LEAF WETNESS & HUMIDITY MEASUREMENT / DATA SHEET

# SS203-05

# Leaf Wetness & Temperature/Humidity Sensor

Leaf-shaped sensor for continuous monitoring of leaf-surface wetness/humidity and temperature in plant and object-surface environments.

## Overview

- The humidity channel detects changes in surface dielectric constant to measure leaf-surface moisture.
- A high-precision thermistor measures temperature across the specified range.
- Waterproof design and low power support long-term continuous monitoring.

| Humidity Range | Humidity Accuracy | Temperature Range | Temperature Accuracy |
|---|---|---|---|
| 0–100%RH | ±3% | –40 to +80 °C | ±0.5 °C |

## Key Advantages

- Leaf-shaped sensing surface realistically simulates leaf characteristics.
- Dense vein texture (15 lines/cm) detects smaller droplets with higher sensitivity.
- Fast response, high accuracy and good interchangeability.
- Black flame-retardant epoxy encapsulation supports waterproof, moisture-resistant operation.
- Easy installation for greenhouses, tree branches and continuous monitoring sites.

## Application Scenarios

- Greenhouses and agricultural facilities.
- Laboratories and artificial climate chambers.
- Aquaculture environments.
- Production environments.
- Plant-surface monitoring.
- Object-surface moisture measurement.

SENSING PRINCIPLE

## Measurement Principle

### LEAF-SURFACE DIELECTRIC MEASUREMENT

The humidity sensor is based on dielectric-constant measurement. Its leaf-shaped sensing surface simulates the characteristics of a real leaf, so changes in the surface dielectric constant can be used to measure leaf-surface humidity and detect trace moisture residue. The temperature sensor uses a high-precision thermistor and transmitter for temperature measurement.

Leaf wetness / humidity measurement path


Temperature path


Principle reconstructed from the supplied source description; no additional sensing equation is inferred.

SYSTEM DATA

## Technical Specifications

| Item | Specification |
|---|---|
| **Humidity Measurement Range** | 0–100%RH |
| **Humidity Resolution** | 0.1%RH |
| **Humidity Accuracy** | ±3% (@0–50%, 25 °C) |
| **Temperature Measurement Range** | −40 to +80 °C |
| **Temperature Resolution** | 0.1 °C |
| **Temperature Accuracy** | ±0.5 °C (@25 °C) |
| **Operating Temperature** | −40 to +60 °C |
| **Power Supply** | DC 5–30 V / 10–30 V / 18–30 V |
| **Maximum Power Consumption** | 0.75 W (12 V DC supply) |
| **Protection Level** | IP67 |
| **Sealing Material** | Black flame-retardant epoxy resin |
| **Default Cable Length** | 2 m; customizable as required |
| **Dimensions** | 65 × 15 × 138.5 mm |

## Output and Communication

The source specifies RS485 with Modbus protocol, 4–20 mA current output, and 0–5 V / 0–10 V voltage output. It lists default DC supply options of 5–30 V, 10–30 V and 18–30 V; confirm the selected option against the ordered configuration.

| Output | Description | Power Supply |
|---|---|---|
| **RS485** | Modbus-RTU protocol | DC 5–30 V / 10–30 V / 18–30 V |
| **4–20 mA** | Current output | DC 5–30 V / 10–30 V / 18–30 V |
| **0–5 V** | Voltage output | DC 5–30 V / 10–30 V / 18–30 V |
| **0–10 V** | Voltage output | DC 5–30 V / 10–30 V / 18–30 V |

ORDERING INFORMATION

## Product Selection

| Code | Description |
|---|---|
| SS203-05 | Model |
| WS- | Leaf temperature and humidity transmitter |
| SD- | Leaf humidity transmitter |
| N01- | RS485 (Modbus-RTU protocol) |
| I20- | 4–20 mA current output |
| V05- | 0–5 V voltage output |
| V10- | 0–10 V voltage output |
| YM-1 | Leaf appearance |

**SELECTION NOTE**

Configuration code elements are transcribed from the supplied source. Confirm the final code and selected output before ordering.

MECHANICAL DATA

## Mechanical Dimensions & Structure

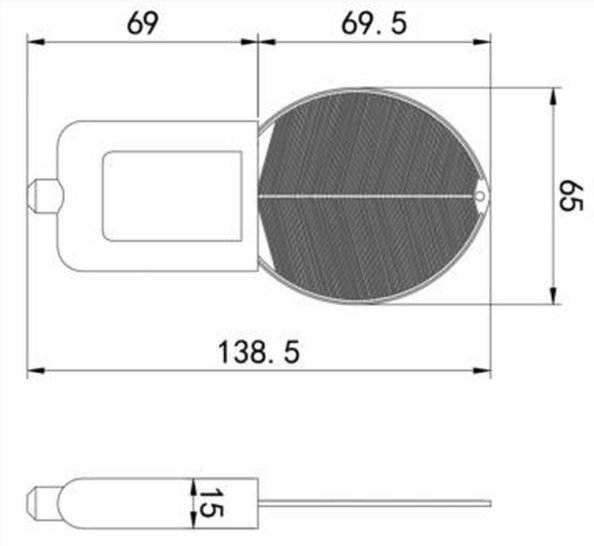
The supplied mechanical drawing shows the leaf-shaped sensing surface and transmitter body. Dimension figures 69, 69.5, 138.5, 65 and 15 mm are reproduced from the source drawing without adding unprovided dimensional interpretation.

**Product view**

Leaf-shaped sensing surface with transmitter housing and cable lead.

*Supplied product appearance retained; the product view contains no third-party branding.*

**Mechanical dimensions**




Source dimension drawing retained; dimension figures are listed below.

*Source dimension figures: 69, 69.5, 138.5, 65 and 15 mm, as shown in the supplied drawing.*

ELECTRICAL CONNECTION

## Wiring Instructions

The supplied source defines RS485, current and voltage output options. Detailed wire colors are not provided in the source; use the wiring method specified for the ordered configuration.

| Output | Interface | Wiring Note |
|---|---|---|
| **RS485** | Modbus-RTU | Use the wiring method specified for the ordered version. |
| **4–20 mA** | Current output | Use the wiring method specified for the ordered version. |
| **0–5 V / 0–10 V** | Voltage output | Use the wiring method specified for the ordered version. |

**WIRING NOTE**

The source does not provide a wire-color or terminal assignment table. Confirm the specific wiring method against the actual ordered configuration.

INSTALLATION & OPERATION

## Installation Notes

- The source describes the product as easy to install and suitable for hanging inside a greenhouse or on tree branches.
- Install the sensor according to the supplied mechanical dimensions and the actual monitoring environment.
- For continuous monitoring, keep the leaf-shaped sensing surface positioned to represent the target leaf or surface condition.

**SS203-05 Leaf Wetness & Temperature/Humidity Sensor**

## Measurement & Configuration Summary

- Leaf-shaped sensing surface simulates leaf characteristics and detects trace moisture residue.
- The humidity channel uses dielectric-constant measurement; the temperature channel uses a high-precision thermistor.
- The source specifies 0–100%RH and −40 to +80 °C measurement ranges, with IP67 protection.
- Select the output and supply-voltage option required for the ordered configuration.

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

WHATSAPP WECHAT

**WhatsApp / WeChat**