

GREENHOUSE MONITORING / DATA SHEET

SS208-01

SMART GREENHOUSE MULTI-PARAMETER SENSOR

4G-connected monitoring of air, soil, light and CO₂ conditions for greenhouse environments.

Overview

- Integrated monitoring of air temperature and humidity, soil temperature and moisture, illuminance and CO₂ concentration.
- 4G data transmission enables remote upload without field communication wiring; upload intervals depend on the power state.
- Large LCD, adjustable upper/lower alarm limits, calibration settings and an integrated audible/visual alarm module.
- Designed for greenhouse environments such as plastic tunnels, greenhouses and greenhouse flower rooms.



4G WIRELESS UPLOAD	4 CORE DATA GROUPS	DC 5–6 V POWER INPUT	1 s SCREEN REFRESH
Key Advantages • Remote 4G upload with a supplied data card according to the source manual. • Online viewing of parameter data and battery level. • Optional air probe styles, soil sensing elements, antenna and 3 W solar panel.		Application Scenarios • Greenhouses and plastic tunnels. • Greenhouse flower rooms and crop-environment monitoring. • Remote multi-parameter data collection and alarm supervision.	

MEASUREMENT PRINCIPLE

Integrated Sensing and 4G Data Architecture

The supplied manual describes the air humidity sensor as using a capacitive sensing principle. The instrument integrates the selected air, soil, illuminance and CO₂ inputs with a large LCD, local storage, alarm module and 4G data upload. The available soil sensing elements are selectable by configuration.

TECHNICAL SPECIFICATIONS

Technical Specifications

PARAMETER GROUP	ITEM	SOURCE-BASED SPECIFICATION
System	Power supply	DC 5–6 V supply and built-in battery supply
System	Communication	4G cellular data upload; source manual lists China Mobile, China Unicom and China Telecom mobile networks
System	Data upload	External power: once per 1 min; battery power: configurable interval, default once per 10 min
System	Display / refresh	Large LCD display; screen refresh time: 1 s
System	Storage capacity	6.5W as stated in the source manual (Chinese “W” notation)

PARAMETER GROUP	ITEM	SOURCE-BASED SPECIFICATION
System	Battery endurance	Up to 20 days per charge under all-element configuration, no external power and 10-min upload interval
System	Transmitter operating environment	-20 to +60 °C; 0-95%RH, non-condensing
Air temperature	Range	External compact probe: -20 to +60 °C; remote extension probe: -40 to +80 °C
Air temperature	Resolution / accuracy	0.1 °C; standard ± 0.5 °C (25 °C), high accuracy ± 0.2 °C (25 °C)
Air humidity	Range	External compact probe: 0-95%RH; remote extension probe: 0-100%RH
Air humidity	Resolution / accuracy	0.1%; standard $\pm 3\%$ RH (60%RH, 25 °C), high accuracy $\pm 2\%$ RH (60%RH, 25 °C)
Soil moisture	Range / resolution	0-100%; 0.1%
Soil moisture	Accuracy	$\pm 2\%$ within 0-50%; $\pm 3\%$ within 50-100%, specified for brown soil at the source reference conditions
Soil temperature	Range / resolution	-40 to +80 °C; 0.1 °C
Soil temperature	Accuracy	± 0.5 °C (25 °C)
Illuminance	Range / resolution	0-200,000 Lux; 1 Lux
Illuminance	Accuracy	$\pm 7\%$ (25 °C)
CO ₂ concentration	Range / resolution	Default 400-5,000 ppm; expandable 0-5,000 ppm; 1 ppm
CO ₂ concentration	Accuracy	Error over 400-5,000 ppm: 50 ppm + 5% F·S

Note: ranges and accuracy values depend on the selected probe or sensing element. All values above are taken from the supplied user manual.

OUTPUT / COMMUNICATION

4G Upload and Data Channel Mapping

The device uploads collected data through a 4G cellular connection. The source manual defines ten upload nodes; optional soil elements become available according to the selected configuration.

DATA CHANNELS

Upload Nodes

NODE	UPLOADED CONTENT	SOURCE MAPPING / NOTE
1	Air temperature and humidity	Analog 1: temperature; Analog 2: humidity; uploaded values multiplied by 10
2	Illuminance	32-bit unsigned value
3	Soil temperature and moisture	Analog 1: temperature; Analog 2: moisture; uploaded values multiplied by 10
4	CO ₂ concentration	Analog 2: CO ₂ concentration
5	Battery level	Analog 1 displays remaining battery level
6	Power status	0: external power; 1000: battery power

NODE	UPLOADED CONTENT	SOURCE MAPPING / NOTE
7	Electrical conductivity	Analog 2; optional soil element
8	pH	Analog 1; optional soil element
9	Heat flux	Analog 1; optional soil element
10	Water potential	Analog 1; optional soil element

CONFIGURATION / INSTALLATION

Controls and Field Installation

USER INTERFACE

Controls

CONTROL / FUNCTION	SOURCE-BASED OPERATION
Power on / off	Long press for 3 s; a beep confirms the action.
Menu / confirm	Short press to enter the menu.
Page navigation	Short press the forward or back keys to browse.
Audible / visual alarm	Long press from the main screen to enable or disable the alarm.
Parameter editing	Use increase, decrease, shift and save functions as required.
Bluetooth configuration	For versions after 7.02, long press the designated key to enable Bluetooth configuration.

Installation notes

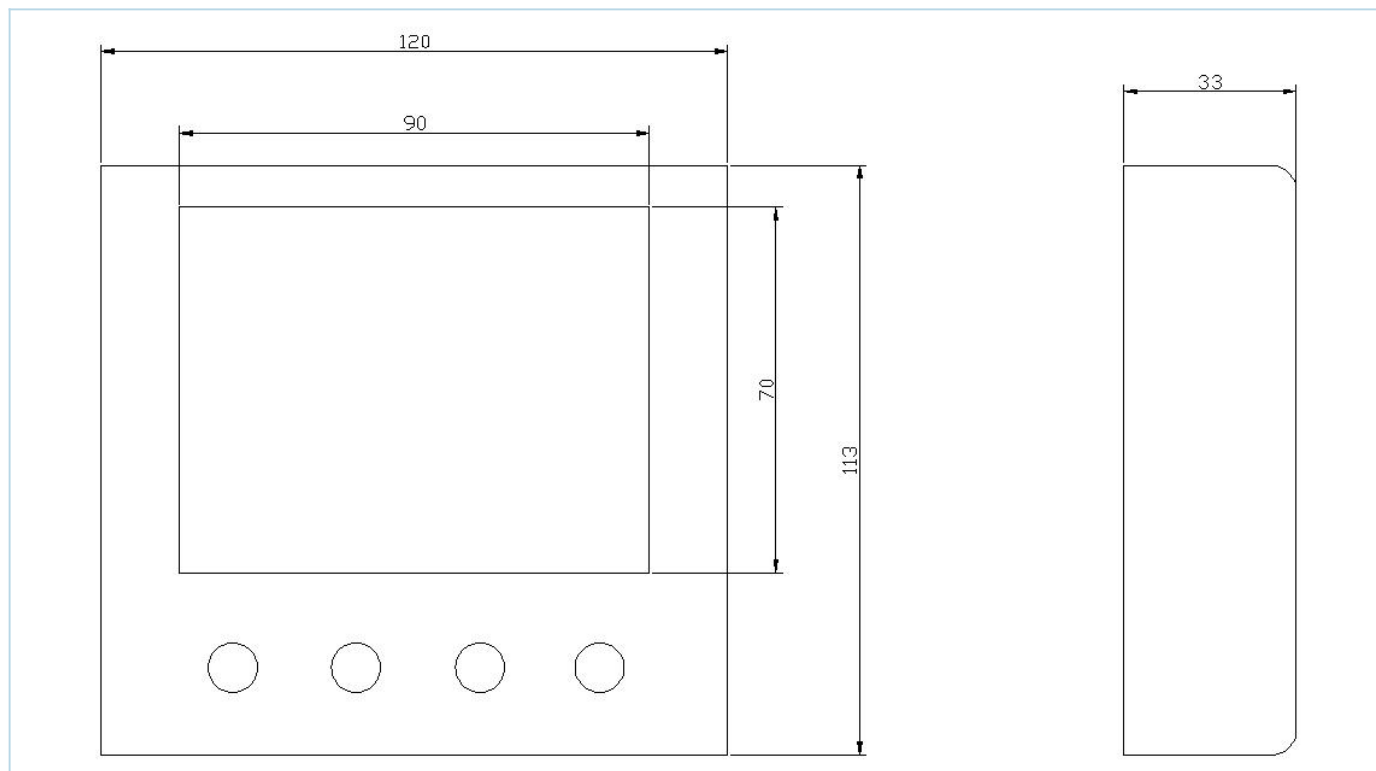
- Install the hanging cord on the main unit and suspend the unit from a greenhouse crossbeam.
- Install the optional 3 W solar panel facing the sunlight; the source illustration indicates a 90° orientation reference.
- The air temperature/humidity probe can be an external compact probe or a remote extension probe with cable length up to 30 m (optional).
- Soil sensing elements should be installed and operated according to their corresponding soil-element instructions.



MECHANICAL DIMENSIONS

Main Unit Dimensions

Main unit: 120 W × 113 H × 33 D mm. Display opening: 90 W × 70 H mm. Dimensions are taken from the supplied source drawing.



OPERATING NOTES

Use and Maintenance Notes

- Do not use the device as a safety or emergency-stop device, or in any application where failure could cause personal injury.
- The air humidity sensor uses a capacitive principle; avoid environments containing volatile organic compounds.
- If the device is stored for a long period, charge it once a month and keep it in a dry, cool environment.
- Avoid strong electromagnetic interference, corrosive chemicals, heavy dust, direct rain and lightning exposure.
- Do not operate the main unit or sensing probes outside the specified ranges; do not disassemble the battery or modify the device without authorization.

ALARM SETTINGS

Alarm and Configuration Reference

Upper and lower alarm thresholds are configurable for air humidity, air temperature, soil moisture, soil temperature, CO₂ and illuminance. Source defaults are: air humidity 100 / 0%RH; air temperature 100 / -40 °C; soil moisture 100 / 0%; soil temperature 100 / -40 °C; CO₂ 5,000 / 0 ppm; illuminance 200,000 / 0 Lux. The configuration password range is 000–999, default 000. These are setting limits, not measurement ranges.

PRODUCT SELECTION / ORDERING INFORMATION

Configuration Options

ORDERING

Selection Guide

CONFIGURATION ITEM	OPTION	SOURCE-BASED NOTE
Model	SS208-01	SpeSense product model
Air temperature / humidity probe	External compact probe	Standard option listed in the source manual
Air temperature / humidity probe	Remote extension probe	Cable length up to 30 m; optional
Soil sensing element	Soil temperature / moisture; 3-pin; 5-pin; pH; advanced pH; heat flux; water potential	Options introduced from source Version 7.02
Antenna	Rod antenna	Default
Antenna	Magnetic-mount antenna, 3 m cable	Optional
Solar power	3 W solar panel	Optional

Configuration note: select the required sensing elements and probe style when ordering. The technical ranges shown in this datasheet apply to the corresponding selected element.

CONTACT / SUPPORT

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