05103-LC AND 05305-LC
R.M. YOUNG WIND MONITOR
FOR
METDATA1
INSTRUCTION MANUAL

4/97

WARRANTY AND ASSISTANCE

The **05103-LC AND 05305-LC R.M. YOUNG WIND MONITOR FOR METDATA1** is warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

Products may not be returned without prior authorization. To obtain a Returned Materials Authorization (RMA), contact CAMPBELL SCIENTIFIC, INC., phone (435) 753-2342. After an applications engineer determines the nature of the problem, an RMA number will be issued. Please write this number clearly on the outside of the shipping container. CAMPBELL SCIENTIFIC's shipping address is:

> **CAMPBELL SCIENTIFIC, INC.**
> RMA#_____
> 815 West 1800 North
> Logan, Utah 84321-1784

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

Non-warranty products returned for repair should be accompanied by a purchase order to cover the repair.

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05103-LC AND 05305-LC R.M. YOUNG WIND MONITOR FOR METDATA1

1. INTRODUCTION

This manual provides information for interfacing the R.M. Young 05103 Wind Monitor and 05305 Wind Monitor AQ to the MetData1 system. The 05305 Wind Monitor AQ is a high performance version of the 05103 Wind Monitor that is designed specifically for air quality measurements. R.M. Young's instruction manual is also included, which contains sensor specifications, operating principles, installation and alignment guide, and calibration information. Multiplier and offset values in the Campbell Scientific notes are based on calibration data obtained from the R.M. Young Wind Monitor manual.

> **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.

2. MOUNTING REQUIREMENTS

The Wind Monitor mounts to a vertical piece of 1" IPS schedule 40 (1.32" O.D.) pipe. (See Figure 2-1.) A band clamp at the base of the sensor is tightened to secure the sensor to the pipe.

Campbell Scientific supplies a 12" length of unthreaded pipe for mounting the wind monitor to Campbell Scientific's 019ALU Crossarm Sensor Mount.

3. CONNECTION

The wind monitor cable is attached to the MetData1 connector labeled #2.

4. DATALOGGER PROGRAMMING

> **NOTE:** Information in this section is not necessary when programming the MetData1 with the Short Cut Program Builder software.
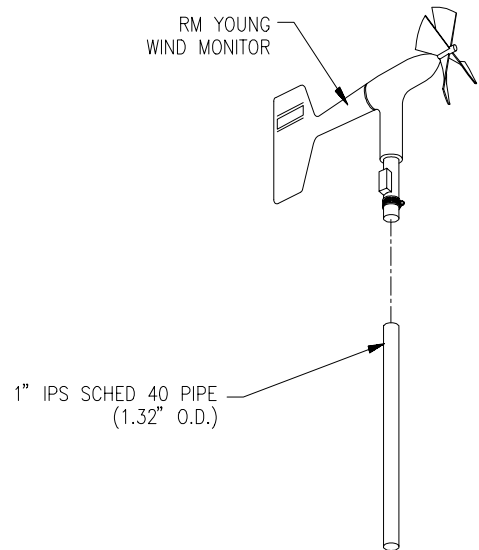
FIGURE 2-1. Wind Monitor Mounted to a Vertical Pipe

4.1 WIND SPEED

MetData1 uses Instruction 3 (Pulse Count) to measure wind speed.

The expression for wind speed (U) is:

$$U = MX + B$$

where

M = multiplier
X = number of pulses per second
B = offset

MetData1 Datalogger Program Instruction

```
01:   P3              Pulse Count
  01:      1          Rep
  02:      1          Pulse Chan
  03:     21          Config Option
  04:      *          Loc
  05:    .2192**      Mult
  06:      0          Offset
```

*   Proper entry will vary dependent on input location assignment.

**   Use a multiplier of 0.098 for ms^{-1} output.

The helicoid propeller has a calibration that passes through zero; use an offset of zero (Gill, 1973; Baynton, 1976).

4.2 WIND DIRECTION INSTRUCTION CODE

MetData1 uses Instruction 4 (excite, delay, and measure) to measure wind direction. In general, a delay of 2 (0.02 seconds) is sufficient when lead lengths are less than 100 feet. If the cable is 100 to 1000 feet, use a delay of 20 (0.20 seconds). If you need further assistance with the delay, contact Campbell Scientific's Marketing Department. The wind direction potentiometer has a five degree deadband between 355 and 360 degrees; therefore, the multiplier is 355/Excitation Voltage. The offset is zero.

MetData1 Datalogger Program Instruction

```
01:   P4            (Excite, Delay, Measure)
  01:     1         Rep
  02:     5         2500 mV slow
  03:     3         In Chan
  04:     2         Ex Chan
  05:     2         Delay (Units 0.01 Sec)
  06:  2500         mV Excitation
  07:     *
  08:   0.142       Mult
  09:     0         Offset
```

* Proper entry will vary dependent on input location assignment.

5. MAINTENANCE AND REPAIRS

R.M. Young suggests the anemometer bearings be inspected at least every 24 months. Please refer to the R.M. Young manual for maintenance information.

Contact R.M. Young's customer service department directly to obtain repair cost estimates and authorization for return of the unit. Their phone number is (616) 946-3980.

6. REFERENCES

Gill, G.C., 1973: The Helicoid Anemometer Atmosphere, II, 145-155.

Baynton, H.W., 1976: Errors in Wind Run Estimates from Rotational Anemometers Bul. Am. Met. Soc., vol. 57, No. 9, 1127-1130.