

PORTABLE WEATHER MONITORING / DATA SHEET

SS1000U-08

Portable Ultrasonic Weather Station

A compact field weather station combining an ultrasonic multi-parameter sensor with an optional 7-inch touchscreen, configurable 4G upload and RS485 / Modbus-RTU integration.

Overview

- Designed for rapid outdoor deployment in meteorology, agriculture, environmental surveys and field research.
- Measures wind, temperature, humidity, pressure, noise, particulate matter, CO₂, light, optical rainfall, solar radiation and altitude according to the selected configuration.
- A lightweight, detachable aluminum-alloy tripod and carrying case support convenient transport and setup.
- The electronic compass removes orientation requirements; keep the station level and unobstructed for accurate observation.



Wireless 4G upload	Sensor bus RS485 / Modbus	Power 12,000 mAh battery	Storage 520,000 records
Key Advantages • Selectable measurement elements let each station match the field task. • 7-inch touchscreen, offline storage and USB export support on-site review. • Battery, 24 V adapter and optional portable solar-panel power options.		Applications • Meteorological and ecological field observation. • Agriculture, forestry, environmental and marine surveys. • Airport, port, campus and temporary monitoring stations.	

SENSOR DATA

Ultrasonic Multi-Parameter Sensor

Measured element	Range / capability	Accuracy / response
Wind speed	0–60 m/s	±(0.2 m/s ±0.02·v); response ≤3.5 s
Wind direction	0–359°	±3°; response ≤3.5 s
Air temperature	–40 to +80 °C	±0.5 °C at 25 °C; response ≤25 s ¹
Relative humidity	0–99%RH	±3%RH at 60%RH, 25 °C; response ≤8 s ¹
Atmospheric pressure	0–120 kPa	±0.15 kPa at 25 °C / 101 kPa; response ≤2 s
Noise level	30–130 dB	±0.5 dB at 94 dB / 1 kHz; response ≤3 s
PM10 / PM2.5	0–1000 μg/m ³	PM2.5 accuracy ±3%FS at 100 μg/m ³ , 25 °C, 50%RH; response ≤90 s
CO ₂	0–5000 ppm effective range 400–5000 ppm	±(50 ppm + 3%FS) at 25 °C; response <180 s at 90% step
Illuminance	0–200,000 Lux	±7% at 25 °C; response ≤3 s
Total solar radiation	0–1800 W/m ²	≤±3% at 150 W/m ² ; response ≤10 s
Optical rainfall	0.1 mm resolution; 24 mm/min max instantaneous rate	Typical accuracy ±5%; sensing diameter 6 cm
Altitude	0–18,000 m	Pressure-derived value; calibrate at the installation location

¹ Temperature and humidity response times are τ 63 values; wind-speed v is the actual wind speed at the sensing material. ² Wind response is specified at the internal sensing material.

LONG-TERM STABILITY

Channel	Typical long-term stability
Temperature / humidity	$\leq 0.1\text{ }^{\circ}\text{C/y}$ / $\leq 1\%\text{RH/y}$
Pressure / noise	-0.1 kPa/y / $\leq 3\text{ dB/y}$
PM10 / PM2.5 / CO ₂	$\leq 1\%/y$ / $\leq 1\%/y$
Illuminance / solar radiation	$\leq 5\%/y$ / $\leq \pm 3\%$

ACQUISITION UNIT

Portable Collector and Data Handling

Item	Specification
Power	12000 mAh lithium battery; 24 V power adapter; optional portable solar panel
Display	Optional 7-inch LCD touchscreen with live element view and status pages
Data capacity	Up to 520,000 records; USB flash-drive export when display is selected
4G upload	20–65535 s interval, default 300 s
Storage interval	20–65535 s, default 60 s
Runtime	$\leq 36\text{ h}$ with touchscreen / $\leq 50\text{ h}$ without touchscreen (configuration dependent)
Power consumption	$\leq 3.6\text{ W}$



Portable tripod assembly: lightweight, telescopic and detachable

Mounting Options

- Assemble the three-section tripod and secure the connecting seat with the hand screw.
- Place on a level, hardened surface at least 15 cm thick with minimal obstruction.
- Keep the station level; the electronic compass removes directional alignment.
- Confirm network coverage and firm cable connections before field operation.

DIMENSIONS & PACKAGE

Case, Connections and Standard Package

Assembly	Approx. specification	Notes
Tripod support	Lightweight, telescopic and detachable aluminum-alloy tripod	Portable three-leg field support
Collector interfaces	Aviation plug RS485, USB, power switch, charging port and 4G antenna	USB export is available on display configurations
Connection	Threaded connecting seat with hand screw	Secure the station before powering on

Included / Option-Dependent

- Portable weather station, tripod, carrying case and aviation plug cable.
- 24 V power adapter, 4G antenna, mounting seat, certificate and warranty documents.
- Portable solar panel and USB drive are optional according to configuration.

Selectable Elements

- Wind speed / direction, temperature / humidity, pressure, noise, PM2.5 / PM10, CO₂, illuminance, optical rainfall, solar radiation and altitude.
- PM and CO₂ are mutually exclusive in the stated selection scheme.

COMMUNICATION

RS485 / Modbus-RTU Interface

Parameter	Setting
Encoding / data	8-bit binary; 8 data bits; no parity; 1 stop bit
Error check	CRC-16
Address / baud	Default address 0x01; 1200–115200 bit/s selectable; default 4800 bit/s

Frame	Address + function + register start + register length + data + CRC
Register group	Data mapping
500–503	Wind speed $\times 0.1$; wind force; 0–7 direction; 0–359° direction
504–506	Humidity $\times 0.1$; temperature $\times 0.1$; noise $\times 0.1$
507–509	PM2.5; PM10; pressure $\times 0.1$ (selection-dependent channels)
510–515	Illuminance high / low words and 100-Lux units; optical rainfall $\times 0.1$; total solar radiation; altitude

Software & Cloud

- Use the Bluetooth parameter app to configure the acquisition case and selected elements.
- Connect through 4G to a cloud platform, mobile app, mini-program or web client for remote monitoring.
- View live values, two-hour minute-level precipitation prediction and 24-hour weather trends.

Screen & Export

- The optional touchscreen provides status, parameter configuration and data-export pages.
- Set upload, storage and screen timeout intervals; choose which elements are displayed.
- Insert a USB drive to export stored records; altitude and compass calibration are available on screen.

CALIBRATION

Altitude and Electronic Compass

Altitude

- Enter the local elevation after installation or relocation.
- Use the calibrated value for short-term reliable altitude readings; recalibrate after moving the station.

Electronic Compass

- Point the sensor “N” mark north and set the compensation toward 0° / 360°.
- Rotate the level station slowly for approximately 2 minutes without switching off power.

SERVICE

Installation and Care

Confirm the station, tripod, antenna and cables are firmly connected before powering on. Keep the station level, use an unobstructed site with reliable network coverage, and inspect the tripod locks and connectors before each deployment. The product is not a safety or emergency-stop device; use it only within the stated environmental and mechanical limits. Avoid volatile organic compounds around the capacitive humidity sensor.

CONTACT / SUPPORT

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