

AGRICULTURAL MONITORING / DATA SHEET

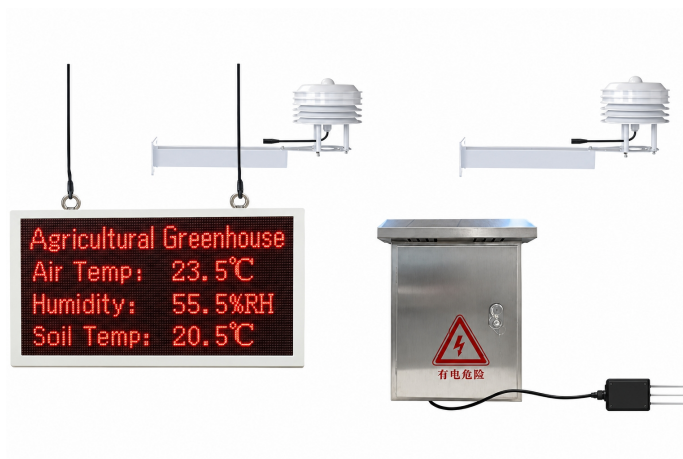
SS1000U-05

Agricultural Indoor Weather Station

A modular monitoring and control station for greenhouses and indoor agricultural facilities, with 4G data transmission, RS485 integration and optional LED display.

Overview

- Collects data from RS485 air, soil, light, CO2 and nutrient sensors through one master interface.
- Uploads monitoring data through 4G and exposes the collected values through a Modbus-RTU slave interface.
- Provides one relay output as standard, with a second relay available as an option for remote manual control.
- Supports mains power, solar power or uninterrupted dual-source operation.



Wireless 4G Cellular	Sensor Bus RS485 Master	System Output RS485 Slave	Control 1 Relay Standard
Key Functions • Configurable 20-65535 s upload interval. • Remote relay status viewing and manual control. • Optional 96 × 48 dot-matrix outdoor display. • Unique 8-digit device address for asset management.		Applications • Commercial greenhouses and nurseries. • Indoor crop and flower production. • Agricultural research facilities. • Remote environmental monitoring and control.	

SYSTEM DATA

Technical Specifications

Item	Specification
System Power Options	220 V AC external power, matched solar supply, or dual supply
Dual-Supply Operation	Mains power has priority; the solar supply maintains operation after a mains outage
Host DC Input	DC 10-30 V via terminal or 5 mm DC socket
Wireless Upload	4G cellular communication
Upload Interval	20-65535 s configurable; 300 s default
Sensor Communication	1 × RS485 master; communication distance ≥1500 m
System Integration	1 × RS485 slave for a PLC, supervisory host, HMI or monitoring software
LED Display Interface	1 × interface for an optional 96 × 48 monochrome dot-matrix display
Relay Output	1 dry-contact relay standard; second relay optional
Relay Capacity	250 V AC / 30 V DC, 5 A

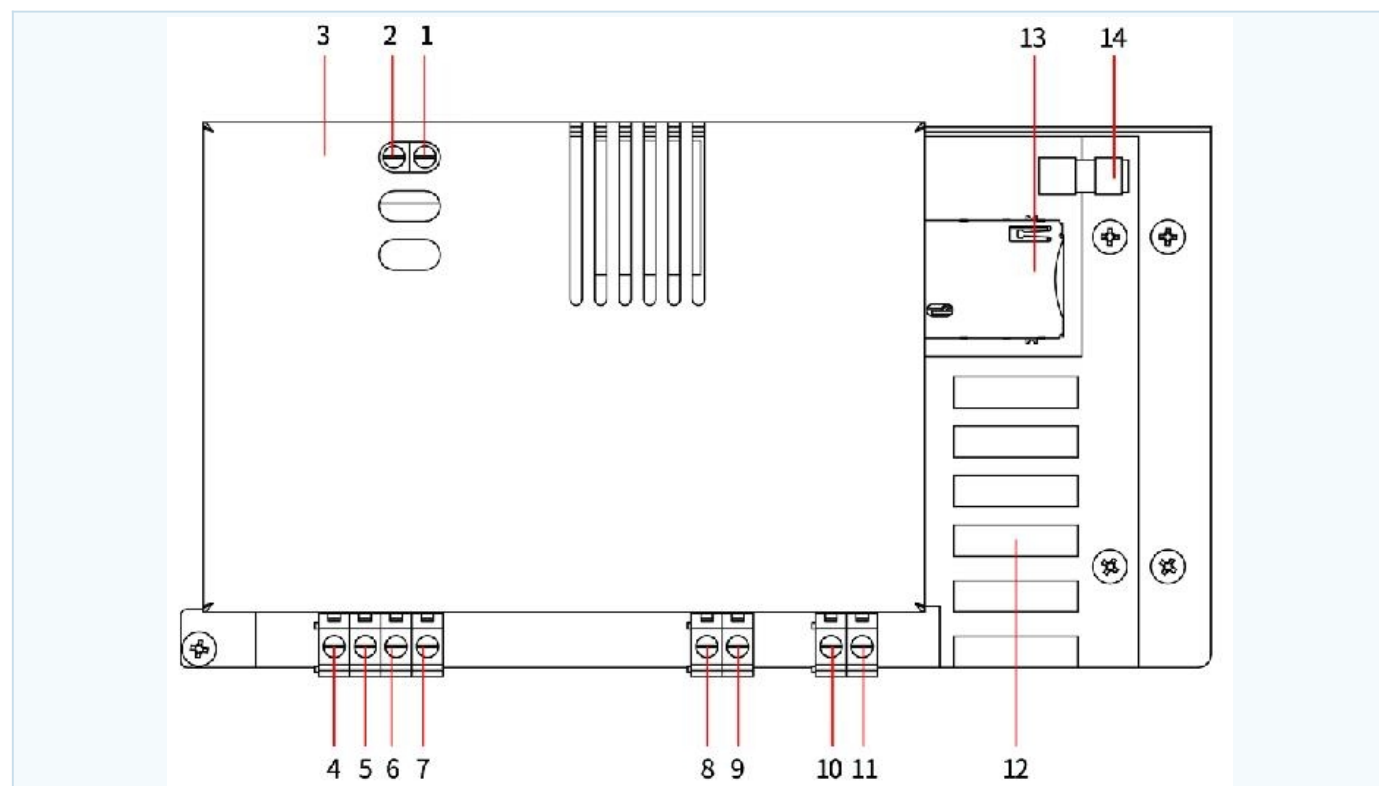
MONITORING PARAMETERS

Supported Measurement Channels

Parameter	Range	Data Factor	Unit
Soil Moisture	0-100%	0.1	%
Soil Temperature	-40 to +80 °C	0.1	°C
Soil EC	0-20,000 μ S/cm	1	μ S/cm
Soil pH	3-9 pH	0.1	pH
Air Humidity	0-99% RH	0.1	% RH
Air Temperature	-40 to +120 °C	0.1	°C
CO2 Concentration	0-5000 ppm	1	ppm
Illuminance	0-200,000 lux	1	lux
Nitrogen	1-1999 mg/kg	1	mg/kg
Phosphorus	1-1999 mg/kg	1	mg/kg
Potassium	1-1999 mg/kg	1	mg/kg

HARDWARE

Device Interfaces



No.	Interface	Function
1-2	GND / VCC	Host DC 10-30 V power terminals
3	DC power socket	DC 10-30 V input through 5 mm socket
4-7	VCC / GND / RS485 A / B	RS485 master connection for external transmitters
8-9	Relay 1	Dry-contact output, 250 V AC / 30 V DC, 5 A
10-11	RS485 slave A / B	Connection to a PLC, host computer or monitoring system
12	LED ribbon connector	Connection for the optional 96 × 48 monochrome display
13	SIM card slot	Cellular data card interface
14	4G antenna socket	Connection for the supplied cellular antenna

COMMUNICATION

Modbus RTU Slave Interface

Serial Settings

- Data format: 8 data bits, no parity, 1 stop bit.
- Baud rate: 1200-115200 bit/s; 9600 bit/s default.
- Device address: 0x01 by default.
- Error check: 16-bit CRC.

Protocol

- Protocol: Modbus RTU.
- Supported read function: 0x03.
- 16-bit values are transmitted high byte first.
- Collected measurements can be queried through the upstream RS485 slave port.

INSTALLATION

Installation and Operation

- Verify the controller, selected sensors, mounting hardware, interconnection cables and optional display before installation.
- Suspend the optional LED display from a structurally secure indoor fixing point.
- Connect the RS485 sensors using the matched plug-in distribution cables; extend additional branches in sequence when multiple sensors are used.
- Route the 4G antenna outside the display enclosure or control enclosure to avoid cellular signal shielding.
- Select the configured monitoring factors and verify the target server address, target port, upload interval and RS485 settings before operation.

CONFIGURATION

System Options

Option	Description
Base Model	SS1000U-05 agricultural weather monitoring controller
LED Option	Outdoor monochrome LED display, 96 × 48 dot matrix
Power Option	External mains power, solar system or dual supply
Upload Option	4G cellular data upload
Relay Option	1 relay standard; second relay optional

APPLICATION

Greenhouse Environmental Monitoring



Typical greenhouse installation

System Integration

- One station can consolidate air, soil, light, CO2 and nutrient measurements.
- The RS485 slave interface allows integration with a customer PLC, HMI or supervisory platform.

UPLOAD NODES

Platform Data Channel Reference

Node	Uploaded Data	Format
3	Soil temperature and moisture	Temperature $\times 0.1$ °C; moisture $\times 0.1\%$
4	Soil EC and pH	EC $\times 1$ μ S/cm; pH $\times 0.1$
11	Air temperature and humidity	Temperature $\times 0.1$ °C; humidity $\times 0.1\%$ RH
13	CO2 concentration	$\times 1$ ppm
15	Illuminance	32-bit unsigned; $\times 1$ lux
28	Nitrogen and phosphorus	Each $\times 1$ mg/kg
29	Potassium	$\times 1$ mg/kg

CONTACT / SUPPORT

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