

## Ultrasonic Anemometer 3D



### Description

Sensor for the inertia-free measurement of the three-dimensional wind speed and wind direction, and of the sonic temperature. As the sensor contains no moving parts, it is maintenance-free.

Three opposite pairs of ultrasonic transducers measure all three components of the wind vector. A built-in processing unit converts the raw signals into analog voltage and current loop signals.

The serial RS485 port allows direct connection to data loggers (e.g., **blueberry NDL485** or **blueberry COMPACT**). In addition to the wind vector, the sensor provides the virtual temperature, turbulence, covariances, shearing stress speed, shearing stress, sensible heat flow, vertical pulse flow, Monin Obukov length and some other parameters that can be used for estimations of atmospheric stability.

The electrical heating prevents the sensor from getting blocked by icing.

### Technical Data

#### Sensor

Sensing element .....	Ultrasonic transducers
Data processing .....	Microprocessor

#### Outputs

Analog .....	0..85 m/s	= 0/2..10 V or 0/4..20 mA
	0..360°	= 0/2..10 V or 0/4..20 mA
Digital.....	RS422/485 full / half duplex, 4800..115200 baud	

#### Resolution

Wind speed.....	0.1 m/s
Wind direction .....	1°
Sonic temperature .....	0.1 K

#### Accuracy

Wind speed.....	0.5 m/s ± 0.1 m/s
	5..35 m/s ± 1%, 35..65 m/s ± 2%, 65..85 m/s ± 3%
Wind direction .....	± 1° at 1..35 m/s
Sonic temperature .....	± 0.5 K
Starting threshold.....	0.1 m/s
Internal sampling rate .....	400 Hz at 25 °C

#### Output Rate

Analog signals .....	100 ms
Digital.....	100 ms..25 s, user selectable

## Power Supply

Supply voltage..... 8..78 VAC/DC  
 Power consumption ..... typ. 1.5 W

## Heating

Heating power ..... max. 150 W, electronically controlled  
 Supply voltage..... 24 VAC/DC  $\pm$  15%  
 Current consumption ..... max. 6 A

## Casing

Material ..... stainless steel  
 Protection class..... IP 67 in upright position, properly mounted on a pipe  
 Dimensions .....  $\varnothing$ 300 x 600 mm  
 Weight ..... 3.4 kg  
 Mounting..... the sensor mounts on a standard 1 1/2 inches pipe  
 with  $\varnothing$ 49 mm outside diameter and  $>$  $\varnothing$ 35 mm inside  
 diameter

## Electrical Connection

Connector (at the sensor) ..... 8 pin circular connector

## Environmental Conditions

Operating temperature..... -40..+70 °C  
 Relative humidity..... 0..100%  
 Maximum wind speed..... 85 m/s

