

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 |



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

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