

WIND SENSOR / DATA SHEET

SS103U-01

Ultrasonic Wind Speed & Direction Sensor

Ultrasonic wind sensor for simultaneous measurement of instantaneous wind speed and wind direction, with RS485 and optional analog or 4G outputs for outdoor environmental monitoring.

Overview

Ultrasonic measuring instrument for simultaneous instantaneous wind speed and wind direction measurement.

The sensor calculates wind speed and direction from the time difference of transmitted and received ultrasonic pulses and supports RS485 output.

A built-in electronic compass option removes azimuth-alignment requirements; the lightweight, robust ABS housing is maintenance-free for outdoor installations.



0-45 / 0-60 / 0-80 m/s WIND SPEED RANGE	0-359° WIND DIRECTION	$\pm(0.2 \text{ m/s} \pm 0.02 \cdot v)$ $\pm 3^\circ$ ACCURACY	RS485 / ANALOG / 4G COMMUNICATION
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CAPABILITY

Key Advantages & Applications

Key Advantages

- No starting wind speed limitation; works at zero wind speed and supports full 360° measurement.
- No moving wear components, low wear and long service life.
- Random-error identification technology helps maintain low dispersion error and stable output even under strong wind conditions.
- Standard RS485 interface with Modbus-RTU; address and baud rate are configurable, with maximum communication distance of 2000 m.
- Optional built-in electronic compass enables horizontal installation without orientation requirements.

Application Scenarios

- Meteorology
- Marine monitoring
- Environmental monitoring
- Airports and ports
- Laboratories
- Industrial and agricultural monitoring
- Transportation systems

MEASUREMENT PRINCIPLE

Technical Principle

The sensor uses ultrasonic pulse transmission to measure the propagation time difference between transmitting and receiving paths. Based on the time difference, the internal algorithm calculates wind speed and wind direction. The electronics then output the data through RS485, analog or 4G interfaces depending on the selected configuration.

PERFORMANCE

Technical Specifications

Item	Specification
Default Power Supply	10-30 V DC
Maximum Power Consumption	RS485: 0.6 W; Analog: 0.5 W; 4G: 1.0 W

Item	Specification
Measurement Range	Wind speed: 0–45 m/s, 0–60 m/s, 0–80 m/s (extended range, not standard; customizable); wind direction: 0–359°
Accuracy	Wind speed: $\pm(0.2 \text{ m/s} \pm 0.02 \cdot v)$ (0–20 m/s, 60% RH, 25°C); wind direction: $\pm 3^\circ$ (60% RH, 25°C)
Resolution	Wind speed: 0.01 m/s; wind direction: 1°
Operating Temperature & Humidity	–40 to +70°C; 0 to 95% RH, non-condensing
Wind Resistance	75 m/s
Response Time	1 s
Protection Class	IP65
Output Signals	4–20 mA; 0–5 V; 0–10 V; RS485 (Modbus-RTU); 4G via China Mobile / China Unicom / China Telecom mobile network

OUTPUT CONFIGURATIONS

Signal & Communication Options

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

Item	Source Specification
RS485 Protocol	Modbus-RTU
Communication Settings	Communication address and baud rate are configurable
Maximum Communication Distance	Up to 2000 m
Electronic Compass Option	Built-in compass enables horizontal installation without azimuth alignment

ORDERING INFORMATION

Product Selection

Code	Meaning
SS	Company code
103U-01	Ultrasonic wind speed & direction transmitter
485-	RS485 interface output
I20-	4–20 mA current output
V05-	0–5 V voltage output

Code	Meaning
V10-	0-10 V voltage output
4G-	4G transmission mode
2-	ABS housing
2H-	Advanced appearance version
2HS-	Tunnel version (does not support built-in electronic compass option)
Blank	Without built-in electronic compass
CP	Built-in electronic compass function

Example model composition:

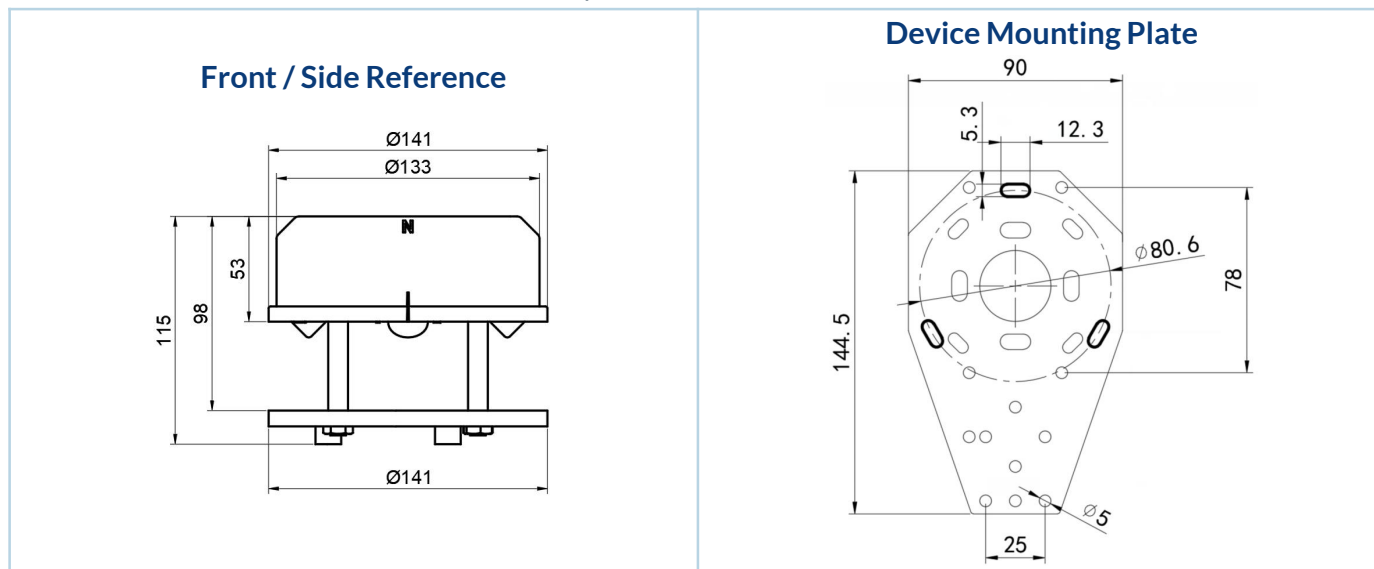
SS + 103U-01 + output code + housing code + compass option

MECHANICAL DATA

Product Dimensions



All dimensions are in millimeters unless otherwise specified.



INSTALLATION NOTES

Compass & Mounting Guidance

Item	Source Guidance
Built-in Compass	Models with a built-in electronic compass only need to be installed horizontally; azimuth alignment is not required.
Tunnel Version	The -2HS tunnel version does not support the built-in electronic compass option.

CONTACT / SUPPORT

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