WEATHER STATION / DATA SHEET

SS1000-04

Integrated Weather Station

C-type integrated weather station for environmental monitoring, combining wind, temperature, humidity, noise, PM, CO2 and pressure measurement with RS485 / Modbus-RTU and Bluetooth configuration.

Overview

SS1000-04 is a C-type integrated weather station designed for environmental monitoring. It integrates wind speed, wind direction, temperature and humidity, noise, PM2.5 and PM10, CO2 and atmospheric pressure acquisition in one compact platform.

The device uses the standard Modbus-RTU communication protocol and RS485 output, with a communication distance up to 2000 m. Data can be uploaded to monitoring software or PLC configuration screens through RS485 communication, and secondary development is supported.

The station supports Bluetooth configuration and real-time data reading. Its compact, lightweight structure uses UV-resistant material, high-sensitivity probes and a dedicated RS485 circuit for stable signals, reliable accuracy and convenient installation.

Output	Communication	Wind speed	Sensor suite
RS485 / Modbus-RTU	Up to 2000 m Bluetooth config	0-70 m/s	Wind / T&H / PM / CO2 / Noise / Pressure

Key Advantages

- Integrated multi-sensor design for convenient installation.
- Wind speed and wind direction structure with low rotational inertia and sensitive response.
- Noise measurement range up to 30-130 dB.
- Simultaneous PM2.5 and PM10 collection, 0-1000 μg/m³ range and 1 μg/m³ resolution.
- CO2 range 0-5000 ppm, effective range 400-5000 ppm, with 1 ppm resolution.

Application Scenarios

- Environmental monitoring stations.
- Outdoor air-quality, PM and CO2 monitoring.
- Industrial parks and field measurement sites.
- Weather and pressure monitoring through RS485 / Modbus-RTU.
- Sites requiring compact installation and Bluetooth configuration.

MEASUREMENT PRINCIPLE

Technical Principle

The station integrates a mechanical wind-speed and wind-direction assembly with environmental sensing elements for temperature, humidity, noise, particulate matter, CO2 and barometric pressure. Real-time data are transmitted through RS485 using the standard Modbus-RTU protocol, while Bluetooth is used for configuration and local reading of current data. The compact UV-resistant housing, high-sensitivity probes and dedicated 485 circuit support stable signal output, convenient installation and long-distance transmission. The design is intended for reliable multi-parameter outdoor monitoring where compact installation and convenient

configuration are required. It also supports integration with monitoring software, PLC configuration screens and secondary development through the RS485 communication interface. The source positions the station for temperature, humidity, noise, air-quality, CO2 and pressure monitoring applications.

The following tables summarize the source technical data for power, output, communication and measurement performance.

Item	Specification
Default power supply	DC10-30V
Maximum power consumption	RS485 output: 0.8 W
Output signal	RS485 output; standard Modbus communication protocol
Configuration	Bluetooth configuration supported
Communication distance	Up to 2000 m through RS485 communication
Housing	C-type integrated housing
Important selection note	PM elements and CO2 elements cannot be selected at the same time according to the source selection note.

MEASUREMENT

Measurement Range & Accuracy

Parameter	Range / Resolution	Accuracy	Response / Stability
Wind speed	0-70 m/s	±(0.2 + 0.03V) m/s; V represents wind speed; at 60%RH, 25°C	Response ≤3.5 s
Wind direction	8 indicated directions	Source file does not provide a separate wind-direction accuracy value	Response ≤3.5 s
Relative humidity	0%RH-99%RH	±3%RH at 60%RH, 25°C	Stability ≤1%/year; response ≤8 s at internal 1 m/s wind speed
Temperature	-40°C to +80°C	±0.5°C at 25°C	Stability ≤0.1°C/year; response ≤25 s at internal 1 m/s wind speed

Atmospheric pressure	0-120 kPa	±0.15 kPa @25°C, 101 kPa	Stability -0.1 kPa/year; response ≤2 s
Noise	30-130 dB	±0.5 dB at reference tone, 94 dB @1 kHz	Stability ≤3 dB/year; response ≤3 s

Parameter	Range / Resolution	Accuracy	Response / Stability
PM2.5 / PM10	0-1000 μg/m³; PM resolution 1 μg/m³	PM2.5 counting efficiency: 50% @0.3 μm, 98% @≥0.5 μm; PM2.5 accuracy ±3%FS at 0-100 μg/m³, 25°C, 50%RH	Stability ≤1%/year; response ≤90 s
CO2	0-5000 ppm; effective range 400-5000 ppm; resolution 1 ppm	±(50 ppm + 3%FS) at 25°C	Stability ≤1%/year; response generally <180 s for 90% step change

Notes: Temperature/humidity response time is τ 63 time; source test conditions refer to internal sensitive-material air speed.

CONFIGURATION

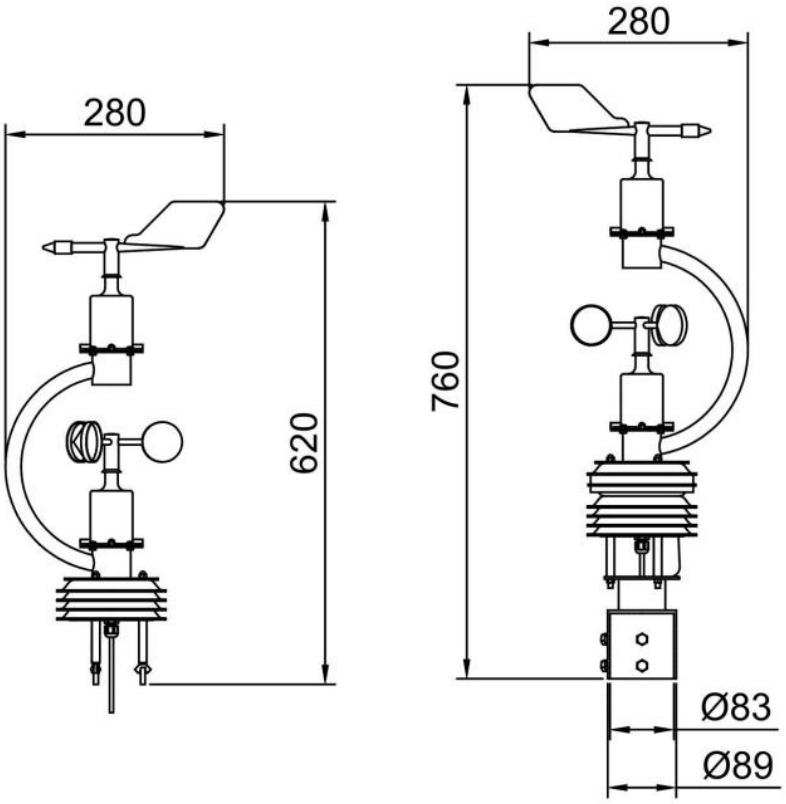
Product Selection

Code	Description
SS	SpeSense company code
1000-04	Integrated weather station
N01	485 communication, standard Modbus-RTU protocol
1	C-type integrated housing

MECHANICAL DATA

Dimensions

Device Dimensions (unit: mm)



CONTACT / SUPPORT

SpeSense Technologies Inc.

Add: No. 9 Yuhe Road, Guitang Subdistrict, Yuhua District, Changsha City
Tel: +86-15386478166
Email: info@spesense.com
Web: www.spesense.com

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