

FIRST CLASS POTENTIOMETER WINDVANE - W200P/FC

A PRECISION, ROBUST "FIRST CLASS" WINDVANE

Featuring :

- ▶ 10K ohm Long-Life, Precision Potentiometer
- ▶ Low Starting Threshold
- ▶ $\geq 80\text{m/s}$ Max Wind Speed Rating

This "First Class" wind direction sensor incorporates a custom-made precision potentiometer as shaft/fin angle transducer, enabling wind direction to be accurately determined. The potentiometer has the lowest possible torque consistent with long life and reliability, the small gap at north being filled with an insulating material to ensure smooth operation over the full 360°. The vane arm assembly is attached by the unique Porton™ gravity fastener, allowing rapid attachment and release for easy installation and good portability.

The larger fin and longer vane gives this W200P/FC "First Class" model improved performance, and lower threshold, compared to the standard W200P windvane model.

The 10K potentiometer means improved data-logger compatibility, and surge-protection is fitted as standard. Construction is from anodised aluminium alloys and stainless steels for exposed parts. Combined with the hard plastic (upper) plain bearing and precision ball races, the result is a robust instrument with a long service interval which is suitable for permanent exposure to the weather.

- OPTIONS:**
- ▶ HE-4 internal anti-icing heater
 - ▶ 405/405W Series Mounting Adaptors
 - ▶ /SE Severe environment option
 - ▶ MEASNET/IEC Calibration Certificate

INTENDED PRODUCT APPLICATIONS/USE

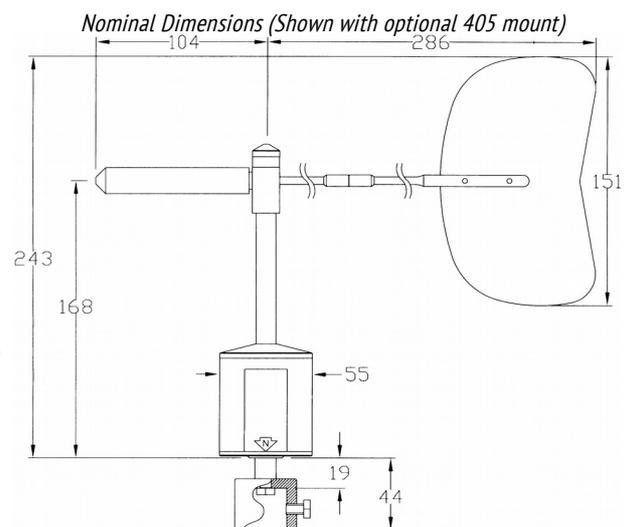
This instrument is intended for use in various meteorological wind measurement applications (including general meteorology and wind-assessment applications), mounted on a mast or pole and connected to a data-logger, meter, signal conditioner or similar measuring equipment.

Specification Summary

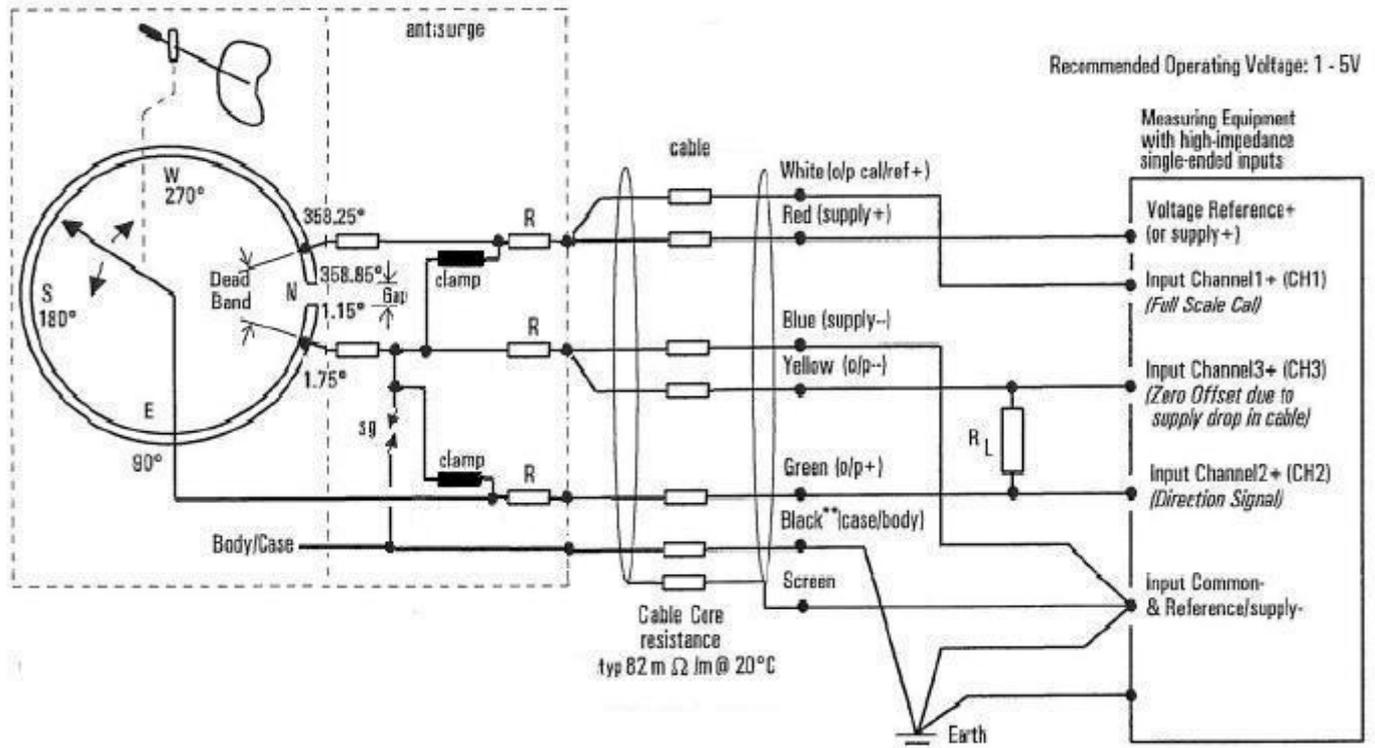
Range of operation:	Threshold: 0.5m/s (1.0 Knot, 1.2mph). The vane will commence movement when aligned at 10° to the flow (as per. ASTM)
Maximum wind speed:	$\geq 80\text{m/s}$ (160 knots, 180mph)
Range:	360° mechanical angle, full-circle continuous rotation allowed
Response:	Damped natural wavelength: 6 m Damping ratio: 0.2 m Recovery distance: 0.9 m Distance constant: 4 m
Repeatability:	typ. $\pm 0.1^\circ$, vane removed and replaced (no measurable backlash movement during use)
Potentiometer life*:	5×10^7 cycles (10 years typical exposure)
Temperature range:	-40 to +70°C
Service interval:	4 to 5 years.
Standard Accuracy:	$\pm 3^\circ$ in steady winds $> 3.5\text{m/s}$
Accuracy after Wind Tunnel Calibration:	$\pm 2^\circ$ obtainable.

Electrical:

Potentiometer resistance:	$10,000\Omega \pm 15\%$ (Temp. Coeff. of Resistance: TBA)
Maximum wiper current:	$10\mu\text{A}$ (10mA absolute max)
Wiper Contact Resistance:	typically upto 400 ohms (variable).
Supply voltage:	1 to 5V (20V absolute max) across the pot track.
Electrical continuity angle:	$357.7 \pm 1.5^\circ$ (2.3° typ. gap at north)
Electrical variation angle:	$356.5 \pm 1.5^\circ$ (3.5° typ. total "deadband")
Resolution:	better than 0.2°
Independent non-linearity:	better than $\pm 0.25\%$ (with zero wiper signal load/current, and potentiometer wiper on the track)
Rotation Sense:	Direction changes from N through E, S, W to N cause the wiper (green wire) to move along the track from Yellow/Blue wire terminal towards the Red/White wire terminal. (Note: Wind direction is "North" when wind is "coming from the North").
Maximum dissipation:	0.5W, -40 to + 20°C (de-rate linearly to 0.25W at 70°C)
Case to pot. Voltage:	72V max (case or screen to any terminal on pot)
Insulation resistance:	$> 50\text{M}\Omega$
Instrument cable:	6 core braided shield, 7/0.2mm, PVC outer sheath. (8 core with /HE4 heater option) - Standard length is 3m, longer cables are available to order.



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Connections: *RED/WHITE = 358.85° end of pot track (ref. voltage)*
BLUE/YELLOW = 1.15° end of pot track (0v/ground)
GREEN = wiper (output signal)
BLACK = Sensor Body
SCREEN = not connected at windvane
Anti-Surge circuit is fitted inside the windvane.

Note:
 - For 5-wire operation, connect as per diagram above.
 - For 3-wire operation, connect RED and WHITE together, and connect BLUE and YELLOW together.

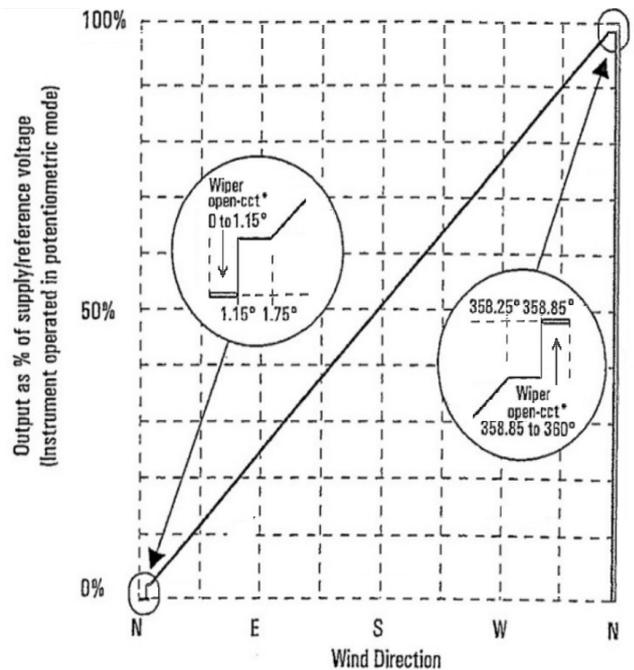
Mechanical:

Mounting: 0.25 inch BSW / UNC screw into base (standard tripod screw)
 - The optional 405 series mounts are shown in photo/diagram,
 - The 405W mount is similar, but includes a "pin" to allow accurate alignment using a cross-drilled hole at the top of the mounting pole. (405 or 405W are not included as standard).

Dimensions/Weight (with 3m cable) packed: 330 x 160 x 80mm / 750g
 Instrument+Fin+3m Cable Weight: < 500g

Notes:
 The potentiometer in this windvane must be used in ratiometric mode, i.e. as a potential-divider, and not as a variable resistance to achieve the correct/specified accuracy/performance.
 * Potentiometer Life: The "life" figure specified is for a typical/general meteorological application. In applications/installations where wind conditions are such that all of the "wear" occurs on a particular sector of the potentiometer track (i.e. when the wind mostly approaches the windvane from the same direction throughout it's life) the potentiometer life may be reduced.

W200P/FC



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All dimensions/weights are approximate.
 Specification and Prices subject to change at any time without notice, contact our sales office for latest pricing and availability details.
E&OE. All information herein is believed to be correct at time of writing but may change without notice.
 Contact us to confirm latest information.
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