

WIND SENSOR / DATA SHEET

SS103U-04

Mini Ultrasonic Wind Speed & Direction Sensor

Compact ultrasonic wind sensor for simultaneous wind speed and wind direction measurement, designed for meteorological, marine, environmental and industrial monitoring.

Overview

SS103U-04 uses ultrasonic measurement technology to calculate wind speed and wind direction from the phase difference of received acoustic pulses.

The compact sensor provides simultaneous instantaneous wind data and is suitable for meteorology, marine, environmental, airport, port, laboratory, industrial, agricultural and transportation monitoring.

An optional built-in electronic compass removes directional requirements during installation; the sensor only needs to be mounted horizontally. The ABS engineering-plastic housing is lightweight and contains no moving mechanical parts.



0–40 m/s WIND SPEED RANGE	0–360° WIND DIRECTION RANGE	$\pm(0.5 \text{ m/s} + 2\% \text{ FS}) / \pm 3^\circ$ SPEED / DIRECTION ACCURACY	RS485 / ANALOG / 4G OUTPUT OPTIONS
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CAPABILITY

Key Advantages & Applications

Key Advantages

- No angular limitation; wind speed and wind direction can be measured simultaneously.
- No moving parts, resulting in low wear and long service life.
- Random-error identification technology helps maintain low dispersion error and stable output under strong wind conditions.
- Lightweight ABS engineering-plastic housing for convenient carrying, installation and removal.
- Standard Modbus-RTU communication via RS485; configurable address and baud rate with communication distance up to 2000 m.
- Maintenance-free and no on-site calibration required.

Application Scenarios

- Meteorological monitoring
- Marine and port monitoring
- Environmental monitoring
- Airports and laboratories
- Industrial and agricultural sites
- Transportation monitoring

MEASUREMENT PRINCIPLE

Technical Principle

Ultrasonic wind measurement applies ultrasonic detection technology in a gaseous medium. Airflow changes the propagation velocity of ultrasonic waves in air, allowing the system to calculate wind speed. Compared with conventional cup or propeller anemometers, the method has no mechanical rotating components and provides inertialess measurement capable of capturing high-frequency gust fluctuations in natural wind.

SS103U-04 uses four ultrasonic probes that cyclically transmit and receive ultrasonic signals in a two-dimensional plane. Wind-induced changes in ultrasonic propagation are processed to determine wind speed and wind direction.

PERFORMANCE

Technical Specifications

Item	Specification
Default Power Supply	10–30 V DC
Power Consumption	RS485: 0.12 W; Analog: 1.2 W; 4G: 0.72 W
Wind Speed Range	0–40 m/s (customizable)
Wind Direction Range	0–360°
Wind Speed Accuracy	±(0.5 m/s + 2% FS) at 60% RH, 25°C
Wind Direction Accuracy	±3° at 60% RH, 25°C
Wind Speed Resolution	0.01 m/s
Wind Direction Resolution	1°
Operating Environment	–40°C to +80°C; 0–95% RH, non-condensing
Wind Resistance	75 m/s
Response Time	1 s
Protection Class	RS485: IP65; 4G / Analog: IP54
Output Signals	RS485 (Modbus-RTU); 4–20 mA; 0–5 V; 0–10 V; 4G via China Mobile / China Unicom / China Telecom cellular network
Starting Wind Speed	0.5 m/s
Communication Distance	Up to 2000 m for RS485

OUTPUT CONFIGURATIONS

Signal & Communication Options

Option	Description
N01	RS485 interface output; standard Modbus-RTU protocol with configurable address and baud rate.
I20	4–20 mA current output.
V05	0–5 V voltage output.
V10	0–10 V voltage output.
4G	4G wireless upload via China Mobile, China Unicom or China Telecom cellular network.

ORDERING INFORMATION

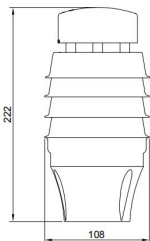
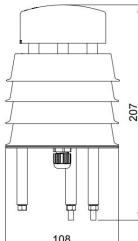
Product Selection

Field	Code	Meaning
Company Code	SS	SpeSense
Base Model	103U-04	Mini ultrasonic wind speed & direction transmitter
Housing	3	Mini ultrasonic wind speed & direction housing
Housing	3H	Advanced-appearance version
Compass Option	Blank	Without built-in electronic compass
Compass Option	CP	Built-in electronic compass function

MECHANICAL DATA

Product Dimensions

All dimensions are in millimeters unless otherwise specified.

Front View – 3H Housing 	Side View – Standard Housing 
Top View 	Mechanical Reference Front: 222 × 108 mm; side: 207 × 108 mm. Top: Ø68 / Ø52 mm. Mounting references: Ø80.6, 90, 144.5, 78, 25, Ø5, 5.3 and 12.3 mm.

INSTALLATION

Installation & Use Notes

- Built-in compass option: mount the sensor horizontally; no directional alignment is required.
- RS485 version: standard Modbus-RTU; communication address and baud rate are configurable.
- No moving measurement parts; 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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