

**RM Young  
05103V-45**

**Alpine Wind Monitor**

**Sensor Interface Manual**



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## Overview

The RM Young 05103V-45 is a wind monitor that measures wind speed and direction using a 0-5 V analog output.

The wind speed sensor is a four blade helicoid propeller. Propeller rotation produces an AC sine wave voltage signal with frequency directly proportional to wind speed.

The wind direction sensor is a low aspect ratio vane, ensuring good fidelity in fluctuating wind conditions. Vane angle is sensed by a built-in potentiometer housed in a sealed chamber. With a known excitation voltage applied to the potentiometer, the output voltage is directly proportional to vane angle.

This alpine wind monitor features an ice-resistant coating on all external surfaces and a smaller propeller diameter than the standard model to minimize vibration at high wind speeds.



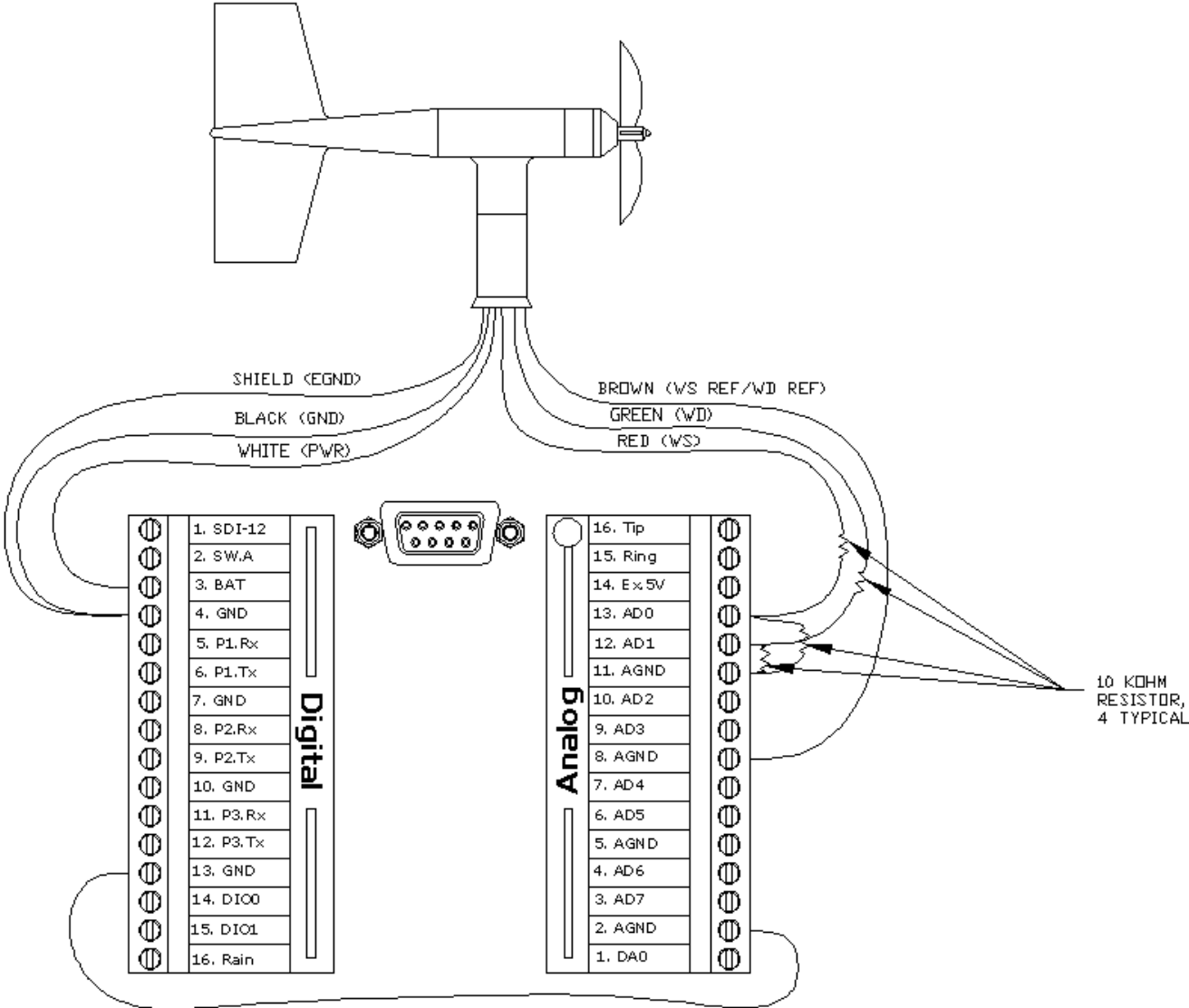
**Figure 1:** RM Young 05103V-45 alpine wind monitor

## Connecting to an iSIC Data Logger

To wire the sensor into the iSIC, route the cable and wires through a gland fitting installed in the enclosure, and then unplug the green terminal strip from the data logger before securing individual wires according to the wiring diagram below. Avoid clamping on wire insulation.



**Figure 2:** Unplug the green terminal strip from the data logger before wiring the sensor



**Figure 3:** Physical wiring of an RM Young 05103V-45 alpine wind monitor to an iSIC data logger

**Table 1:** Table for wiring an RM Young 05103V-45 alpine wind monitor to an iSIC data logger

**WARNING**  
 Green (WD) and Red (WS) must each have an additional 10 KΩ resistor connected in series.  
 This prevents the sensor's output voltage from exceeding input voltages accepted by the iSIC data logger.

Digital		Analog	
1. SDI-12	-	16. Tip	-
2. SW.A	-	15. Ring	-
3. BAT	White (+PWR)	14. Ex.5V	Red (WS) Resistor 1 (10 KΩ)
4. GND	Shield (EGND) Black (REF)	13. AD0	Green (WD) Resistor 2 (10 KΩ)
5. P1.Rx	-	12. AD1	Resistor 1 (10 KΩ) Resistor 2 (10 KΩ)
6. P1.Tx	-	11. AGND	-
7. GND	-	10. AD2	-
8. P2.Rx	-	9. AD3	Brown (REF)
9. P2.Tx	-	8. AGND	-
10. GND	-	7. AD4	-
11. P3.Rx	-	6. AD5	-
12. P3.Tx	-	5. AGND	-
13. GND	-	4. AD6	-
14. DIO0	-	3. AD7	-
15. DIO1	-	2. AGND	-
16. Rain	-	1. DA0	-

## Installation

The instrument mounts to a standard 1" pipe. A mounting orientation ring assures correct realignment of the wind direction reference when the instrument is removed for maintenance.

### Mounting Wind Monitor

1. Place orientation ring on mounting post. Do not tighten band clamp yet.
2. Place Wind Monitor on mounting post. Do not tighten band clamp yet.

### Aligning Vane

Aligning the vane while connected to an iSIC data logger requires the use of a voltmeter. During the initial installation, follow the steps below to ensure proper vane alignment:

1. Ensure the sensor is connected to the iSIC data logger
2. Sighting down the instrument centerline, point nose cone due north.

3. While holding vane in position, measure the voltage between iSIC terminal strip pins AD0 and AGND
4. Slowly turn base until indicator reads  $\sim 0$  V.
5. Tighten mounting post band clamp.
6. Engage orientation ring indexing pin in notch at instrument base.
7. Tighten orientation ring band clamp.

## Computer Interface

iChart software is used to set up the iSIC data logger, as well as to acquire and process data. Launch the software and select **File | New Project**. Follow the Setup Device Wizard to create a project file. Additional information is available in the iChart manual.



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