



# Ultrasonic Anemometer 2D

The Ultrasonic Anemometer 2D is designed to detect the horizontal components of wind velocity and wind direction as well as the virtual temperature in two dimensions.







**Digital / analogue transmission of the measured values**



**The highest precision and accuracy**



**More than 35 measurement values available**



**Automatic heating of the sensor arms**

## Range of application

Due to its very short measurement intervals, the instrument is ideal for the inertia free measurement of gusts and peak values. The accuracy of the air temperature measurement (virtual temperature) surpasses that of the classic method where the temperature transmitter is used in a weather and thermal radiation shield. The measured data are available as analogue signals or as a data telegram over a serial interface. The anemometer is equipped with an automatic heating for the instrument body as well as for the sensors so that the measuring results, in case of critical ambient temperatures, are not affected by ice, snow or rainfall.

## Mode of operation

The Ultrasonic Anemometer 2D consists of 4 ultrasonic

transformers, in pairs of 2 which are opposite each other at a distance of 200 mm. The two measurement paths thus formed are vertical to each other. The transformers act both as acoustic transmitters and acoustic receivers. The respective measurement paths and their measurement direction are selected via the electronic control. When a measurement starts, a sequence of 4 individual measurements is performed in all 4 directions of the measurement paths at maximum speed. The measurement directions (acoustic propagation directions) rotate clockwise, first from south to north, then from west to east, from north to south and finally from east to west. The mean values are formed from the 4 individual measurements of the path directions and used for further calculations. The time required for a measuring sequence is approx. 2.5 msec at +20 °C at the maximum measuring speed.

## Wind speed

<b>Measuring range</b>	0 to 85 m/s, 0 to 165 kt (starting threshold: 0.01 m/s or 0.02 kt)
<b>Resolution</b>	0.1 m/s, 0.2 kt (standard) 0.01 m/s, 0.02 kt (user defined)
<b>Accuracy</b>	± 0.1 m/s rms (< 5 m/s) ± 2 % rms (5 to 85 m/s)

**Wind direction**

<b>Measuring range</b>	0 – 360°
<b>Resolution</b>	1° 1° (standard) < 1° (user defined)
<b>Accuracy</b>	± 1° @ WS 1 to 60 m/s ± 2° @ WS 60 to 85 m/s

**Virtual temperature**

<b>Measuring range</b>	-50 °C to +80 °C
<b>Resolution</b>	0.1 K
<b>Accuracy</b>	± 0.5 K @ WS < 35 m/s

**Data output digital**

<b>Interface</b>	RS-485 / RS-422
<b>Baudrate</b>	1200 to 921600 Baud
<b>Data values</b>	instant. values, average values, standard deviation
<b>Output range</b>	1 per 10 msec up to 1 per 60 sec
<b>Status signals</b>	heating, Meas section error, Temperature of meas section

**Data output analog**

<b>Wind speed</b>	0 to 20 mA 4 to 20 mA 0 to 10 V 2 to 10 V
<b>Stromausgang</b>	max. 400 Ω
<b>Wind direction</b>	0 to 20 mA 4 to 20 mA 0 to 10 V 2 to 10 V
<b>Voltage output</b>	min. 4000 Ω
<b>Resolution</b>	16 bit

**Data input analog** (alternative)

<b>Channels</b>	3
<b>Resolution</b>	16 bit

**Operating voltage**

<b>Electronic</b>	8 to 60 V DC or 12 to 42 V AC / 2.5 W
<b>Heating</b>	24 V AC / DC, typ 80 W

**Heating**

<b>Heated components</b>	sensor arms
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**General**

<b>Bus operation</b>	up to 98 sensors
<b>Electr. connection</b>	8 pol. connector
<b>Mounting</b>	on a mast tube 1,5"
<b>Housing</b>	stainless steel (V4A) AISi316Ti
<b>Protection</b>	IP 67
<b>Dimension</b>	diameter 424 mm x 287 mm
<b>Weight</b>	2.5 kg