



ADS Anemometer and Wind Vane

March 2009

Thank you for your interest in Hobby Boards' ADS Anemometer. We are confident that this device will form an integral part of your weather station for years to come.

Description

Hobby Boards' ADS Anemometer is our most cost-effective solution for monitoring wind speed and direction.

Contents of kit

- Anemometer (wind speed sensor)
- Wind vane (wind direction sensor)
- Controller board
- Controller board case
- Mounting arm
- Nut and bolt for mounting arm
- Nuts and bolts for anemometer and wind vane
- Two-piece mounting pole
- Two band clamps for mounting anemometer to mast
- Tie wraps for mounting case and securing cable

Required but NOT included

- 1-Wire master
- CAT5 cable
- 14-24v DC power supply
- Software to interpret data

Technical Specs

Anemometer and Wind Vane

- Anemometer with 3 cup rotor
 - Measures wind speeds of 3 to 125+ MPH.
- Wind vane uses reed switches
 - Wind direction resolution of 22.5 degrees.
- Weather-resistant casing protect bearings and electronics.
- 1-Wire controller board with RJ12 jack for easy connection of the device.

Controller

- The Hobby Boards' Anemometer board uses the Dallas DS2423 and DS2438 1-Wire chips.

Connections

- 1-Wire connections are made through a dual RJ45 jack with pass-through capability or the available screw terminals for easy connectivity to your 1-Wire network.
- Power is supplied through CAT5 cable connected to the RJ45 jack or through the screw terminal.
- The ADS Anemometer and Wind Vane are connected through the RJ12 jack.

Power Requirements

- The maximum power draw is 7mA at +14v DC.

Installation

Anemometer Assembly

1. Unpack all parts and verify against the contents of kit listed above.
2. Connect two pole pieces.
3. Insert mounting arm into top pole. Be sure tab on mounting arm fits securely into notch on mounting pole. Bolt mounting pole to the mounting arm.
4. Mount the anemometer to one side of the mounting arm. Be sure tab on anemometer fits securely into slot on mounting arm. Bolt anemometer to mounting arm.
5. Apply dielectric compound to jack on wind vane (optional; dielectric compound not included.)
6. Plug cable from anemometer into jack on wind vane.
7. Mount the wind vane to the other side of the mounting arm. Be sure tab on wind vane fits securely into slot on mounting arm. Bolt wind vane to mounting arm.
8. If desired, insert connecting cable into tabs under mounting arm for neater appearance.

Connecting Controller Board

1. Open the controller board case.
2. Apply dielectric compound to the RJ12 jack and two RJ45 jacks on the controller board (optional; dielectric compound not included).
3. Connect the cable from the wind vane to the RJ12 jack on the controller board, labeled ADS Anemometer.
4. Connect your 1-Wire cable (see Connecting 1-Wire and Power below).
5. Re-install the case cover, making sure all wires fit in the slot in the case cover. By default, the case comes with a slit on one end, to accommodate wires connected to screw terminals. If you choose to use the RJ45 connectors, Hobby Boards can provide an additional slot for these wires. Because of the additional slots needed, the case will be less water-resistant when RJ45 connectors are used. Please let us know when you place your order.
6. Seal the slot in the case, where wires protrude, with caulk or other sealant (caulk not provided).

Mounting

1. Anemometer should be mounted on a mast in a high location as far from trees and other obstructions as possible.
2. Attach mounting pole to your mast using the supplied band clamps. If clamps do not fit or will not attach securely, an alternate mounting method may be needed. The axis of rotation should be as close to vertical as possible.

NOTE: Wind Vane points north when the pointer is aligned over the RJ12 jack on the wind vane base, and the tail is aligned over the cable protruding from the base. Some software may support a north offset, in which case alignment is not necessary.

3. Attach controller case to the mast using two of the supplied tie wraps.
4. Use remaining tie wraps to neaten any wires, if desired.

Operation

Connecting 1-Wire and Power

To connect the controller board to your 1-Wire network, simply use a standard network cable and connect it to either RJ45 jack. The second jack is provided to allow pass-through connections. The two jacks can be connected interchangeably. Optionally, the controller board can be connected to your 1-Wire network using the screw terminals labeled GND, DQ, and +14v.

The controller board requires at least 14 VDC. This will be supplied in one of two ways. Power can be supplied locally, using the screw terminals labeled GND and +14v. Alternatively, power can be supplied through the 1-Wire network if your controller board is connected through a Hub, Master Hub, or Power Injector.

Software Requirements

The ADS Anemometer and Wind Vane is not compatible with 1-Wire software released prior to March 2009. We anticipate rapid support for this device in the major weather software applications.

If you are a software developer, and would like to write your own software to support the ADS Anemometer and Wind Vane, the following calculations will be necessary.

Wind Speed:

Wind speed will be calculated from the counters on page 15 and 16 of the DS2423. To obtain wind speed from the counter, use the following formula:

$$WS = \frac{1.25C}{T}$$

Where:

WS=wind speed in miles per hour

C=counts

T=time interval over which counts are measured

Wind Direction:

Wind direction will be calculated from the VAD register of the DS2438.

Due to variability in input voltage, resistance tolerances, and temperature, the output voltages will vary slightly. In order to accommodate this variability, we have provided a range of output voltages for each compass direction.

The following table gives the output values for the 16 compass points the wind vane supports:

Direction	Voltage
N	2.66-2.72
NNE	6.49-6.55
NE	5.96-6.02
ENE	9.35-9.41
E	9.27-9.33
ESE	9.50-9.56
SE	8.48-8.54
SSE	8.98-9.04
S	7.57-7.63
SSW	7.95-8.01
SW	4.28-4.34
WSW	4.59-4.65
W	0.89-0.95
WNW	2.20-2.26
NW	1.54-1.60
NNW	3.54-3.60