WATER QUALITY / DATA SHEET

SS314-01-N01

Chlorophyll Transmitter



Fluorescence measurement of chlorophyll concentration and relative fluorescence in water with temperature compensation and RS485 Modbus RTU output.

Overview

- Measures chlorophyll concentration from 0 to 400 µg/L.
- Fluorescence principle with a fibre-optic light path.
- RS485 Modbus RTU connects to compatible monitoring systems.

Maximum Range	Resolution	Power Supply	Output
0–400 µg/L	0.1 µg/L	DC 7–30 V	RS485

Key Advantages

- Filter algorithm reduces external-light interference.
- Fibre-optic design supports online monitoring.
- Automatic temperature compensation.
- Configurable address and baud rate; 4800 bit/s default.
- IP68 probe; low power consumption of 0.4 W.

Application Scenarios

- Rivers, lakes and ponds.
- Marine surveys and aquaculture.
- Drinking-water sources.
- Algae and phytoplankton research.

SYSTEM DATA

Technical Specifications

Item	Specification
Model	SS314-01-N01
Measurement principle	Fluorescence; fibre-optic light path
Range options	0–400 µg/L; 0–100 RFU
Measurement error	±5% FS at 25 °C
Response time	≤30 s
Resolution	0.1 µg/L; 0.1 RFU; temperature: 0.1 °C
Supply voltage	DC 7–30 V
Power consumption	0.4 W
Communication interface	RS485; Modbus RTU; 4800 bit/s default
Probe operating temperature	0–40 °C
Ingress protection	IP68
Probe cable	5 m standard
Housing material	Corrosion-resistant plastic
Probe dimensions / thread	134 mm and 119 mm dimensions shown; Ø30 mm; NPT 3/4
Temperature error	±0.5 °C

MEASUREMENT DATA

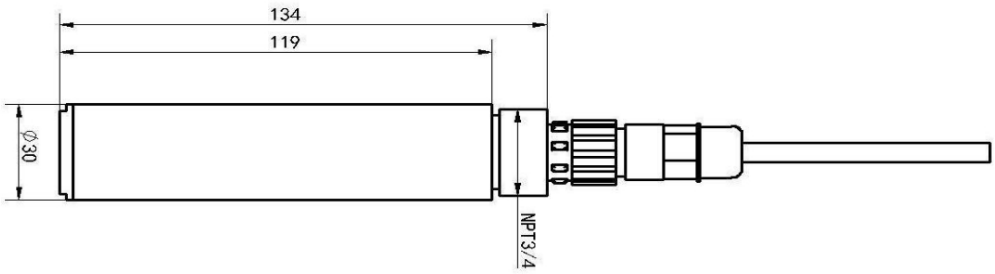
Measurement Conditions and Calibration

Calibration condition	Requirement
Laboratory reference	Specified concentrations of Rhodamine B solution; published parameters derive from repeated laboratory measurements.
Relative fluorescence	RFU output supports analysis of fluorescence intensity versus chlorophyll concentration for the actual application. Built-in temperature measurement enables automatic compensation.

Ordering model: SS314-01-N01. Standard cable length: 5 m. Supports one-point or two-point calibration; the recommended points are deionized water for zero and a 100 µg/L chlorophyll-equivalent reference (0.5 mg/L Rhodamine B).

MECHANICAL DATA

Dimensions and Installation



Dimensions in millimetres: probe Ø30 mm, 134 mm and 119 mm dimensions as shown; NPT 3/4 mounting thread.

Install in slow-flowing, bubble-free water, at least 10 cm below the water surface while allowing for water-level changes. 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 7–30 V
Black	Power negative
Yellow	RS485 A
Blue	RS485 B

The standard cable has four bare wires. Connect power and RS485 as shown. Configure one device at a time using an RS485 converter and the supplied software: select the correct COM port, detect the current baud rate and address, then update the required settings.

COMMUNICATION DATA

Modbus RTU Communication and Calibration

Serial format: 8 data bits, no parity, 1 stop bit; CRC16. Default address: 1, configurable 1–254. Baud rates: 1200, 2400, 4800 (default), 9600, 19200, 38400, 57600 and 115200 bit/s. Measurement registers: 0x0000 chlorophyll, unsigned 16-bit /10 in µg/L; 0x0001 temperature, signed 16-bit /10 in °C; 0x0002 RFU, unsigned 16-bit /10. Read functions: 0x03 / 0x04; data high byte first.

Concentration offset: 0x0050, signed 16-bit integer ×10. Temperature offset: 0x0051, signed integer ×10. Concentration slope: 0x0060, signed integer ×100. 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. Read concentration and temperature: 01 03 00 00 00 02 C4 0B. Example: 0D2E /10 = 337.4 µg/L; 00DB /10 = 21.9 °C. Offset −10 µg/L encodes as −100 (FF9C); slope 0.80 encodes as 80 (0050).

Calibration: reset K=1 and B=0; record zero reading X and reference reading Y, avoiding direct sunlight, immersing the measuring end >2 cm and maintaining >7 cm bottom clearance. Use 0.5 mg/L Rhodamine B as a nominal 100 µg/L chlorophyll reference; its fluorescence varies with temperature. The manual gives K=100/(Y−X), B=−X, but later defines output=(actual−offset)×slope, which conflicts in offset sign. Confirm the offset convention and verify both reference readings before applying calibration. Rhodamine B calibration is approximate; correlate site fluorescence with sample extraction analysis. Wear gloves when handling the standard.

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; adjust frequency for fouling and chemical deposits. Keep cable connectors out of water until fully locked. If an obvious fault occurs, contact technical support and do not open the device for repair.

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 chlorophyll 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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