Vaisala WINDCAP® Ultrasonic Wind Sensor WMT50

Economical Wind Measurement

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WMT50 Ultrasonic Wind Sensor for Accurate and Stable Measurement

The Vaisala WINDCAP® Ultrasonic Wind Sensor is designed for demanding applications where stable and inexpensive wind measurements are required.

Features/Benefits

- Measures horizontal wind speed and wind direction
- No moving parts
- Proven Vaisala WINDCAP® Sensor technology for first class accuracy and stability
- Triangular design ensures excellent data availability and 360° measurement accuracy
- Heated model available
- Compact, durable and robust
- Low power consumption
- Variety of serial data outputs available
- Maintenance-free
- Corrosion resistant, IP65 housing
- Applications: meteorology, wind energy, marine, transport, pollution control, agriculture

Proven Vaisala performance

The Vaisala WINDCAP® Ultrasonic Wind Sensor WMT50 incorporates Vaisala' s decades of experience in wind measurement using ultrasound to determine horizontal wind speed and direction.

Accurate measurement

The triangular design in the WMT50 solves the mechanical shading of transducers on measurement paths. This ensures accurate wind measurement from all wind directions, without blind angles or corrupted readings.

The WMT50 is free from problems the conventional mechanical sensors often have such as inertia, friction, time-constant, over-speeding, and starting threshold.

Easy settings

The WMT50 is supplied pre-configured from the factory. With the Vaisala Configuration Tool you can change the settings, such as averaging times, output mode, update intervals, measured variables, and message contents.

Heating

Wind can also be measured in freezing weather and during snowfall, thanks to the optional heating available in the WMT50.

As the heating circuit is separate from the operational power, separate supplies can be used. Heating is switched on automatically only at low temperatures.

Flexible output options

The WMT50 communicates with the host via a bi-directional serial line. It offers a choice of four configurable serial interfaces: SDI-12, RS-232, RS-485, and RS-422. The screw terminals inside the lower part of the transmitter are easy to access.

An industry standard 8-pin M12 connector is optionally available.

Maintenance
The WMT50 has no moving parts, thus making it superior to the conventional mechanical wind sensors. It is also very economical; there is no need for field calibration or maintenance.

Low power consumption
The WMT50 has a very low power consumption; during the idle mode the device typically consumes less than 0.1 mA.

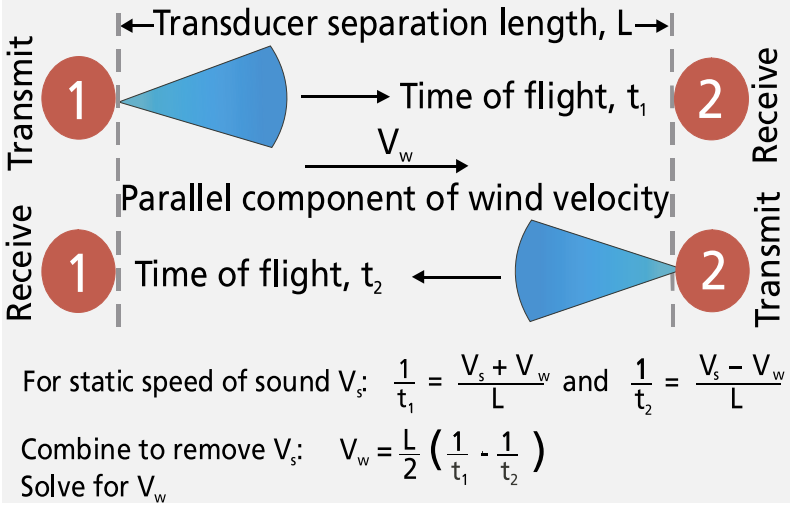
The WMT50 has a wide supply voltage range, 5.3 ... 30 VDC, which is applicable both to the operational and heating power.

Easy installation
The WMT50 can be mounted either on top of a 30 mm pole mast (or 3/4" pipe when using optional mounting adapter) or on a cross arm.

The WMT50 is easy to install - it only needs to be mounted, aligned, and connected to the host system and the power source.

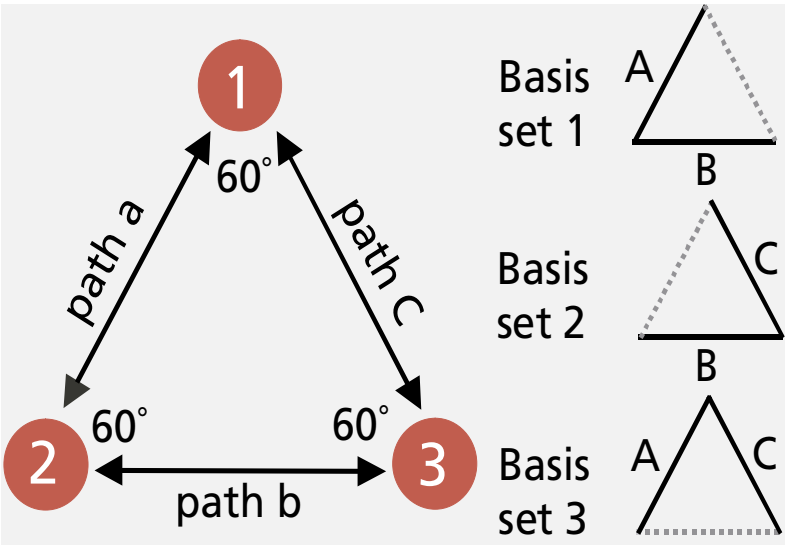
When using the optional mounting adapter, no new alignment is required, not even after re-installation of the sensor.

Operating Principle



Time-of-flight for a sonic impulse from the transmit transducer to the receive transducer is determined for both directions. Simple algebra allows for solving the parallel component of wind velocity independently of the static speed of sound.

Vaisala WINDCAP® Sensor



The equilateral triangle configuration of the three transducers provides three possible sets of basis vectors. The combinations yield bi-directional measurements on the paths labeled A, B, and C. These measurements are used to determine the wind velocity components parallel to each of the three paths.

Technical Data, Dimensions

Wind

Wind speed	
Range	0 ... 60 m/s
Response time	0.25 s
Available variables	average, minimum, maximum
Accuracy	
0 ... 35 m/s	±0.3 m/s or ±3 % whichever is greater
35 m/s ... 60 m/s	±5 %
Starting threshold	virtually zero
Output resolution	0.1 m/s (km/h, mph, knots)
Units available	m/s, km/h, mph, knots
Wind direction	
Azimuth	0 ... 360°
Response time	0.25 s
Available variables	average, maximum and minimum
Accuracy	±3°
Starting threshold	virtually zero
Output resolution	1°
Measurement frame	
Averaging time	1 ... 3600 s (=60 min), at one second steps on the basis of samples taken at 4 Hz rate (configurable)
Update interval	1 ... 3600 s (=60 min), at one-second steps

General

Self-diagnostics	separate supervision message, unit/status fields to validate measurement quality
Start-up	automatic, <10 seconds from power on to the first valid output
Serial data interfaces	SDI-12, RS-232, RS-485, RS-422
Communication protocols	SDI-12 v1.3, ASCII automatic & polled, NMEA 0183 v. 3.0 with query option
Port	
Baud rate	1200 ... 115 200
Operating temperature	-52 ... +60 °C (-60 ... +140 °F)
Storage temperature	-60 ... +70 °C (-76 ... +158 °F)
Dimensions	
height	139 mm (5.47")
diameter	127 mm (5.00")
weight	510 g (1.12 lbs)
Housing	IP65

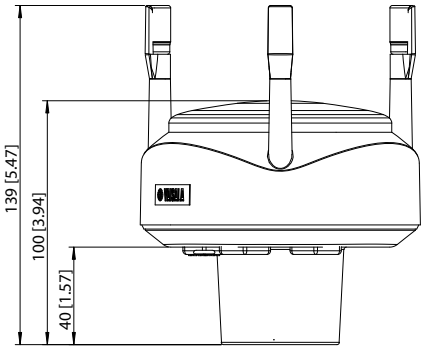
Power supply

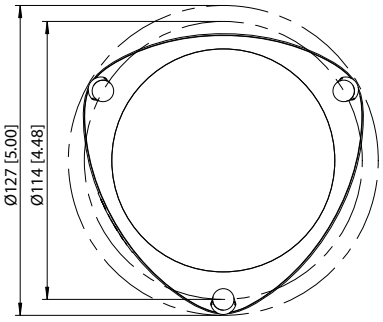
Input voltage	5.3 ... 30 VDC
Power consumption on average	
minimum	0.07 mA at 12 VDC
maximum	13 mA at 30VDC
typical	3 mA at 12 VDC (default measuring intervals)
Heating voltage options	DC, AC, full wave rectified AC

Electromagnetic compatibility

Complies with EMC standard: EN61326-1; 1997 + Am1: 1998 +AM2:2001 Generic Environment

Dimensions





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Reliable.

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