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 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. Also, sensor body heating is available.

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 cage
- Stainless steel structure
- Maintenance-free
- 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 250 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 and the FAA rely 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	±0.1 m/s or 2% 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	0.01°
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 Standard and Extended, SDI-12, 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
frequency outputs	Hz (push-pull, pull-down, pull-up)
Operating mode	automatic or poll mode
Virtual temperature	degrees Celsius

General

Heating[1]	0 W or 30 W or 150 W or 250 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. 40VDC
Heating power supply requirement for	
transducers	40 W
transducers and arms	200 W
transducers, arm and body	350 W
IP class	IP66 and IP67

Material

body, arms	stainless steel AISI316
transducer heads	silicone
mounting kit	stainless steel AISI316
connector housing surface	nickel plated brass
Dimensions	
height	348 mm
width	250 mm
depth	285 mm
Weight	1.8 kg
Approvals	CE, CE-TICK

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

Test Standards

Wind	ISO16622; MEASNET
EMC	IEC61000-4-2 ... 6; CISPR22
Environmental	IEC60068-2-1,2,6/34,30,31,67,78; IEC60529; VDA 621-415
Maritime	DNV; Lloyd's requirements, IEC60945

Accessories

Verifier	WMT70Verifier
Bird cage	WMT70BirdKit
Bird perch	WS425BirdPerch
Cable tightener tool	237888SP
Junction Box with Cable 2 m (connected)	ASM210719SP
Cable 2 m (connector and open leads)	227567SP
Cable 10 m (connector and open leads)	227568SP
Cable 15 m (connector and open leads)	237890SP
RS485 Cable 2 m (connector and open leads)	228259SP
RS485 Cable 10 m (connector and open leads)	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
Adapter for FIX70	228869
Fix70 (suitable also for inverted mounting)	WMT70FixSP
Mounting adapter 60 mm POM	WMT700FIX60-POM
Mounting adapter 60 mm RST	WMT700FIX60-RST
Adapter for FIX30/FIX60	228777
FIX30	WS425Fix30
FIX60	WS425Fix60

TYPE APPROVED PRODUCT
CERTIFICATE NO.: A-11440