

Wind Direction Vane.



Installation Guide.

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Wind Direction Vane.

4~20mA.
Potentiometer.
Voltage.

Description.

The Wind Vane is a highly responsive and versatile wind vane. The vane body is made from stainless steel and anodised aluminium. Stainless steel shafts, bearings and fittings are used throughout. A precision potentiometer is coupled to the vane shaft to provide an analogue output proportional to the wind direction. A counterweight provides precision balancing of the tail assembly on the shaft.



Features.

- Rugged Construction.
- Temperatures of -5 to 60°C.
- Various Output Types.
- High Accuracy.
- Easy Installation.

Ordering Information.

Standard output models.

- **WD-CL:** Wind Vane with 4~20mA output.
- **WD-P:** Wind Vane with Potentiometer output.

Special output models. Note: Minimum Order Quantity applies.

- **WD-V:** Wind Vane with 0~5Vdc output.

Specifications.

Common Specifications:

Sensor Type	Rotating vane.
Range	10°~350° (±10° dead band at North).
Accuracy	±3% max (10°~350°).
Linearity Error	±2% max (10°~350°).
Cable	5m, UV Resistant.
Rotation Life	10,000,000 cycles.
Operating Temperature	-5°~60°C.
Temperature Error	±350ppm/°C typical.
EMC Compliances	Emissions EN 55022-A. Immunity EN 50082-1.
Safety Compliances	EN 60950.
Dimensions - Overall	L=410, H=230mm.
- Mounting Plate	L=70mm, W=38mm, H=6.5mm, PCD=55mm.

Current Output Specifications:

Output	4~20mA, 2 wire (Loop Powered).
Damping	2min Nominal over 90°.
Load Resistance	500Ω @ 24Vdc.
Supply Voltage	12~24Vdc.
Range	4mA = 0°(north), 8mA = 90°(east), 12mA = 180°(south), 16mA = 270°(west).

Voltage Output Specifications:

Output	0~5Vdc, 3 Wire (common ground).
Damping	2min Nominal over 90°.
Power Supply Required	12Vdc.

Potentiometer Output Specifications:

Transducer	Potentiometer 10,000Ω.
Wiper Output	1MΩ in series.

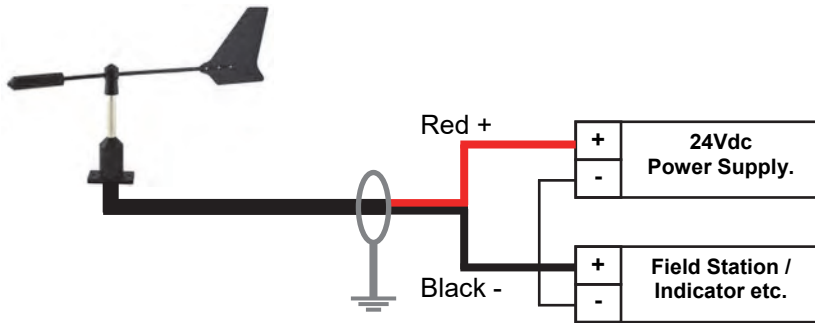
Product Liability. This information describes our products. It does not constitute guaranteed properties and is not intended to affirm the suitability of a product for a particular application. Due to on-going research and development, designs, specifications, and documentation are subject to change without notification. Regrettably, omissions and exceptions cannot be completely ruled out. No liability will be accepted for errors, omissions or amendments to this specification. Technical data are always specified by their average values and are based on Standard Calibration Units at 25C, unless otherwise specified. Each product is subject to the 'Conditions of Sale'.

Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independent fail-safe back-up system must always be implemented.

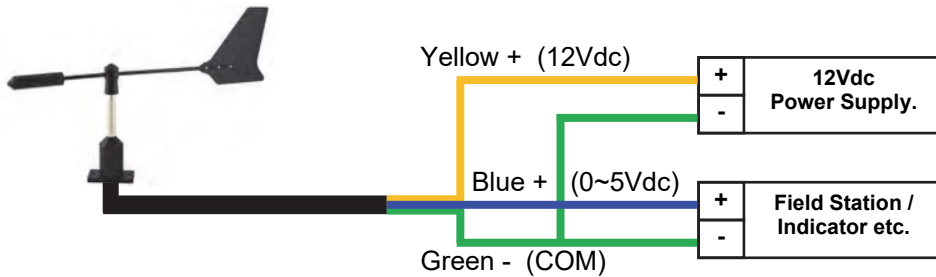
Connections & Wiring.

All wind vane's come fitted with a 5 metre UV resistant cable.

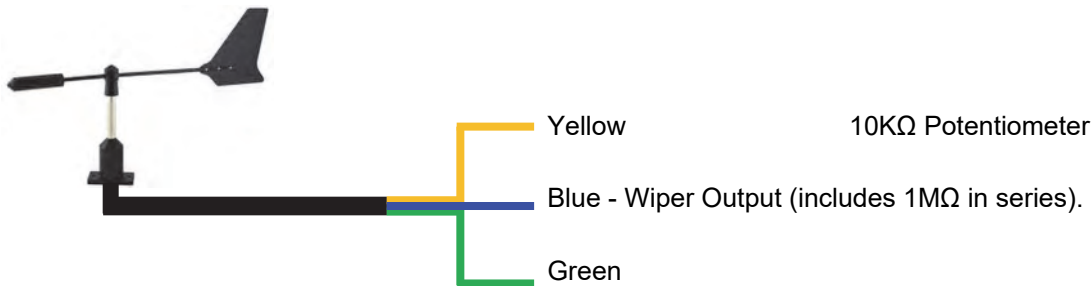
WD-CL 4~20mA Output (Loop Powered).



WD-V Voltage Output.



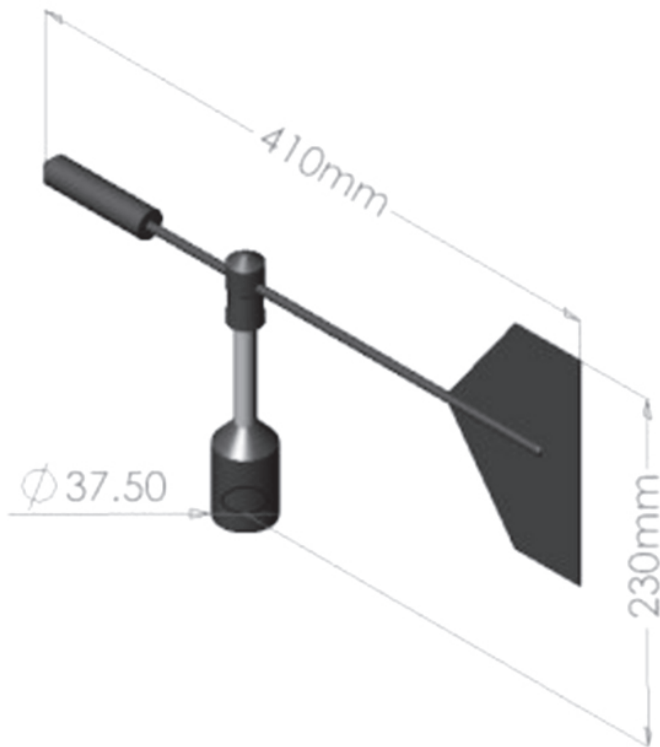
WD-P Potentiometer Output.



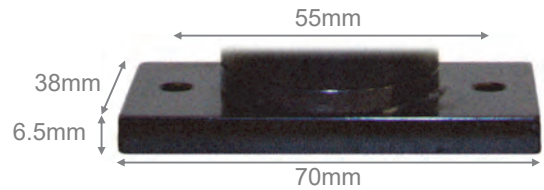
Wiring.

- All cables should be good quality overall screened INSTRUMENTATION CABLE with the screen earthed at one end only.
- Signal cables should be laid a minimum distance of 300mm from any power cables.
- It is recommended that you use power supplies with ungrounded outputs and that you do not ground current loops.
- Lightning arrestors should be used when there is a danger from this source.

Wind Vane Dimensions.



Mounting Plate Dimensions.



Theory of Operation.

Wind direction is defined as the direction of the source of the wind flow measured in degrees from true north in a clockwise increasing angle.

A potentiometer is mounted directly to the Vane shaft and rotates with the shaft. Changes in wind direction are sensed by a balanced vane assembly and this rotation moves the potentiometer. When a voltage (V_{in}) is connected across the potentiometer, the output from the wiper of the potentiometer is a voltage from 0 to V_{in} as a direct function of wind direction. This is converted to an analogue signal by the internal electronics.

Site Selection.

Location of the sensor is critical for accurate wind measurements. The standard exposure of an vane or anemometer on open, level terrain is 10 metres above the ground. Open, level terrain is defined as level ground with no obstruction within 300 metres. In locations where obstructions are not large, such as residential areas, and are distributed more or less evenly, the sensors may be placed at an effective height of $h+10$ metres, where h is the approximated height (in metres) of the various obstacles.

As an example, in a location where trees and buildings reach to about 5 metres, the sensor should be placed on a 15 metre mast to avoid erroneous results. In areas where large obstructions do exist within 300 metres of the sensor, the vane can be mounted raised from the top of a building, however the building itself disturbs the wind flow and must be taken into account before installation.

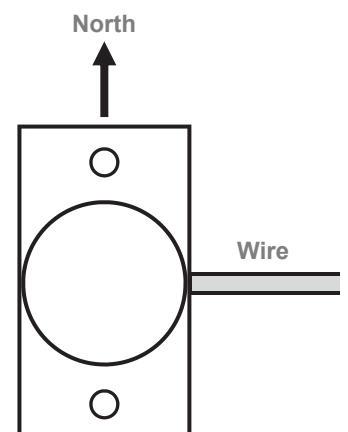
Mounting.

The Vane can be mounted using the two holes in the bottom mounting plates. This allows mounting on any flat LEVEL surface. The Vane can also be used in conjunction with a Anemometer on a single cross-arm to form a wind speed and direction measurement set.

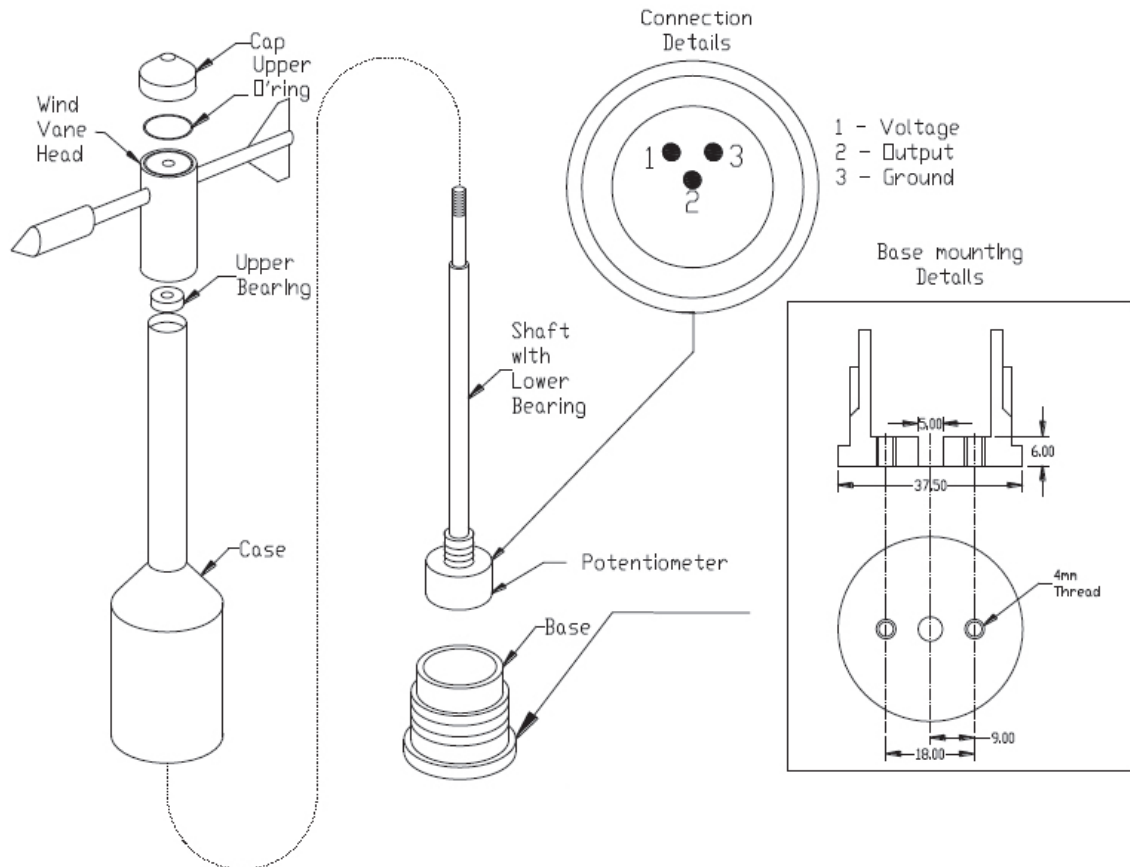
Orientation.

If the wind vane is supplied assembled, it will normally be set up to be mounted with the screw holes north south facing and the wire coming out the east side of the mounting plate. After mounting always check the orientation of the vane and realign if necessary.

View from top.



Wind Vane Assembly Diagram.



Maintenance.

The Vane shaft coupled to the potentiometer should turn freely at all times. Rough motion indicates worn bearings either in the potentiometer or in the top bearing. If the unit is rough or tight, both the potentiometer and top bearing should be replaced. The bearings can be replaced in the field or the unit returned to the factory.

Since corrosion can be a problem, using a non corrosive lubricant such as bees wax on all external parts and all screws and fasteners will make disassembly easier. If the bearings are to be replaced in the field, you will need the Vane Service Kit that includes one bearing and a shaft with the potentiometer and electronics attached.

Follow the steps below to replace the bearings:

- Remove the cap by unscrewing.
- Loosen the Allen screw in the Wind Vane head and remove Wind Vane head.
- Unscrew case from base, being careful of the wires.
- Unplug the cable from the electronics.
- Using the old shaft, carefully knock the upper bearing out.
- Clean all parts if required but do not clean the new bearings.
- Insert new shaft with potentiometer and electronics from the bottom and press hard to push potentiometer into the O ring.
- Plug wire into the new electronics.
- Screw case onto the base.
- Slide the Wind Vane head onto the shaft.
- Realign Wind Vane head as described in Alignment section.
- Replace the cap by screwing it onto the shaft until finger tight.
- Tighten the Allen set screw in the Wind Vane head.

Spin the Wind Vane head by hand to assure smooth operation. The Wind Vane head should coast to a smooth stop. Use great care in assembly of the sensor. Never use excessive force to make parts fit together. Over-tightening of fasteners will either break the fastener or damage the machined threads of the sensor.

Alignment Calibration.

The potentiometer is aligned with north by rotating the case while monitoring the output.

- Remove the cap from the shaft.
- Loosen the Allen screw in the Wind Vane head.
- Rotate the Wind Vane head until it points south.
- Hold the Wind Vane head pointing south while rotating the shaft until the signal output reads 12 milliamps or the connected equipment indicates south.
- Tighten the Allen screw in the Wind Vane head.
- Replace the cap.

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