

Ultrasonic Wind Sensor uSonic-3 Omni RX



Data Sheet



- High precision 3D sonic anemometer
- Accurate measurement of 3 wind components
- Optional online calculation of turbulence parameters
- Flow distortion correction
- Robust stainless-steel construction
- No moving parts, no maintenance
- Ice protection by efficient sensor heating with smart control function
- Automatic system monitoring
- Internal data logger
- Ethernet interface
- Measuring range
0 ... 60 m/s, -40 ... +70 °C
- Easy operation via graphical user interface

Price competitive 3D wind and turbulence sensor

The 3D wind and turbulence sonic sensor uSonic-3 Omni RX has proven reliable operation, outstanding flexibility, high rated system performance and user-friendly operation in widespread applications and under all weather types. It delivers raw or mean values of wind components x, y, z including acoustic temperature by interface RS422 and Ethernet or as analogue output.



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Typical Applications

- Meteorological systems
- Dispersion parameters for pollution modeling
- Air quality studies
- Eddy correlation fluxes
- Wind shear detection
- Wake vortex monitoring
- Meteorological networks
- Research stations
- Industrial sites
- Airports
- Marine and offshore platforms
- Wind energy
- Sport events

Graphical user interface



The uSonic-3 Omni shows a perfect linearity between 0 ... 60 m/s and high resolution in time (max. 25 Hz) and data (0.01 m/s, 0.01 K). Absence of inertial masses allows even precise turbulence measurements. Flow distortion effects are compensated by wind tunnel calibration (2D).

With no moving parts the uSonic-3 Omni avoids the shortcomings of mechanical wind sensors: no bearings subject to wear and tear, no shift of calibration parameters, no thresholds, no time delays. Comprehensive online data quality checks and automatic system status reports provide for easy operational use and high system availability.

Optional extensions are sensor head heating with smart heating functions, analogue data output, online turbulence calculation, and a reinforced central rod (uSonic-3 Omni HD – Heavy Duty) for extra stability.

Live data display



Ambient conditions	-40 ... +70 °C, 5 ... 100 %
Average time / number	1 ... 3600 s / 1 ... 65365 samples
Sampling rate	0.1... 25 Hz
Measurement ranges	0 ... 60 m/s, -40 ... +70 °C
Accuracy (max. dev.) wind speed / wind direction	0.1 m/s or 2 % / 2° @ 5 m/s horizontal wind speed
Resolution	0.01 m/s, 0.1°, 0.01 K
Output data set	x, y, z, T / vel, dir, z, T
Averaging method	scalar, vectorial
Output protocols	ASCII framed with a checksum, binary
Data output	asynchronous, TTL-triggerable or polling, time synchronized by NTP/PTP
Turbulence module (option)	online calculation (means, variances, covariances, heat flux, momentum flux, Monin-Obukhov length, wind gusts, etc.)
Internal memory	approx. 7 GB (63 GB on request)
Power supply	12 ... 36 VDC / 2.5 W (without options)
Sensor head heating (option)	24 VDC / max. 55 W (on, off, auto, smart-auto)
Analogue output (option)	4 x 0-5 V, ±5 V, 0-10 V, ±10 V, 0-2,5 V, ± 2,5 V
Communication	RS422 and Ethernet RJ45 (standard), or RS422 and analogue output, RS485 on request, transfer rate 300 ... 115200 baud
Firmware	Firmware-update possible by user
Weight	2.8 kg
Protection class	IP 67

Mechanical drawing

