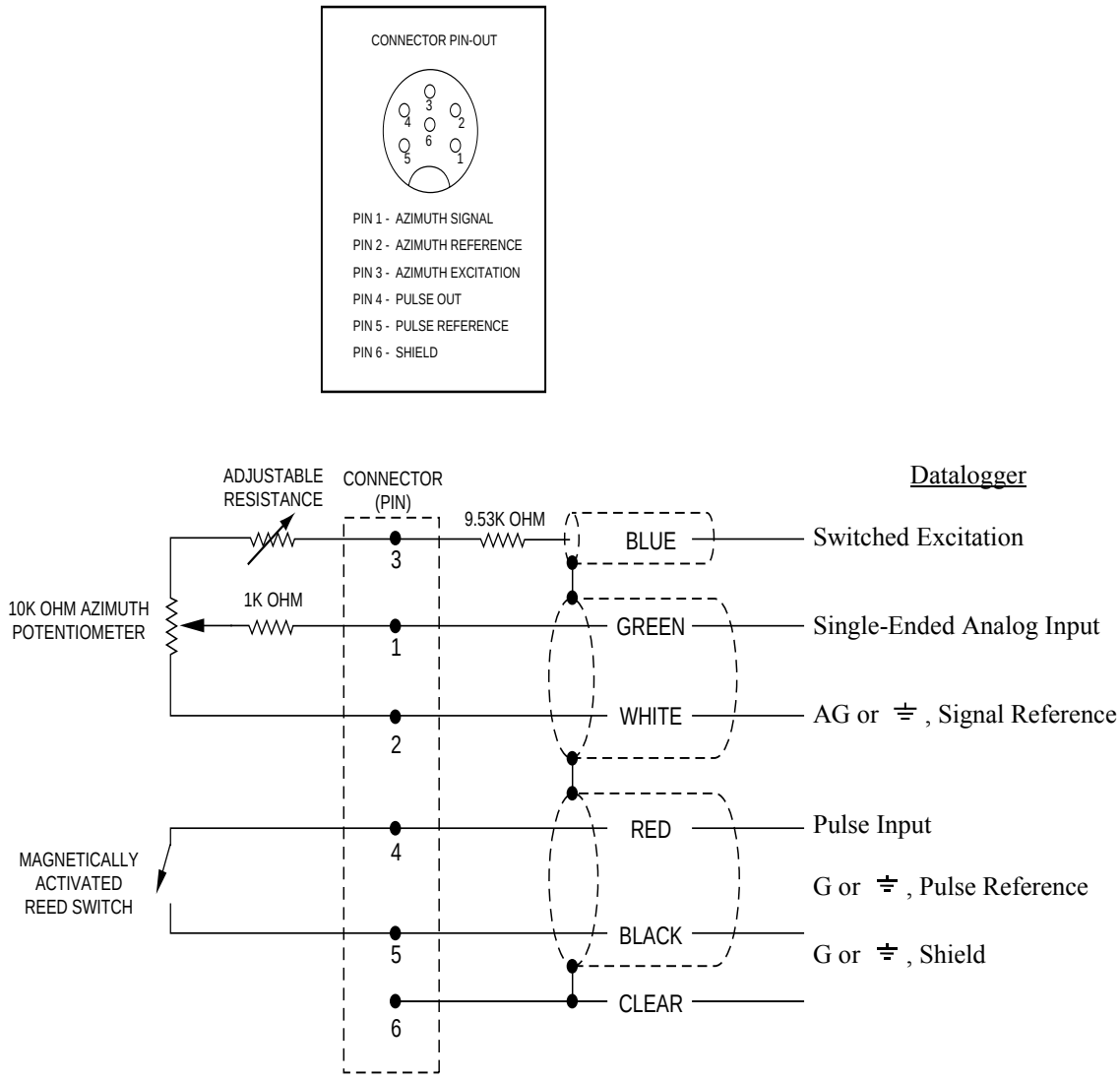

FIGURE 4-1. 034B-L Windset Wiring Diagrams

5. Datalogger Programming

The Pulse instruction, Instruction 3, with an option code of 22, is used to measure the wind speed. Instruction 3 counts the number of switch closures that have occurred during the datalogger's execution interval. When option code 22 is selected, the datalogger reports the counts as a frequency. In addition, counts beyond the execution interval, caused by table overruns, are discarded, see Section 9 of the Datalogger manual for details. The frequency is converted into wind speed using the multiplier and offset listed in Table 5-1.

The AC Half Bridge instruction, Instruction 5, is used to measure wind direction. The AC Half Bridge (P5) instruction provides a precision voltage to the potentiometer and measures the voltage between the wiper and ground. The voltage is linearly proportional to the azimuth and is converted to degrees by the multiplier and offset listed in Table 5-1.