

WIND SENSOR / DATA SHEET

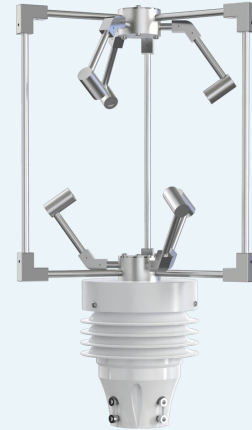
SS103U-05

3D Ultrasonic Anemometer

Three-dimensional ultrasonic sensor for simultaneous measurement of wind speed, wind direction, speed of sound and acoustic temperature, with RS485 and 4G communication options.

Overview

SS103U-05 is a three-dimensional ultrasonic wind speed and direction sensor using transmitted acoustic pulses and receiver timing differences to calculate instantaneous wind data. It simultaneously measures wind speed, wind direction, speed of sound and acoustic temperature. The 4G configuration supports remote monitoring without local signal cabling where cellular coverage is available. The metal-frame construction has no moving measurement parts, providing rugged, corrosion-resistant operation without routine maintenance or on-site calibration.



0–60 m/s WIND SPEED RANGE	0–359° WIND DIRECTION RANGE	300–370 m/s SPEED OF SOUND RANGE	RS485 / 4G COMMUNICATION OPTIONS
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CAPABILITY

Key Advantages & Applications

Key Advantages

- No start-up wind speed limitation; supports zero-wind operation and omnidirectional measurement.
- No moving measurement components, resulting in low wear and long service life.
- Metal housing/frame provides strong corrosion resistance, durability and environmental adaptability.
- No routine maintenance or on-site calibration required.
- 4G version enables remote data monitoring without local communication cabling.

Application Scenarios

- Meteorological observation
- Marine and port monitoring
- Environmental monitoring
- Airports and transportation
- Laboratories
- Industrial and agricultural monitoring

MEASUREMENT PRINCIPLE

Technical Principle

Ultrasonic wind measurement applies acoustic detection technology in a gaseous medium. Airflow changes the propagation time of ultrasonic waves through air. Compared with cup or propeller anemometers, the system has no mechanical rotating elements and provides inertia-free measurement capable of capturing rapidly changing wind components.

SS103U-05 uses six ultrasonic probes that cyclically transmit and receive acoustic pulses in three-dimensional space. Time-of-flight differences along the measurement paths are processed to determine wind speed and direction, while the instrument also reports speed of sound and acoustic temperature.

PERFORMANCE

Technical Specifications

Item	Specification
Default Power Supply	10–30 V DC
Maximum Power Consumption	RS485 version: 1.2 W; 4G version: 534 mW
Wind Speed Range	0–60 m/s
Wind Direction Range	0–359°
Speed of Sound Range	300–370 m/s
Acoustic Temperature Range	–40 to +60°C
Wind Speed Accuracy	±0.2 m/s (0–5 m/s); ±2% FS ±0.2 m/s (>5 m/s)
Wind Direction Accuracy	±2°
Speed of Sound Accuracy	±0.5%
Acoustic Temperature Accuracy	±0.5°C
Wind Speed Resolution	0.01 m/s
Wind Direction Resolution	0.1°

Environmental & Interface Specifications

Item	Specification
Speed of Sound Resolution	0.01 m/s
Acoustic Temperature Resolution	0.01°C
Operating Environment	–40 to +60°C; 0–100% RH
Wind Resistance	75 m/s
Response Time	1 s
Protection Class	IP66
Output Signal	4G transmission; RS485 (Modbus-RTU)

OUTPUT CONFIGURATIONS

Signal & Communication Options

Option	Description
N01	RS485 communication with standard Modbus-RTU protocol.
I20	4–20 mA current output.
V05	0–5 V voltage output.
V10	0–10 V voltage output.
4G	4G wireless upload.

ORDERING INFORMATION

Product Selection

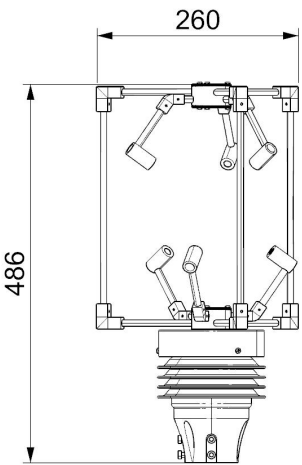
Field	Code	Meaning
Company Code	SS	SpeSense
Base Model	103U-05	3D ultrasonic wind speed & direction transmitter
Output / Communication	N01 / I20 / V05 / V10 / 4G	N01: RS485 / Modbus-RTU; I20: 4–20 mA; V05: 0–5 V; V10: 0–10 V; 4G: wireless upload
Housing	3D	3D ultrasonic wind speed & direction housing

MECHANICAL DATA

Product Dimensions

Overall dimensions shown below. Units: mm.

Overall Dimension Drawing



Mechanical Reference

- Overall dimensions: 486 mm H × 260 mm W
- Reference unit: mm; drawing shows the overall sensor and frame dimensions.

INSTALLATION

Installation & Use Notes

- The 4G configuration supports remote monitoring without local communication cabling wherever cellular network coverage is available; the sensor has no moving measurement parts, so routine mechanical maintenance and on-site calibration are not required under normal use.

Note: If the technical indicators and cable definitions differ from the actual product, please refer to the actual order.

CONTACT / SUPPORT

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