

WATER QUALITY MONITORING / DATA SHEET

SS302-02

Integrated ORP Transmitter

An integrated RS485 transmitter for continuous oxidation-reduction potential and temperature monitoring. Its high-purity platinum composite electrode, compact IP68 housing and Modbus-RTU interface support direct field deployment.

Overview

- ORP range of -1999 to 1999 mV with 1 mV resolution.
- Integrated temperature measurement from 0 to 60 °C.
- Wide DC 7-30 V supply with standard RS485 Modbus-RTU.
- IP68 integrated construction for submerged and pipe installation.



Measured ORP + Temperature	ORP Range -1999-1999 mV	Supply DC 7-30 V	Protection IP68
Key Functions • High-purity platinum electrode with fast response and stable performance. • Configurable Modbus address and communication baud rate. • Two-point ORP calibration and digital offset / slope correction. • Low 0.3 W power consumption for continuous online monitoring.		Applications • Cyanide- and chromium-containing industrial wastewater. • Rivers, lakes and other natural-water monitoring. • Aquaculture water-quality management. • Water-treatment and online redox-process control.	

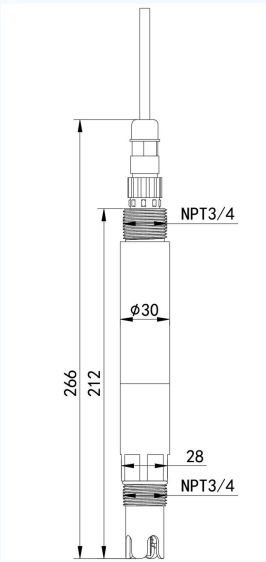
SYSTEM DATA

Technical Specifications

Item	Specification
Supply Voltage	DC 7-30 V
Power Consumption	0.3 W
Communication	RS485; Modbus-RTU; default 4800 bit/s; 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 configurable
ORP Range / Resolution	-1999 to 1999 mV / 1 mV
ORP Measurement Error	≤±5 mV at 25 °C in 222 mV standard solution
Temperature Range / Resolution	0-60 °C / 0.1 °C
Temperature Measurement Error	±0.5 °C
Operating / Storage Temperature	0-60 °C / 0-60 °C
Protection / Pressure	IP68 / 0.6 MPa
Cable Length	5 m standard; other lengths customizable
Electrode Service Life	Approximately 1 year

HARDWARE

Integrated Electrode and Dimensions

 Probe dimensions (mm)	Mechanical Details • Overall length: 266 mm; integrated body length: 212 mm. • Probe diameter: Ø30 mm; lower opening width: 28 mm. • NPT 3/4 threaded connections at the top and lower interface. • Integrated IP68 construction with 0.6 MPa pressure resistance. • 5 m cable supplied as standard; other lengths can be specified.
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INSTALLATION

Installation Guidance

Installation	Guidance
Submerged	Route the lead through a waterproof tube and seal the NPT 3/4 connection with suitable thread-sealing tape. Keep the cable entry dry.
In-line / Pipe	Connect the NPT 3/4 thread directly to a compatible process fitting and keep the sensing end fully wetted.
Probe Position	Remove air bubbles, stir the electrode in the sample and then allow it to rest for a stable reading.
Cable Protection	Do not immerse the cable plug before it is fully connected and locked.

INTERFACES

RS485 Modbus-RTU and Wiring

Connection	Wire / Default	Details
Power positive	Brown	DC 7-30 V positive
Power negative	Black	Power negative / 0 V
RS485-A	Yellow	RS485-A communication line
RS485-B	Blue	RS485-B communication line
Serial format	8 data bits, no parity, 1 stop bit	CRC check; 4800 bit/s default
Device address	0x01 default	1-254 configurable

REGISTERS

Key Modbus Registers

Register	Value	Description
0x0000	ORP value	16-bit signed integer; actual value in mV
0x0001	Temperature	16-bit signed integer; actual value ×10 in °C
0x0050	ORP offset	16-bit signed integer; actual correction value
0x0051-0x0052	ORP slope	Big-endian floating-point value

Register	Value	Description
0x0053	Temperature offset	16-bit signed integer; actual value $\times 10$
0x0120-0x0121	Calibration	Write the calibration point and ORP standard-solution value
0x07D0-0x07D1	Address / baud	Device address and baud-rate selection

MAINTENANCE

Calibration and Electrode Care

Item	Guidance
Two-point calibration	Use two known ORP standard solutions. The first calibration value must be greater than the second; write the point and value through registers 0x0120 and 0x0121.
Storage	Keep the electrode tip in 3.3 M KCl storage solution when not in use. The source preparation is 25 g analytical-grade KCl in 100 mL pure water.
Routine cleaning	Rinse with deionized water before and after measurement. Keep the glass parts away from hard objects and clean deposits with a compatible cleaning solution.
Passivation	If response becomes slow, lightly polish the platinum sensing head with fine sandpaper until the metallic luster is restored.
Calibration interval	Calibrate before use; for long-term operation, calibration every three months is recommended and may be adjusted to process conditions.

Chemical compatibility note: strong acids, strong alkalis, strong oxidizing or reducing media, hydrofluoric acid, sulfides, bromides, iodides and organic solvents may shorten electrode life.

Recommended Cleaning Agents

Contaminant	Recommended cleaner
Inorganic metal oxides	Dilute acid below 1 M
Organic oils and grease	Dilute weak-alkaline detergent
Resins / polymers / protein deposits	Alcohol or an acidic enzyme solution, selected for the deposit
Pigments	Dilute bleach or hydrogen peroxide

SERVICE

Package and Replacement

Item	Guidance
Product package	One SS302-02 integrated ORP transmitter, one 5 m cable or specified custom cable, certificate and warranty card.
Replacement	The ORP electrode has an expected service life of approximately one year; replace it when response, slope or accuracy declines.

CONTACT / SUPPORT

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