WATER QUALITY / DATA SHEET

SS312-01-N01-3

Suspended Solids Transmitter



Optical measurement of suspended solids and sludge concentration with temperature compensation and RS485 Modbus RTU output.

Overview

- Measures suspended inorganic and organic solids, sediment and microorganisms in water.
- Optical scattering measurement requires no chemical reagents.
- RS485 Modbus RTU connects to computers and compatible monitoring systems.

Maximum Range	Resolution	Power Supply	Output
0–5000 mg/L	0.1 mg/L	DC 10–30 V	RS485

Key Advantages

- Optical scattering measurement without reagents.
- Modulated light reduces visible-light interference.
- Automatic temperature compensation.
- Configurable device address and baud rate.
- IP68 probe; low power consumption of 0.2 W.

Application Scenarios

- Water treatment.
- Aquaculture.
- Environmental monitoring.
- Online sludge concentration monitoring.

SYSTEM DATA

Technical Specifications

Item	Specification
Model	SS312-01-N01-3
Measurement principle	Optical scattering
Range options	0–5000 / 0–1000 / 0–200 mg/L; select one
Measurement error	±5% FS; depends on sludge homogeneity
Resolution	0.1 mg/L
Response time	≤30 s
Supply voltage	DC 10–30 V
Power consumption	0.2 W
Communication interface	RS485; Modbus RTU; 4800 bit/s default
Probe operating temperature	0–40 °C
Ingress protection	IP68
Probe pressure limit	<0.6 MPa
Probe cable	5 m standard; customizable
Housing material	Corrosion-resistant plastic

Item	Specification
Maintenance / calibration interval	3 months recommended
Probe dimensions / thread	137 mm dimension shown; Ø30 mm; NPT 3/4

MEASUREMENT DATA

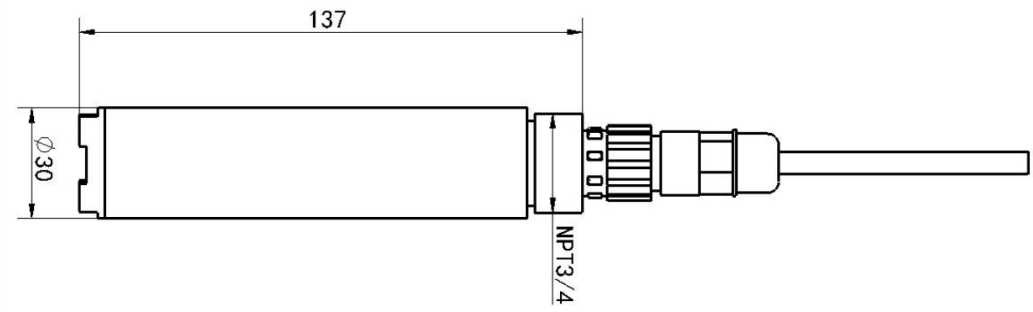
Calibration and Range Selection

Calibration condition	Requirement
Factory reference	Diatomaceous earth standard, selected for the optical scattering measurement method.
Site calibration	Use a standard prepared from sludge representative of the installation environment to ensure homogeneity and appropriate concentration calibration.

Ordering model: SS312-01-N01-3. Specify the required 5000, 1000 or 200 mg/L full-scale range and cable length. The type 3 probe provides RS485 Modbus RTU output.

MECHANICAL DATA

Dimensions and Installation



Dimensions in millimetres: probe Ø30 mm, 137 mm as shown and NPT 3/4 mounting thread. Standard cable length: 5 m; customizable.

Install the probe in slow-flowing, bubble-free water. Maintain 5 cm clearance from surrounding walls and keep the 7 cm space beneath the probe free of obstructions. Route the cable through a waterproof support pipe and attach using the NPT 3/4 thread.

ELECTRICAL CONNECTION

Power and RS485 Wiring

Wire colour	Connection
Brown	Power positive; DC 10–30 V
Black	Power negative
Yellow	RS485 A
Blue	RS485 B

The standard cable has four bare wires. Connect DC 10–30 V and the RS485 pair as shown. For configuration, connect one device at a time through an RS485 converter, select the correct COM port and detect its address and baud rate using the supplied configuration software.

COMMUNICATION DATA

Modbus RTU Communication and Registers

Serial format: 8 data bits, no parity, 1 stop bit; CRC16. Default address: 1 (0x01), configurable 1–254. Baud rates: 1200, 2400, 4800 (default), 9600, 19200, 38400, 57600 and 115200 bit/s. Register values use high byte first; CRC low byte is transmitted first.

Read concentration at 0x0000–0x0001 (mg/L) and temperature at 0x0002–0x0003 (°C) using function 0x03 or 0x04. Each value is a 32-bit big-endian float. Read both with: 01 03 00 00 00 04 44 09. Example response values: 35.7 mg/L and 20.4 °C.

Concentration offset: 0x0050; temperature offset: 0x0051; signed 16-bit integers, register value = offset ×10. Concentration slope: 0x0060–0x0061, big-endian float. Output = (actual value − offset) × slope. Address: 0x07D0. Baud code at 0x07D1: 0=2400, 1=4800, 2=9600, 3=19200, 4=38400, 5=57600, 6=115200, 7=1200. Settings support 0x03/0x04 reads and 0x06/0x10 writes.

Temperature offset +1 °C: write 10 to 0x0051 with 01 06 00 51 00 0A 58 1C; function 0x06 returns the same frame. The manual's printed response differs and should not be used. For a 200 mg/L standard measured as 150 mg/L after offset correction, set slope to 200/150 ≈1.333333 (3F AA AA AB).

CALIBRATION & MAINTENANCE

Probe Cleaning and Calibration

Remove the black rubber protective cover before measurement. Clean probe deposits approximately every 30 days, adjusting frequency to the operating environment. Rinse with flowing water and wipe remaining dirt with a soft damp cloth. Avoid scratching the optical light-guiding surfaces.

Calibrate before each use and approximately every 3 months for long-term operation, adjusting for fouling and chemical deposits. Factory calibration uses diatomaceous earth; use a standard prepared from sludge representative of the installation environment for site calibration. Keep cable connectors out of water until fully locked. Contact technical support if a clear fault occurs.

Do not use this device as a safety device or emergency stop device, or in applications where equipment failure could cause personal injury. Read the operating instructions before installation, use or servicing.

Package contents: one suspended solids transmitter, 5 m cable, certificate and warranty card. Warranty: 12 months for verified defects in materials or workmanship under normal use and maintenance.

CONTACT / SUPPORT

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