WATER QUALITY / DATA SHEET

SS312-01-N01-2

Suspended Solids Transmitter



Self-cleaning optical measurement of suspended solids and sludge concentration with RS485 Modbus RTU output.

Overview

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

Maximum Range	Resolution	Power Supply	Output
0–20000 mg/L	0.1 mg/L	DC 12–30 V	RS485

Key Advantages

- Integrated self-cleaning system reduces biofouling.
- Modulated light reduces visible-light interference.
- Automatic temperature compensation.
- Configurable device address and baud rate.
- IP68 probe; adjustable self-cleaning interval.

Application Scenarios

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

SYSTEM DATA

Technical Specifications

Item	Specification
Model	SS312-01-N01-2
Measurement principle	Optical absorption
Range options	0–20000 / 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 12–30 V
Power consumption	1.2 W normal; 4.5 W during self-cleaning
Communication interface	RS485; Modbus RTU; 4800 bit/s default
Probe operating temperature	0–40 °C
Ingress protection	IP68
Flow velocity	<3 m/s
Probe pressure limit	<0.1 MPa
Probe cable	5 m standard; customizable
Housing material	Corrosion-resistant plastic and stainless steel

Item	Specification
Maintenance / calibration interval	3 months recommended
Self-cleaning system service life	18 months; dynamic seal replacement required after continuous use
Probe dimensions / thread	247 mm dimension shown; 227 mm body dimension; Ø50 mm; NPT 3/4

MEASUREMENT DATA

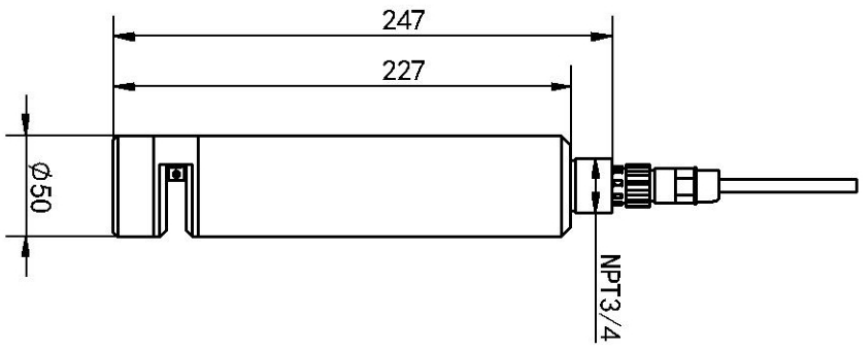
Calibration and Range Selection

Calibration condition	Requirement
Factory reference	Kaolin standard, selected for the optical transmission 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-N01-2. Specify the required 20000, 5000, 1000 or 200 mg/L full-scale range and cable length. The type 2 self-cleaning probe provides RS485 Modbus RTU output.

MECHANICAL DATA

Dimensions and Installation



Dimensions in millimetres: probe Ø50 mm; 247 mm and 227 mm dimensions as shown; NPT 3/4 mounting thread. Standard cable length: 5 m; customizable.

Horizontal probe placement is preferred to reduce sediment accumulation. Install in bubble-free water at a depth no greater than 2 m and at least 30 cm below the lowest water level. Prevent the suspended probe from striking walls or structures; secure it where flow is strong. 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 12–30 V
Black	Power negative
Yellow	RS485 A
Blue	RS485 B

The standard cable has four bare wires. Connect DC 12–30 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. Cleaning interval: 0x1200, 6–6000 min, default 30 min; cleaning cycles: 0x1201, default 3 (one back-and-forth movement per cycle). 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

Self Cleaning and Probe Maintenance

Inspect the measurement windows for deposits and scale. Rinse with tap water and wipe with a soft damp cloth; household detergent in water may be used for stubborn deposits. Do not touch or scratch the windows. Keep bubbles off the probe and measurement windows during measurement and calibration. Protect the probe from impact, direct sunlight, cable tension and mechanical stress.

Check the cleaning brush regularly for correct operation and damage. Do not force the brush shaft to rotate. After 18 months of continuous self-cleaning use, return the device for dynamic seal replacement; adjust the service interval to actual cleaning frequency. Calibrate before each use and approximately every 3 months for long-term operation, adjusting for fouling and chemical deposits. Check window cleanliness if readings are high, low or persistently unstable.

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 self-cleaning suspended solids transmitter, 5 m cable, protective net, 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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