WATER QUALITY / DATA SHEET

SS316-01-N01-5

Ammonia Nitrogen Transmitter



Online ammonia nitrogen, potassium, pH and temperature monitoring with automatic compensation and RS485 Modbus RTU communication. Suitable for seawater applications with field calibration.

Overview

- Three ranges: 0–10, 0–100 or 0–1000 mg/L.
- Automatic potassium, pH and temperature compensation.
- RS485 Modbus RTU; configurable address and baud rate.

Maximum Range	Resolution	Power Supply	Interface
0–1000 mg/L	0.01 / 0.1 mg/L	DC 10–30 V	RS485

Key Advantages

- Automatic potassium, pH and temperature compensation.
- Reagent-free online concentration monitoring.
- Three selectable measurement ranges.
- Modbus RTU output for computer or controller integration.
- Integrated probe with NPT 3/4 mounting thread.

Application Scenarios

- Online water-quality monitoring.
- Continuous ammonia nitrogen measurement.
- Direct immersion installation.
- Freshwater and seawater monitoring with field calibration.

SYSTEM DATA

Technical Specifications

Item	Specification
Model	SS316-01-N01-5
Measured parameter	Ammonia nitrogen: nitrogen present as NH3 and NH4+
Range / resolution	0–10 mg/L: 0.01 mg/L; 0–100 mg/L: 0.01 mg/L; 0–1000 mg/L: 0.1 mg/L
Measurement error	±5% FS at 25 °C in laboratory conditions
Response time	<30 s at 25 °C in laboratory conditions
Repeatability error	±3% FS at 25 °C in laboratory conditions
Supply voltage	DC 10–30 V
Power consumption	0.3 W
Communication	RS485; Modbus RTU; default 4800 bit/s, address 1; 8N1
Probe operating temperature	0–50 °C
Probe cable	5 m standard; 10 / 15 / 20 m customizable
Probe pressure rating	0.2 MPa
Probe dimensions / thread	245 mm body dimension; Ø50 / Ø51 mm; NPT 3/4

Item	Specification
pH range / error	0–14 pH; resolution 0.01 pH; error ±0.15 pH at 25 °C in laboratory conditions
Temperature range / error	−20 to +80 °C; ±0.3 °C (probe operating limit: 0–50 °C)
Potassium range / error	0–1000 mg/L; resolution 0.1 mg/L; error ±5% FS at 25 °C in laboratory conditions

MEASUREMENT DATA

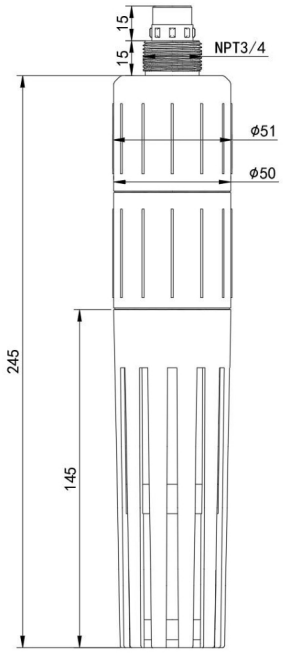
Electrode Service and Monitoring

Electrode maintenance	Requirement
Typical service life	pH electrode: 6–12 months; ammonia nitrogen and potassium electrodes: 3–6 months. Replace aged electrodes promptly.
Calibration interval	Calibrate before each use; for continuous immersion, calibrate every 2–3 weeks and adjust for fouling or chemical deposits.

Ordering model: SS316-01-N01-5. Specify the 0–10, 0–100 or 0–1000 mg/L ammonia nitrogen range and cable length. Integrated probe with RS485 output.

MECHANICAL DATA

Dimensions and Installation



Dimensions in millimetres: probe body 245; lower section 145; diameters Ø50 / Ø51; connector sections 15 + 15; NPT 3/4 mounting thread.

Use immersion installation. Route the probe cable through a waterproof support bracket and connect its 3/4-inch thread to the probe thread using PTFE sealing tape. Keep cable connectors out of water until fully locked.

ELECTRICAL CONNECTION

Power and RS485 Wiring

Connection	Instruction
Power	Brown: DC 10–30 V positive; black: power negative
RS485	Yellow: RS485 A; blue: RS485 B

Connection	Instruction
Commissioning	Check wiring and adapter driver; keep connectors dry until fully locked

COMMUNICATION DATA

Modbus RTU Configuration and Registers

Connect one device at a time to an RS485 adapter. Select the correct COM port in the configuration software and detect the baud rate and address. Factory defaults: 4800 bit/s and address 1. Address range: 1–254. Baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bit/s; 8 data bits, no parity, 1 stop bit; CRC16.

Read with function 0x03 / 0x04: 0x0000 ammonia nitrogen (unsigned; divide by 100 for 10/100 mg/L ranges, by 10 for 1000 mg/L); 0x0001 potassium (unsigned /10 mg/L); 0x0002 pH (unsigned /100); 0x0003 temperature (signed /10 °C). Signed offsets: 0x0050 temperature, 0x0051 pH, 0x0052 ammonia nitrogen, 0x0053 potassium; same scaling as readings. Address: 0x07D0, 1–254. Baud code: 0x07D1; codes 0–7 = 2400, 4800, 9600, 19200, 38400, 57600, 115200, 1200. Offsets and configuration support 0x06 / 0x10 writes.

Use function 0x10 for calibration register pairs: ammonia nitrogen 0x1200 / 0x1201 (point codes 1 / 2; concentration ×100, or ×10 for the 1000 mg/L range); pH 0x1100 / 0x1101 (codes 3 / 4; pH ×100); potassium 0x1300 / 0x1301 (codes 3 / 4, plus 5 for the 10 mg/L range; potassium ×10). Potassium standards: 0.1, 100 and 1000 mg/L for the 10 mg/L ammonia range; 100 and 1000 mg/L for other ranges. Rinse between points and wait at least 15 minutes for stable readings. Field zero: write 0x5A5A to 0x0080 in a sample with zero ammonium and potassium; 0x55AA restores factory zero. Seawater calibration: use local seawater with zero ammonium, wait for stability and write 0x5A5A to 0x0098 with function 0x06.

CALIBRATION & MAINTENANCE

Probe Cleaning and Calibration

Remove both the black and transparent electrode protective sleeves before measurement. Check the sensing end for bubbles; if present, shake the device downward to remove them. Rinse the probe head with clean water after use. Protect the membrane from sharp objects and store unused electrodes in diluted standard solution.

After prolonged storage, activate first in 10 mg/L standard for at least 12 hours, then in 1000 mg/L standard for 1–2 hours. Before testing, immerse the sensing end in deionized water for 5 minutes while stirring; repeat with fresh water for thorough rinsing. After a short idle period, soak in deionized water before measurement or calibration.

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.

Avoid strong acids/alkalis, strong oxidizing or reducing media, hydrofluoric acid, sulfides, bromides, iodides and organic solvents. Complex chemistry can damage the ion membrane. Adjust compensation coefficients for field conditions to reduce error. Package: ammonia nitrogen transmitter, 5 m cable, certificate and warranty card. Warranty: 24 months for verified defects under normal use; pH, ammonia nitrogen and potassium electrodes are consumables and excluded.

CONTACT / SUPPORT

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