senseca

HD2003... series

3-AXIS ULTRASONIC ANEMOMETER WITH ADDITIONAL TEMPERATURE, BAROMETRIC PRESSURE AND RELATIVE HUMIDITY

INTRODUCTION

The HD2003 are cutting-edge three-axis ultrasonic anemometers designed to provide precise, real-time measurement of wind speed, direction, and other key environmental factors. These high-performance instruments are ideal for a wide range of applications, from meteorology and aviation to construction and industrial safety. With the HD2003, you also get additional features such as temperature, relative humidity, and barometric pressure measurements, making it the ultimate solution for comprehensive environmental monitoring.
Whether you need to monitor wind conditions at a remote location or integrate high-quality data into your weather station, the HD2003 series delivers exceptional accuracy, reliability, and durability in any environment.

FEATURES

Comprehensive Measurement Capabilities

Measure wind speed, direction, U-V-W Cartesian components, wind gust, sonic speed and temperature, air temperature, relative humidity, and barometric pressure.

Maintenance-Free Operation

With no moving parts, the HD2003 requires minimal maintenance, reducing operational costs and ensuring long-term reliability.

Self-Diagnosis and Error Reporting

The built-in self-diagnosis feature ensures that the HD2003 operates flawlessly by automatically checking for errors and providing detailed reports, so you can trust your measurements at all times.

Rugged and Reliable Construction

Designed to operate continuously in extreme conditions, the HD2003 features a robust, weather-resistant structure that ensures reliable performance, even in harsh environments. Optionally, built-in heating device for the sonic transducers, preventing ice buildup and ensuring accurate measurements even in sleet or snow.

Low Power Consumption

The HD2003 is energy-efficient, making it ideal for long-term deployment in remote areas or locations with limited power sources.

CONFIGURATION & MEASUREMENT

Multiple Output Options

Up to 5 analogue outputs in current or voltage formats, with varying ranges, and up to 12 extended outputs for more complex measurement setups.

Advanced Communication Interfaces

Equipped with 5 digital communication interfaces (RS232, RS422 on request, RS485 MODBUS-RTU, RS485 Multidrop, and AoXnd), the HD2003 anemometers ensure seamless integration with your existing system, enabling data acquisition and flexible output.

Easy Setup and Configuration

With intuitive setup and the ability to configure output data string emission frequencies and averaging periods (1-60 seconds or minutes), you can tailor the anemometer to your specific needs.

ALL-IN-ONE ENVIRONMENTAL MONITORING
Measure wind speed, direction, temperature, humidity, pressure, and more with high precision, in one device.

MULTIPLE OUTPUT OPTIONS
Choose from up to 5 analogue and 12 extended outputs for seamless integration into your system.

RUGGED AND RELIABLE DESIGN
Designed to withstand extreme weather conditions with minimal maintenance requirements.

AUTOMATIC PERFORMANCE MONITORING
Ensure consistent accuracy with automatic error detection and detailed reporting.

General specifications

Output Quantities

anemometric	wind speed and direction, U-V-W components, wind gust, sound speed, sonic temperature
meteorological	pressure, temperature, relative humidity
heading	compass with magnetic azimuth

Digital Outputs

quantities	anemometric and compass. pressure, temperature, relative humidity
communications	RS232, RS422 full-duplex (on request when ordering), Modbus-RTU, RS485 Multidrop and AoXnd half-duplex
baud rate	9600...115200 bit/sec
output rate	normal mode (Slow): 1...3600 sec digital high frequency (Fast): fixed 50 Hz

Analog Outputs

quantities	5 to be selected from output quantities
range	0...20 mA, 4...20 mA, 0...1 V, 0...5 V, 0...10 V, 1...5 V
resolution	14 bits max

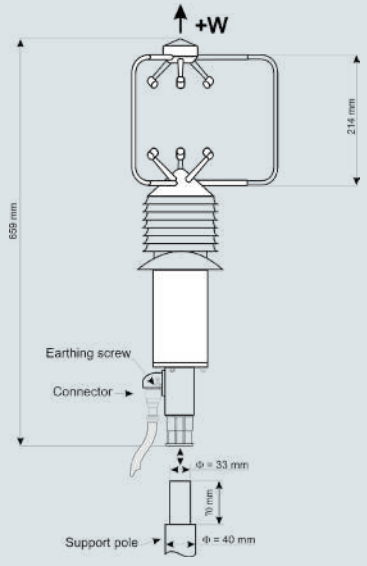
Analog Outputs Extended *(optional with additional ICP DAS I7024® module)*

quantities	up to 12 to be selected from output quantities
range	0...20 mA, 4...20 mA, 0...5 V, 0...10 V
resolution	14 bits
output rate	normal mode (Slow): 1 ÷ 3600 s analog high frequency (Fast) : from 5 to 20 Hz depending on the baud rate

Power Supply

range	12...30 Vdc
power	< 2 W (typically: 110 mA @ 15 Vdc) < 6 W models with heaters and environment temperature not lower than -10 °C
Operating Conditions	-40...+60 °C / 0...100% RH up to 300 mm/h of precipitation
Weight	2.1 kg

Dimensions



Ordering codes

HD2003	3-axis ultrasonic anemometer
HD2003R	3-axis ultrasonic anemometer with integrated heating option

The anemometer is supplied with 26-pole female free connector (only if the optional cable is not ordered). The cable must be ordered separately.

Measurement specifications

Wind Speed

unit	m/s, cm/s, km/h, knots, mph
range	0...70 m/s (252 km/h)
resolution	0.01 m/s
accuracy	± 1% of reading

Wind Direction

range	azimuth: 0...360° elevation: ± 60°
resolution	0.1°
accuracy	± 1

Sound Speed

range	300...380 m/s
resolution	0.01 m/s
accuracy	± 1% of reading

Sonic Temperature

range	-40...+60 °C
resolution	0.1 °C
accuracy	± 1 °C

Compass

range	0...3600 /10°
resolution	0.1°
accuracy	± 1°

Pressure

sensor	piezoresistive
range	600...1100 mbar
resolution	0.1 mbar
accuracy	± 0.4 mbar @ 20 °C
temperature effects	± 0.8 mbar between -40 °C and +60 °C
long-term stability	1 mbar in 6 months @ 20 °C

Temperature

sensor	Pt100
range	-40...+60 °C
resolution	0.1 °C
accuracy	± 0.2 °C, ± 0.15 % of reading

Relative Humidity

sensor	capacitive
range	5...98 % RH
resolution	0.1 %
accuracy	± 2.5 % RH @ 23°C

General Measurement Specifications

moving averages	1...60 sec / 1...60 min
ultrasonic rate	60 Hz

V 2.0

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