

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 | ■ Measurement range up to 75 m/s |
| ■ Data output rate 0.25 s | ■ Heating up to 150 W |
| ■ Self-diagnostics and validation | ■ Max. 3600-second average |
| ■ Bird cage | ■ IP66 and IP67 |
| ■ Stainless steel structure | ■ Robust EMC design |
| ■ Maintenance-free | ■ Can be mounted upside down |
| ■ Patented three-transducer layout provides accurate data | ■ Large transducers provide high ultrasound power |
| ■ Data format outputs: polar coordinates and vectors | ■ Wind gust calculated according to the WMO guidelines |
| ■ Fully compensates effects of temperature, humidity and pressure | ■ 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	+/-0.2 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 interface	
communication (data)	RS485, RS422, RS232, SDI-12
communication (service)	RS485
analog output wind speed	voltage, current, frequency
analog output wind direction	voltage, current, potentiometer
Communication profile	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 W or 30 W or 150 W
Temperature	
operating ¹⁾	-10 ... +60 °C or -40 ... +60 °C or -55 ... +70 °C
storage	-60 ... +80 °C
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

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

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

Verifier	WMT70Verifier
Bird cage	WMT70BirdKit
Bird perch	WS425BirdPerch
Cable connector	WMT70Conn
Cable 2 m, cable connector, open leads on one end	227567SP
Cable 10 m, cable connector, open leads on one end	227568SP
RS485 Cable 2 m, cable connector, open leads on one end	228259SP
RS485 Cable 10 m, cable connector, open leads on one end	228260SP
MAWS cable 10 m	227565SP
AWS520 cable 10 m, shield connected to PE pin	229807SP
AWS520 cable 10 m, shield not connected to PE pin	227566SP
Adapter cable for WS425 serial	227569SP
Adapter cable for WS425 analog frequency output	227570SP
Adapter cable for WS425 analog voltage output	227571SP
Fix70 (suitable also for inverted mounting)	WMT70FixSP
FIX30	WS425Fix30
FIX60	WS425Fix60
Adapter for FIX70	228869
Adapter for FIX30/FIX60	228777
Cross-arm	WMT70CROSSARM

VAISALA

For more information, visit
www.vaisala.com or contact
 us at sales@vaisala.com

Ref. B210917EN-C ©Vaisala 2010
 This material is subject to copyright protection, with all
 copyrights retained by Vaisala and its individual partners. All
 rights reserved. Any logos and/or product names are trademarks
 of Vaisala or its individual partners. The reproduction, transfer,
 distribution or storage of information contained in this brochure
 in any form without the prior written consent of Vaisala is strictly
 prohibited. All specifications — technical included — are subject
 to change without notice.

