WATER QUALITY / DATA SHEET

SS311-01-N01

Oil in Water Transmitter

Fluorescence measurement with automatic temperature compensation and RS485 Modbus-RTU output.



Overview

- Measures oil-related fluorescence in water for pollution monitoring and early warning.
- Relative fluorescence units support analysis of the relationship between signal intensity and oil concentration.
- Connects to a computer or acquisition system through RS485 Modbus-RTU.

Oil Range	Fluorescence	Power Supply	Communication
0–50 ppm	0–100 RFU	DC 7–30 V	RS485 Modbus

Key Advantages

- Fluorescence sensing with light-filtering algorithm.
- Automatic temperature compensation.
- Configurable Modbus address and baud rate.
- IP68 protection for submerged operation.
- Two-point zero and slope calibration.

Application Scenarios

- Oil pollution monitoring in water.
- Online contamination early warning.
- Remote water quality monitoring.
- Centralized data collection and alarms.

SYSTEM DATA

Technical Specifications

Item	Specification
Model	SS311-01-N01
Measurement principle	Fluorescence
Measurement range	0–50 ppm; 0–100 RFU
Measurement error	±5% FS at 25 °C; temperature: ±0.5 °C
Resolution	0.01 ppm; 0.1 RFU; temperature: 0.1 °C
Response time	≤30 s, T90
Operating temperature	0–40 °C
Power supply / average power	DC 7–30 V / ≤0.5 W
Data transmission	RS485 Modbus-RTU
RS485 baud rate	4800 bit/s default; 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bit/s
Ingress protection	IP68
Cable length	5 m standard
Housing material	Corrosion-resistant material
Probe dimensions / thread	147 mm dimension shown; Ø30 mm; NPT 3/4 thread

MEASUREMENT DATA

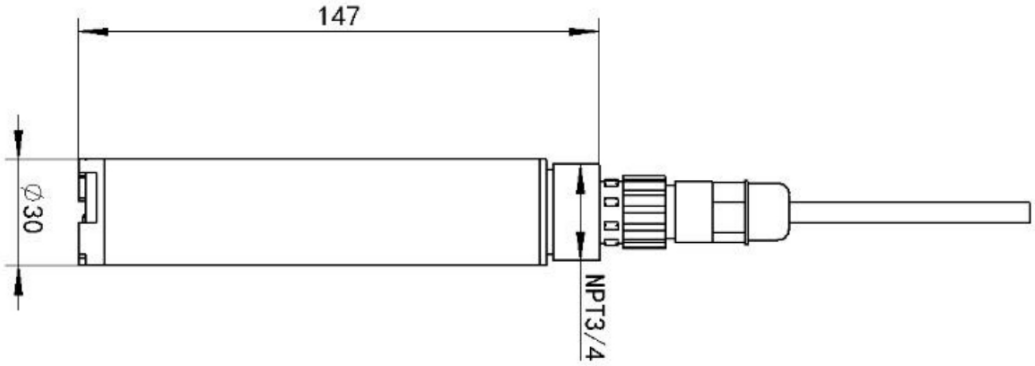
Measurement Conditions

Measurement condition	Interpretation
Reference solution	Specifications were obtained from repeated laboratory tests with quinine sulfate solution at specified concentrations.
RFU output	Relative fluorescence intensity. Assess the relationship between fluorescence and oil concentration for the actual application.

Ordering model: SS311-01-N01, with RS485 Modbus-RTU output and 5 m cable. Standard cable termination: four bare conductors.

MECHANICAL DATA

Dimensions and Installation



Dimensions in millimetres: Ø30 mm, 147 mm as indicated in the drawing and NPT 3/4 mounting thread.

Route the cable through a waterproof support pipe and screw the probe into its NPT 3/4 threaded connection. Allow for water level changes: keep the probe at least 10 cm below the surface in slow-flowing water without bubbles. Maintain 5 cm clearance from surrounding walls and 7 cm beneath the probe, with no obstructions or reflective surfaces.

ELECTRICAL CONNECTION

RS485 Wiring

Wire color	Connection
Brown	Power positive, DC 7–30 V
Black	Power negative
Yellow	RS485-A
Blue	RS485-B

Connect the four conductors according to the wiring table. For initial configuration, connect and power only one device through an RS485 converter. Select the correct COM port in the supplied configuration software, detect the address and baud rate, then change them as required. Default address: 1; default baud rate: 4800 bit/s.

COMMUNICATION DATA

Modbus Communication and Registers

Serial format: 8 data bits, no parity, 1 stop bit; CRC-16 checking. Register data use the high byte first. Read functions: 0x03 and 0x04. Device address: 1–254. Baud codes: 0=2400, 1=4800, 2=9600, 3=19200, 4=38400, 5=57600, 6=115200, 7=1200 bit/s.

Read registers: 0x0000 oil concentration, unsigned 16-bit, divide by 100 for ppm; 0x0001 temperature, signed 16-bit, divide by 10 for °C; 0x0002 fluorescence, unsigned 16-bit, divide by 10 for RFU. Configuration registers: 0x07D0 address; 0x07D1 baud code. Example: raw concentration 3374 = 33.74 ppm; raw temperature 219 = 21.9 °C.

Register clarification: the concentration-offset table at 0x0050 specifies a ×10 scale, while its example uses ×100. The slope table at 0x0060 specifies a scaled 16-bit integer, while the example writes a 32-bit float across 0x0060–0x0061. Confirm the supported encoding before writing these registers.

CALIBRATION & MAINTENANCE

Probe Cleaning and Calibration

Remove the black rubber protective cover before measurement. Clean optical probe deposits at least every 30 days, adjusting frequency to the application. Rinse with flowing water; use a soft damp cloth for remaining dirt. Avoid scratching the optical light-guiding surfaces.

Two-point calibration: use purified water for zero and the recommended 44 ppm oil-equivalent standard for slope. Use an opaque wide-mouth container larger than 500 mL. Avoid direct sunlight on the optical window; immerse the sensing end more than 2 cm and keep it over 7 cm from the bottom, with no reflections. Wait at least 30 s for stable readings at each point.

Calibration command: use function 0x10 to write registers 0x1010 and 0x1011 together. Zero: write 0x0001 and 0x0000. Slope: write 0x0002 and the standard value ×100; for 44 ppm, write 4400 (0x1130). Calibrate before use and approximately every 3 months for continuous operation, adjusting for fouling.

Reference standard preparation: dissolve 1 g quinine sulfate in 50 mL of 0.05 mol/L sulfuric acid and dilute to 1 L for a 1000 ppm stock. Dilute 0.05 mL of this stock to 1 L with 0.05 mol/L sulfuric acid to obtain 50 ppb quinine sulfate, specified as equivalent to 44 ppm oil by the supplied calibration procedure.

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 oil in water 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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