

WIND SENSOR / DATA SHEET

SS103U-02A

Heated Ultrasonic Wind Speed & Direction Sensor

All-solid-state heated ultrasonic anemometer for wind speed and wind direction measurement, designed for all-weather operation including extreme low temperatures.

Overview

SS103U-02A uses the ultrasonic time-difference method to measure wind speed and wind direction without moving mechanical components.

Its all-solid-state metal construction provides high accuracy, reliable performance and long service life, with no routine maintenance or on-site calibration.

The heated version integrates high-power heating on the ultrasonic emission and reflection cover plates. Heating starts and stops automatically for extreme low-temperature operation.



0–70 m/s WIND SPEED RANGE	±2° WIND DIRECTION ACCURACY	IP66 PROTECTION CLASS	HEATED COLD-WEATHER OPERATION
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CAPABILITY

Key Advantages & Applications

Key Advantages

- No start-up wind speed or directional angle limitation.
- Multiple ultrasonic probes transmit and receive signals in real time.
- High accuracy, wide range, low power consumption and strong anti-interference.
- No routine calibration; suitable for continuous all-weather operation.
- Integrated metal construction with weather, corrosion and water resistance.
- Automatic high-power heating supports extreme low-temperature operation.

Application Scenarios

- Urban environmental monitoring
- Wind power generation
- Meteorological monitoring
- Bridges and tunnels
- Marine vessels and airports
- Subways, mining and ventilation systems

MEASUREMENT PRINCIPLE

Technical Principle

Ultrasonic probes transmit and receive acoustic pulses across the measurement space. Wind changes pulse transit time along different paths, and the electronics calculate the time differences to determine wind speed and wind direction. Automatic thermal control of the ultrasonic emission and reflection cover plates supports cold-weather operation.

PERFORMANCE

Technical Specifications

Item	Specification
Measurement Principle	Ultrasonic time-difference measurement
Wind Speed Range	0–60 m/s or 0–70 m/s
Starting Wind Speed	≤0.1 m/s
Wind Speed Resolution	0.1 m/s
Wind Speed Accuracy	±0.3 m/s or ±3% (0–30 m/s), or ±5% (30–70 m/s), whichever is greater
Wind Speed Response Time	1 s
Wind Direction Range	0–360°
Wind Direction Resolution	0.1°
Wind Direction Accuracy	±2°
Wind Direction Response Time	1 s
Power Supply	DC 9–24 V
Operating Current	Normal type: <35 mA (12 VDC); Heating type: 0.6–1 A
Operating Environment	–20°C to +60°C; 0–95% RH
Protection / Material	IP66; stainless steel
Output Signals	RS485, 0–5 V DC, 4–20 mA

OUTPUT CONFIGURATIONS

Signal & Communication Options

Option	Description
RS485 Output	RS485 communication interface output with standard Modbus-RTU protocol
0–5 V Output	0–5 V DC output configuration
4–20 mA Output	4–20 mA current output configuration

ELECTRICAL CONNECTION

Interface Definitions

Pin	RS485 Definition	Analog Definition	Line Color
A	Positive supply voltage (+24 V)	Positive supply voltage (+24 V)	Red
B	RS485_A	Wind speed 0–5 V or 4–20 mA output	Green
C	Negative supply voltage	Negative supply voltage	Black
D	RS485_B	Wind direction 0–5 V or 4–20 mA output	White

Cable definitions may differ from the delivered configuration; confirm the latest product manual or supplied cable before commissioning.

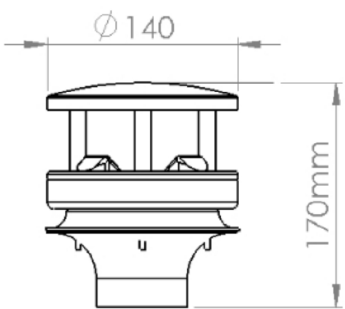
ORDERING INFORMATION

Configuration Codes

Field / Code	Meaning
Base model / SS103U-02A	SpeSense heated ultrasonic wind speed & direction sensor
Output / power – 1 / 2 / 6	1: 4–20 mA / 24 V DC; 2: 0–5 V DC / 24 V DC; 6: RS485 output / 24 V DC
Electrical connection – 3	Aviation plug
Extended function – 2	Heating type

MECHANICAL DATA

Mechanical Dimensions & Connections

Source Dimension Drawing 	Mechanical Data • Overall diameter: Ø140 mm • Overall height: 170 mm • Housing material: Stainless steel • Protection class: IP66
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INSTALLATION & USE

Installation & Application Notes

Item	Source Guidance
Power & Installation	Normal current: <35 mA at 12 V DC. Heating current: 0.6–1 A. Compact integrated installation supports remote, solar-powered and battery-powered deployments.
Environmental Suitability	Designed for continuous outdoor service. Automatic heating of the ultrasonic emission / reflection covers supports operation under extreme low-temperature conditions.

Note: Cable/thread color definitions are for reference only. Confirm the latest product manual or supplied cable definition before installation.

CONTACT / SUPPORT

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