



Features and Benefits

- Supplied with mounting bracket
- Wind speed accuracy $\pm 2\%$
- Anodized aluminium housing
- Ideal for naturally ventilated building applications
- Easy installation

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.

Product Codes

AV-W-S	Wind Speed Sensor
AV-W-AD	Wind Speed & Direction Sensor

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	$\pm 2\%$
Contact rating:	
Power	50W max. (dc resistive)
Voltage	100Vdc max.
Current	1A max.

NB The total power switched must not exceed 50W

AV-W-AD only:

Direction sensor	360° endless travel
Electrical travel	357° ($\pm 2^\circ$)
Output	0-1K Ω for 357° @ 80Vdc max.
Resistance tolerance	$\pm 3\%$
Linearity tolerance	$\pm 0.5\%$

Common Specification:

Electrical conns.	Flying lead (3m long)
Ambient range	-20 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
Conformity	EMC, CE & UKCA Marked

WEEE Directive:



At the end of the products useful life please dispose as per the local regulations. Do not dispose of with normal household waste. Do not burn.



Installation Position & Alignment

Choosing a Mounting Site

- **Avoid sheltered locations:** Buildings, trees, or other obstacles can block or distort wind flow, leading to inaccurate readings.
- **Avoid overly exposed sites** unless the application specifically requires wind speed measurement in exposed conditions.
- **Do not mount on building walls:** This can create sheltering effects and turbulence.
- **Avoid flat roofs:** These create turbulence and eddies that affect accuracy.

Height Considerations

- Wind speed increases exponentially with height for the first 20 m above ground.
- Recommended mounting height: **2m to 9m** above ground, if possible.
- Mounting on a tall mast will record higher wind speeds.

Security & Protection

- If mounting close to the ground, consider **anti-vandalism measures**.
- Ensure that any protective measures **do not obstruct wind flow** to the unit.

Alignment

- Use a **compass** to align the **mast elbow** to point **north**.
 - Accuracy: typically $\pm 5^\circ$.
- For higher accuracy:
 - 1) Hold the wind vane lightly pointing north.
 - 2) Rotate the elbow until the controller displays North.

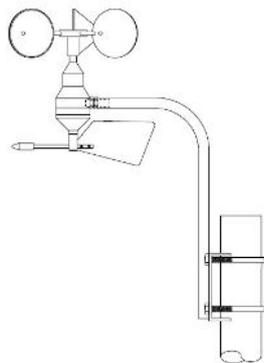
Cable Management

- Secure cables neatly with **cable ties** down the mast.
- Route cables around the **outside bend of the elbow** for minimal disturbance to airflow.
- Prevent cable flapping: loose cables in the wind are a **common cause of sensor failures**.

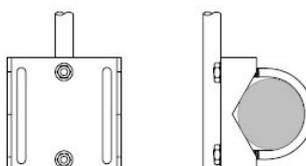
Installation

- 1) 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.
- 2) 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).
- 3) 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.
- 4) The U-bolts are now fitted through the bracket plate and the nuts and washers fitted.
- 5) 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. When fitting ensure the elbow mount is aligned north.

Example ways of pole mounting:



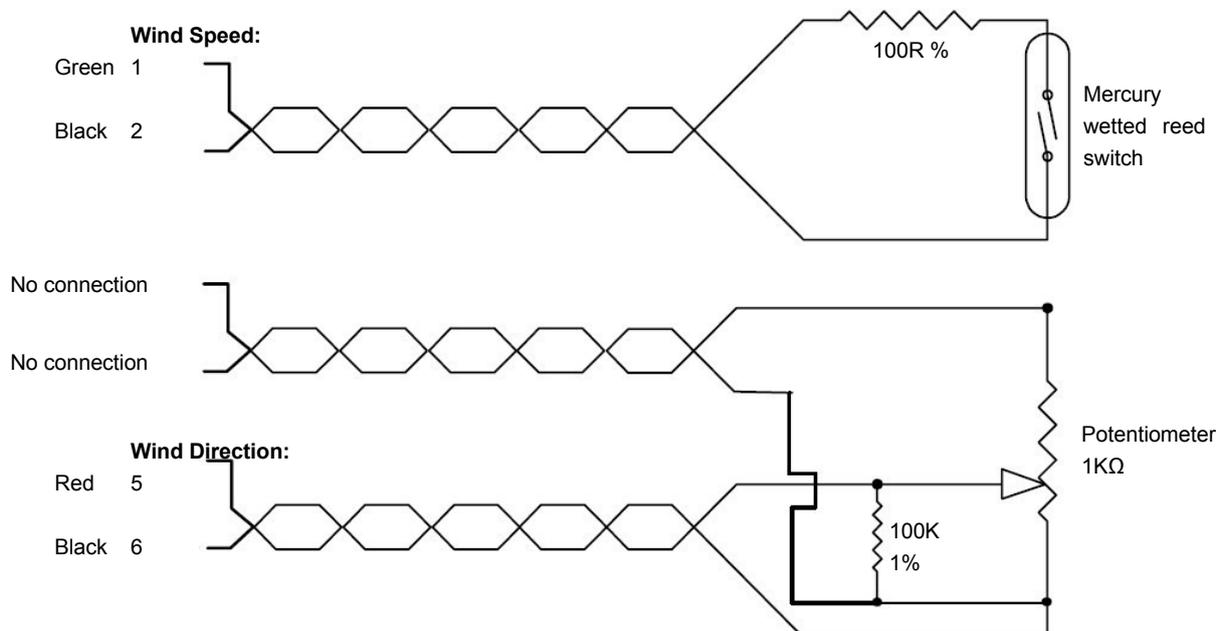
Alternative horizontal mounting:



Connections

- The sensor cable has **3 twisted pairs** (each pair = 1 coloured wire + 1 black wire) and a screen.
- The **screen is not connected** in the sensor head.
- There are **three black wires**, so labels on each wire (heat-shrink markers) help avoid confusion.

It's essential to **keep pairs together** and follow the labels for correct wiring.



A 100Ω resistor is included because long cables have significant capacitance. When the switch closes, this capacitance discharges across the contacts, which can shorten switch life and cause transients in other wires. The resistor limits the discharge current, protecting the switch and circuitry. Although mainly needed for long cables, it is standard in the AV-x head.

Wind Speed Pulse Calculation:

Converting pulses to m/s

The pulse output from the wind speed sensor has a value of 1.493 – meaning that 1.493 m of air has passed over the sensor. A normal given time period would be 1 minute (or 60 seconds).

Air Velocity (in m/s) = (number of pulses counted in 1 minute / 60) * 1.493

Example, if you count 56 pulses in 1 minute, the formula becomes; AV = (56/60)*1.493 = 1.39 m/s

Pulse Duration

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.

