

WMT700 WINDCAP® Ultrasonic Wind Sensors

Vaisala WINDCAP® Ultrasonic Wind Sensor WMT700 Series is a robust and reliable ultrasonic anemometer. It measures surface wind, which is one of the key parameters for meteorology and aviation.

The WMT700 Series meets the updated - WMO-No.8 guide, 7th edition - and ICAO requirements.

Accurate and Maintenance-free

The WMT700 series has a durable full steel structure with welded arms, clear north indication, and one-point, quick bayonet-style mounting. It has no moving parts, and it is resistant to contamination and corrosion.

It measures accurately and produces reliable data in demanding wind conditions and climates without periodic or on-demand maintenance. Self-diagnostics and validation of measurement are standard features. The 60-min. average is available for polar coordinates and vectors.

Measurement Based on Ultrasound

The WMT700 series uses ultrasound to determine horizontal wind speed and direction. The measurement is based on transit time, the time it takes for the ultrasound to travel from one transducer to another, depending on the wind speed.

The transit time is measured in both directions for a pair of transducer heads. Using two measurements for each of the three ultrasonic paths at 60° angles to each other,

the WMT700 computes the wind speed and direction.

The wind measurement is calculated in a way that completely eliminates the effects of altitude, temperature and humidity.

Standard and Heated Models

The sensor operates with a power supply of 9 ... 36 VDC. For the heated model, an additional heating power supply of 24 ... 36 VDC is required. Thermostatically controlled heaters in the transducer heads and arms of the heated model prevent build-up of freezing rain or snow.

In addition, accessories are available for mounting and connecting the WMT700. To minimize interference from birds, a bird prevention kit is available.



The WMT700 Series has been designed for professional use.

Features/Benefits

- WMO and ICAO compliant
- Data output rate 0.25 s
- Self-diagnostics and validation
- Bird prevention kit
- Stainless steel structure
- Maintenance-free
- Patented three-transducer layout provides accurate data
- Data format outputs: polar coordinates and vectors
- Fully compensates effects of temperature, humidity and pressure
- Measurement range up to 75 m/s
- Heating up to 150 W
- Max. 3600-second average
- IP66 and IP67
- Robust EMC design
- Can be mounted upside down
- Large transducers provide high ultrasound power
- Wind gust calculated according to the WMO guidelines
- US National Weather Service relies on Vaisala WINDCAP® technology

Technical data

Wind speed

Measurement range	
701	0 ... 40 m/s
702	0 ... 65 m/s
703	0 ... 75 m/s
Accuracy	+/- 0.4 m/s or 3 % of reading, whichever is greater
Starting threshold	0.01 m/s
Resolution	0.01 m/s
Response time	250 ms

Wind direction

Measurement range	0 ... 360°
Accuracy	+/- 2°
Starting threshold	0.1 m/s
Resolution	1°
Response time	250 ms

Outputs

Communication media	
communication 1	RS485, RS422, RS232, SDI-12
communication 2	RS485
analog 1 wind speed	voltage, current, frequency
analog 2 wind direction	voltage, current, potentiometer
Message format	WMT70, ASCII, NMEA, SDI12, ASOS, MES 12, customized
Baud rate	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Available averages	max. 3600 s
Readout up-date interval	max. 4 Hz
Units	
digital outputs	m/s, knots, mph, km/h
analog outputs	V, mA, Hz
Operating mode	automatic or poll mode
Virtual temperature	degrees Celcius

General

Heating ¹⁾	0 or 30 or 150 W
Temperature	-
operating ¹⁾	-10 ... +60 or -40 ... +60 or -55 ... +70 °C
storage	-60 ... +80 °C

¹⁾ For freezing conditions select appropriate combination of heating and temperature ranges.

Operating voltage	9 ... 36 VDC, max. 40 VDC
Heating voltage	24 ... 36 VDC, max. 40 VDC
Heating power supply requirement for transducers	40 W
transducers and arms	200 W
IP class	IP66 and IP67
Material	
body, arms	stainless steel
transducer heads	silicone
connector housing surface	nickel plated brass
Dimensions	
height	350 mm
width	250 mm
depth	285 mm
Weight	2 kg
Approvals	CE, CE-TICK

Test standards

Wind	ISO 16622
EMC	IEC61000-4-2 ... 6; CISPR 22
Environmental	IEC60068-2-1,2,6/34,30,31,67,78; IEC60529; VDA 621-415
Maritime	Lloyd's requirements, IEC 60945

Accessories

2-m cable with cable connector, open leads on one end	WMT70CABLE1
10-m cable with cable connector, open leads on one end	WMT70CABLE2
10-m MAWS cable	WMT70CABLE3
10-m AWS520 cable	WMT70CABLE4
Adapter cable for supporting WS425 serial communication protocols	WMT70CABLE5
Adapter cable for supporting WS425 serial analog output	WMT70CABLE6
2-m serial connection cable	WMT70CABLE8
10-m serial connection cable	WMT70CABLE9
Mounting kit for WMT700	WMT70FIX
Verifier	WMT70VERIFIER
Bird prevention kit	WMT70BIRDKIT

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