

SOIL pH MEASUREMENT / DATA SHEET

SS204-02

Advanced Soil pH Sensor

Insertion-type soil pH sensor for direct soil measurement and long-term monitoring.

Overview

- SS204-02 is a soil pH transmitter designed for rapid response, stable output and use in different soil types.
- It can be buried in soil for long-term monitoring, with resistance to electrolysis and corrosion.
- It is suited to soil acidity and alkalinity measurement in precision agriculture, forestry, geological exploration, plant cultivation, water conservancy and environmental protection.



pH Range 0–14 pH	Resolution 0.01 pH	Protection IP68	Output RS485 / Analog
Key Advantages • Low threshold, few steps, rapid measurement and no reagent requirement. • High measurement accuracy, fast response and good interchangeability. • Specially treated alloy electrode resists strong external impact and damage. • Fully sealed and acid- and alkali-resistant for long-term buried monitoring. • Insertion-type probe design supports accurate and reliable measurement.		Application Scenarios • Precision agriculture. • Forestry. • Geological exploration. • Plant cultivation. • Water conservancy. • Environmental protection.	

MEASUREMENT PRINCIPLE

Measurement Principle

SOURCE-DATA NOTE

The supplied source file does not provide a detailed electrochemical measurement principle. It specifies an insertion-type soil pH sensor for direct measurement in soil; no additional principle is inferred here.

SYSTEM DATA

Technical Specifications

Item	Specification
Power Supply	DC 6–30 V
Maximum Power Consumption	0.2 W
pH Measurement Range	0–14 pH
pH Resolution	0.01 pH

Item	Specification
Temperature Range	–40 to 80 °C
Operating Conditions	pH 3–10; 0 to 50 °C
Measurement Accuracy	≤ ±0.25 pH; ≤ ±0.5 °C (under operating conditions, based on pH buffer solution)
Stabilization Time	30 minutes to 24 hours
Ingress Protection	IP68
Sealing Material	Black flame-retardant epoxy resin
Cable Length	2 m by default
Output Signal	RS485 / 4–20 mA / 0–5 V / 0–10 V

Output and Communication

The sensor is available with RS485 output using the source-specified Modbus-RTU protocol, or with analog output configurations of 4–20 mA, 0–5 V, or 0–10 V. Select the output code that matches the intended acquisition system.

ORDERING INFORMATION

Product Selection

Code	Description
SS204-02	Model
PH-	Soil pH transmitter
N01-	RS485 (Modbus-RTU protocol)
I20-	4–20 mA current output
V05-	0–5 V voltage output
V10-	0–10 V voltage output
TR-	Soil-testing housing
2	Advanced version

SELECTION NOTE

Select one applicable output code and retain the TR- housing and version elements required by the selected configuration.

MECHANICAL DATA

Mechanical Dimensions & Structure

The following source drawings are retained in the SpeSense datasheet system. Numeric dimensions are reproduced from the supplied source material; no unprovided dimensions are added.

SpeSense Soil pH Sensors

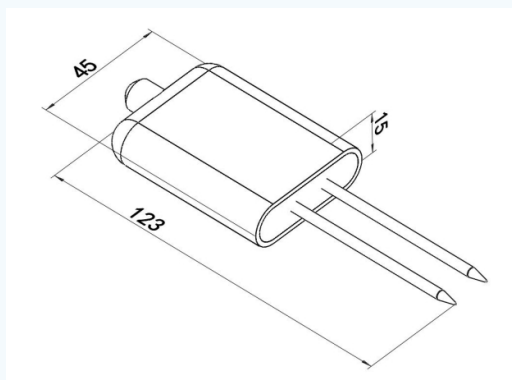
Pin-type Soil pH Sensor



Solid-state Electrode Soil pH Sensor



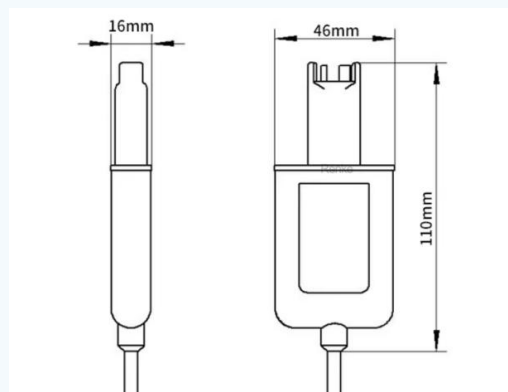
Pin-type soil pH sensor



Source drawing dimensions: 123 mm overall length; 45 mm and 15 mm cross-sectional dimensions.

Dimensions are retained from the supplied source drawing and are shown in millimetres.

Solid-state electrode soil pH sensor



Source drawing dimensions: 110 × 46 × 16 mm.

Product appearance may vary by selected probe and housing configuration.

CONFIGURATION NOTE

The physical appearance depends on the selected probe and housing. Choose the configuration shown in the source drawings that matches the intended installation.

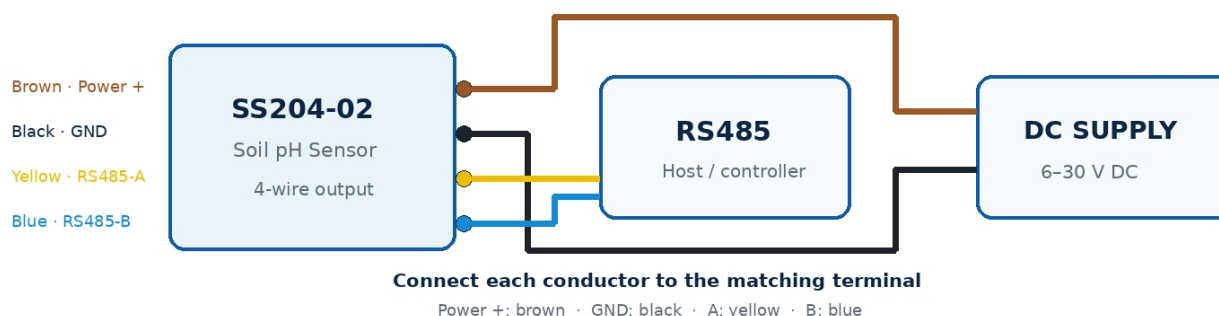
ELECTRICAL CONNECTION

Wiring Instructions

The source wiring table defines the following RS485 color mapping. For analog versions, use the 3-wire or 4-wire arrangement supplied for the selected output configuration and connect conductors by color.

Wire Color	Function	Connection
Brown	Power +	Positive supply terminal
Black	GND	Supply ground
Yellow	RS485-A	RS485 A
Blue	RS485-B	RS485 B

RS485 / Modbus-RTU CONNECTION



RS485 wiring illustration based on the supplied color-coded connection table.

ANALOG OUTPUT NOTE

Analog connection diagrams are configuration-dependent. The source file provides both 3-wire and 4-wire examples; use the arrangement supplied with the selected 4-20 mA, 0-5 V, or 0-10 V configuration.

INSTALLATION & OPERATION

Installation Notes

- Insert the probe into the soil for direct measurement.
- The sealed sensor may be buried for long-term dynamic monitoring.
- Allow 30 minutes to 24 hours for stabilization, depending on the operating conditions.
- Use the output and wiring arrangement that matches the ordered configuration.

High Accuracy Soil PH Sensor



SS204-02 Soil pH Sensor

Configuration & Support Summary

- RS485 Modbus-RTU and analog output versions are available for different acquisition systems.
- Select the probe and housing configuration required for the intended soil measurement application.
- The sealed sensor is suitable for long-term buried monitoring when installed according to the selected configuration.
- Engineering support is available for product selection, output configuration and technical integration.

CONTACT / SUPPORT

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