Wind speed sensors and wind speed & direction sensors

Features

- Low inertia cup assembly for fast response
- Magnetically operated mercury wetted reed switch for bounce-free pulse output

Specification

Speed sensor	Magnetically operated reed switch
Output	1 contact closure per 1.493 meters
Read detector	Bench tested to a speed of 90m/s
Min. start speed	0.5m/s typically
Accuracy	±2%
Contact rating:	
Power	50W max. (dc resistive)
Voltage	100Vdc max.
Current	1A max.

NB The total power switched must **not** exceed 50W

AV-WAD only:

Direction sensor	360° endless travel
Electrical travel	357° (±2°)
Output	0-1KΩ for 357° @ 80Vdc max.
Resistance tolerance	±3%
Linearity tolerance	±0.5%

Common Specification:

Electrical conns.	Flying lead (3m long)
Ambient range	-20°C to +70°C
Dimensions:	
Height	280mm
Max. arc	120mm
Mounting	Arm & clamp for fixing to mast & poles up to 50mm diameter max.
Protection	IP65
Country of origin	UK

Product Codes

AV-WS
Wind speed transmitter

AV-WAD
Wind speed and direction transmitter

Technical Overview

The AV-W series accurately measures the wind speed and direction (AV-WAD only), providing output signals compatible with most BEMS controllers. Intended for applications where external weather conditions influence the building control strategy, such as for the automatic closing of windows in high wind conditions.
Mounting arm and U bolts for pole mounting included.

Installation Position

It is important to choose a site carefully to mount the unit. Sheltered sites should be avoided if possible, as should exposed sites unless there is a requirement to measure wind speed under exposed conditions. Mounting on the wall of a building may also shelter the unit, leading to inaccurate readings.

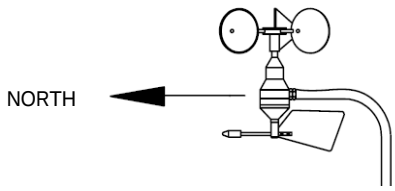
It should be noted that wind speed increases exponentially with height above ground, for the first 20 metres. It follows that mounting on a tall mast will lead to higher wind speeds. A good recommended height is between 2 and 9 metres above ground, where possible.

Mounting on a flat roof should also be avoided as this can lead to inaccurate readings due to turbulence and eddies.

If the unit is to be mounting near to the ground, anti-vandalism measures may be required. Any protection of this nature should not obstruct the wind flow to the unit.

Alignment

Using a compass the elbow of the mast must be aligned to point to the north. This method is usually accurate enough (± 5°); however, for better accuracy then an alternative is to lightly hold the wind vane pointing in the direction of North and rotate the elbow until North is displayed on the controller.



The cable ties should be fitted to ensure a tidy cable run down the mast. Try to keep the cable following around the outside bend of the elbow, to present as clean a profile to the wind vane as possible. Also note that flapping of cables in the wind is a very common source of sensor failures.

Installation

NB The unit should be mounted with the direction vane at the bottom and the speed cups at the top. The unit mounting arm should be pointing North.

1. Fit the 2 washers to the M6 bolts, and pass bolts through the bracket plate, and screw them into the threaded holes of the elbow mount. (Do not over tighten).

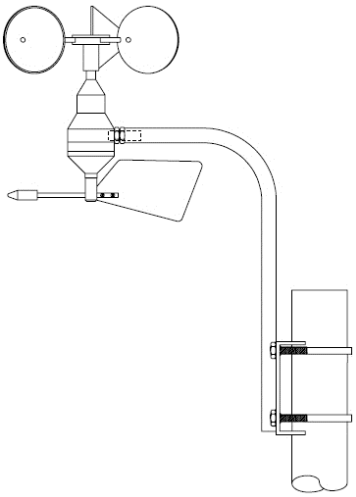
2. Screw the AV-W into the threaded end of the elbow mount, and while keeping the AV-W head perpendicular to the elbow mount tighten the locknut to fix the AV-W head in position.

3. The U-bolts are now fitted through the bracket plate and the nuts and washers fitted.

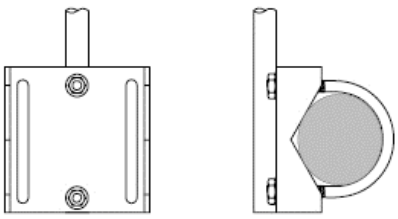
4. This completed assembly is simply fitted by slackening or removing the U-clamps and placing the V-section against the chosen mast; then replace the clamps.

5. When fitting ensure the elbow mount is aligned north.

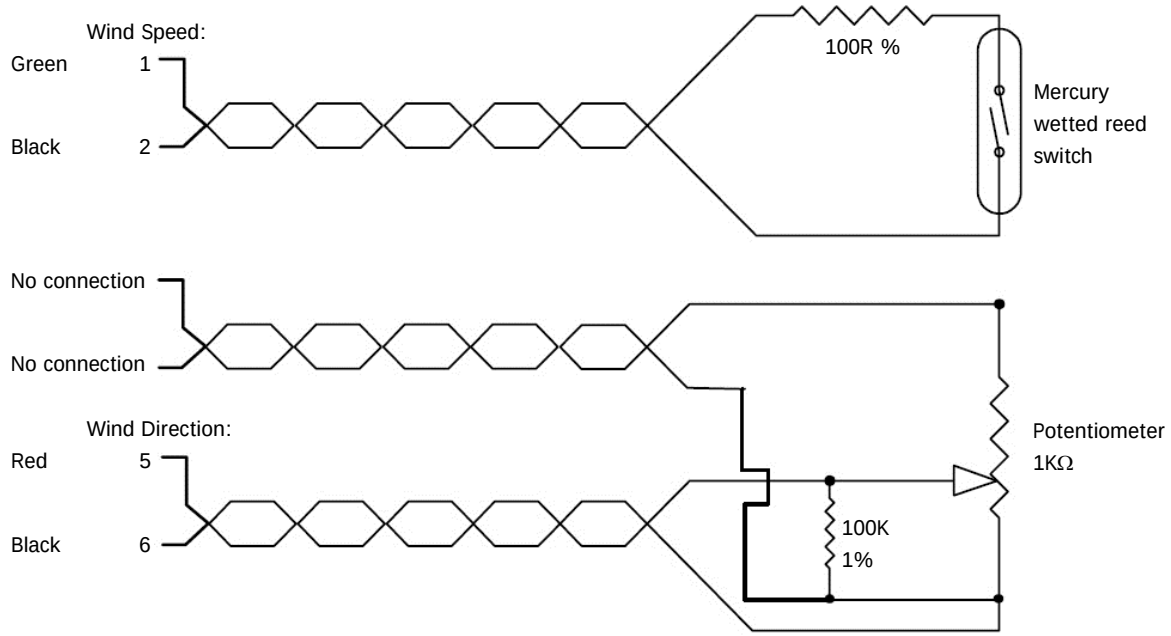
Example ways of pole mounting:



Alternative horizontal mounting:



Connections



Wind Speed Pulse Calculation

In any full revolution of the wind cup assembly the pulse is active for 43% of the revolution and inactive for 53%. The actual duration of the pulse will therefore depend on the wind speed.

For example at a speed of 10m per sec the duration of the pulse is 10 divided by 1.493 (our constant) = 6.7 revolutions per second = (43 divided by 100) multiplied by (1 divided by 6.7) = 64.2m/seconds.