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Ultrasonic Wind Sensor WM80

Vaisala Ultrasonic Wind Sensor WM80 offers unparalleled wind speed and wind direction measurement performance with the Vaisala WINDCAP® ultrasonic technology combined with an innovative, robust, and compact form factor. WM80 is designed for operations where uninterrupted wind data is crucial, such as wind turbine control, ship navigation, and dynamic positioning.

Features

- Anodized aluminum structure
- 11 controlled heating elements
- Measurement range up to 90 m/s (220 mph)
- Measurement performance characterized at accredited wind tunnel
- Novel reflector design (patent pending)
- Fully compensates effects of temperature, humidity, and pressure
- Push-pull cable connector
- Maintenance-free
- Optional alignment tool
- Designed and manufactured in Finland

Ruggedness and reliability in harshest conditions

WM80 is designed and heavily tested to operate reliably in extreme conditions - whether tropical or freezing - measuring accurately in heavy precipitation and extreme temperatures. In icy conditions, the 11 automatically controlled heating elements keep the device ice-free, providing excellent heat distribution in the aluminum structure. The highly accelerated life test (HALT) methodology was used during product development to enhance product reliability.

Innovative technology

WM80 uses a novel reflector design that focuses the ultrasonic signal to the transducers providing 10 times stronger signal and exceptionally reliable wind measurements throughout the entire range of 0–90 m/s (0–200 mph). The patent-pending design makes it possible for the signal beam to maintain its position in changing wind conditions.

The measurement reliability and accuracy is further improved by the sensor's ability to withstand rain and condensation. This has been achieved with the use of heating and the tilted design of the transducers, eliminating the need for hydrophobic coating that wears off over time.

Accuracy and data availability

Vaisala has over 50 years of experience in high-quality wind measurements. The measurement accuracy of the renowned WINDCAP® technology has been coupled with a closed form factor for this next generation device. The ultrasound signal in WM80 uses 6 measurement paths instead of the conventionally used 4 measurement paths, providing better measurement accuracy and data availability.

The closed design protects the measurement volume from external disturbances and enables the use of reflectors, while still providing enough room for the signal to travel inside the measurement volume. Even when the wind reaches the sensor at an angle, it can be captured and measured.

Tools for successful setup

Installation and alignment with ready-made Vaisala accessories is easy regardless of whether your installation site is high above the ground or constricted in space. The simple and sturdy cable with a push-pull connector at the device end is fast to use. WM80 does not require maintenance.

Technical data

Wind measurement performance

Measurement rate	10 Hz
Averaging	Up to 3600 s
Wind speed	
Measurement range	0–90 m/s (0–200 mph)
Accuracy	0.1 m/s or 2 % at 0–50 m/s (0–112 mph) 5 % at > 50 m/s (112 mph)
Resolution	0.01 m/s (0.0223 mph)
Wind direction	
Measurement range	0–360°
Accuracy	4° at 1–5 m/s (2–11 mph) 2° at 5–50 m/s (11–112 mph) 5° at > 50 m/s (112 mph)
Resolution	1°

Virtual temperature measurement performance

Accuracy	1.5 °C at 5–10 m/s (11–22 mph) 1 °C at > 10 m/s (22 mph)

Operating environment

Operating environment	Outdoor use
Use in wet location	Yes
Operating temperature	−40 … +60 °C (−40 … +140 °F)
Operating humidity	0–100 %RH, condensing
Maximum wind speed	100 m/s (224 mph)
Maximum operating altitude	4000 m (approx. 13 100 ft)
Pollution degree	2
IP rating	IP66 and IP67
UL 50E/NEMA rating	Type 4
Storage temperature	−40 … +85 °C (−40 … +185 °F)
Storage humidity	0–100 %RH, non-condensing
Heater control	Automatic

Mechanical specifications

Weight, sensor	650 g (22.9 oz)
Connector	10-pin push-pull connector
Materials	Anodized aluminum (6026LF marine and offshore grade)
Installation	With mounting adapter to hollow pole

Compliance

EU directives and regulations	LVD, EMC, RoHS
Electromagnetic compatibility (EMC)	IEC/EN 61326-1, industrial environment IEC/EN 61000-6-2 IEC/EN 61000-6-4
Electrical safety	IEC/EN/AS/UL/CSA-C22.2 61010-1
Compliance marks	CE, China RoHS, FCC, ICES, RCM

Data communication

Data communication interface	RS-485
Communication protocols	NMEA 0183 ASCII Modbus RTU
Measurement unit, wind speed	m/s (NMEA, ASCII, Modbus) knots (NMEA, ASCII)
Configuration interface	Vaisala Insight PC Software
Output update interval	0.1–600 s, configurable

Analog outputs

Wind speed and wind direction	2 × 4–20 mA
Output type	Sourcing
Maximum load resistance	300 Ω

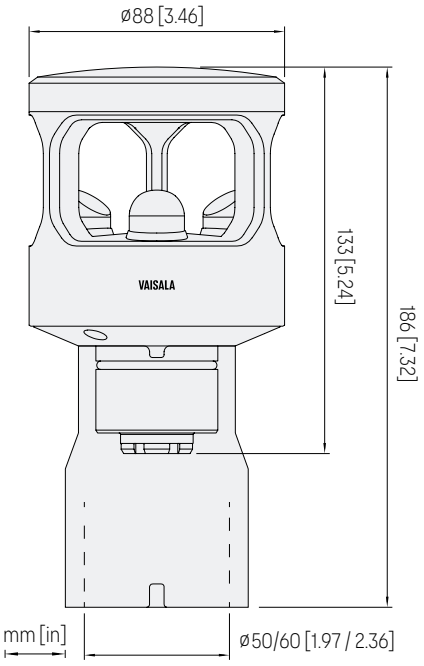
Powering

Operating voltage	24 V DC, +30 / −25 %
Overvoltage category	CAT I
Maximum current	11 A

Options and accessories

50-mm mounting adapter, standard	For pole with outer diameter 48–51 mm (1.89–2.01 in)
50-mm mounting adapter, maritime use	For pole with outer diameter 48–51 mm (1.89–2.01 in)
60-mm mounting adapter, standard	For pole with outer diameter 58–61 mm (2.28–2.40 in)
Alignment tool [1]	Compatible with 3rd-party laser tool [2]
USB configuration cable	For use with Vaisala Insight PC Software

1) *For use as such as a sighting tool for device alignment or in combination with a selected laser pointer tool.*
2) *Not provided by Vaisala, Laserboy II product by BMI Messzeuge.*



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