

WATER QUALITY MONITORING / DATA SHEET

SS301-03

Wide-Range Integrated EC Transmitter

An integrated RS485 conductivity transmitter for continuous water-quality monitoring, with automatic temperature compensation and salinity / TDS conversion across a wide measurement range.

Overview

- Measures conductivity and temperature, with calculated salinity and TDS values.
- Supports K=1 and K=10 electrode constants for 1-10000 and 10-100000 μ S/cm ranges.
- Uses a wide DC 7-30 V supply and standard Modbus-RTU over RS485.
- IP68 integrated construction for submerged, pipe and continuous process monitoring.



Measured EC + Temperature	EC Range 1-100000 μ S/cm	Supply 7-30 V DC	Protection IP68
Key Functions • Wide-range conductivity measurement with K=1 or K=10 electrode constant. • Automatic temperature compensation to a configurable reference temperature. • Configurable Modbus address and baud rate for multi-device networks. • 0.6 MPa pressure resistance for demanding water-quality installations.		Applications • Surface-water and municipal-water monitoring. • Aquaculture and agricultural water management. • Wastewater treatment and environmental protection. • Pharmaceutical, food and process-water control.	

SYSTEM DATA

Technical Specifications

Item	Specification
Supply Voltage	DC 7-30 V
Power Consumption	0.4 W
Communication	RS485; Modbus-RTU; default 4800 bit/s; 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 configurable
Conductivity Range	K=1: 1-10000 μ S/cm; K=10: 10-100000 μ S/cm
Conductivity Resolution	K=1: 0.1 μ S/cm; K=10: 1 μ S/cm
Conductivity Accuracy	$\pm$ 1.5% FS
Response Time	$\leq$ 30 s (T90)
Temperature Range / Resolution	-5 to 80 $^{\circ}$ C / 0.1 $^{\circ}$ C
Temperature Accuracy	$\pm$ 0.5 $^{\circ}$ C
Temperature Compensation	-5 to 80 $^{\circ}$ C; default reference 25 $^{\circ}$ C; coefficient 0.02 default
Salinity Range	K=1: 0-5439 ppm; K=10: 0-60292 ppm
TDS Range	K=1: 0-6700 ppm; K=10: 0-75000 ppm
Protection / Pressure	IP68 / 0.6 MPa
Element Temperature	-20 to +80 $^{\circ}$ C
Cable Length	5 m standard; other lengths customizable

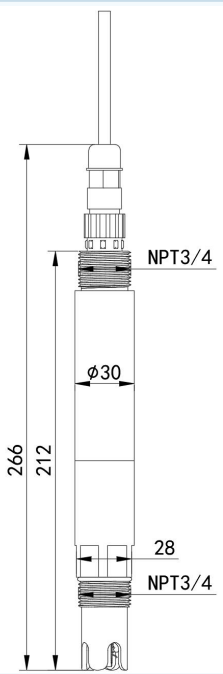
MEASUREMENT

Measurement and Conversion

Parameter	Range	Method / Resolution	Accuracy
Conductivity	1-10000 μ S/cm	K=1; 0.1 μ S/cm resolution	$\pm 1.5\%$ FS
Conductivity	10-100000 μ S/cm	K=10; 1 μ S/cm resolution	$\pm 1.5\%$ FS
Temperature	-5 to 80 °C	0.1 °C resolution	± 0.5 °C
Salinity	0-5439 / 60292 ppm	K=1 / K=10 calculated value	—
TDS	0-6700 / 75000 ppm	K=1 / K=10 calculated value	—

HARDWARE

Integrated Electrode and Dimensions

 Probe dimensions (mm)	Mechanical Details • Overall length: 266 mm; sensing body length: 212 mm. • Probe diameter: Ø30 mm; side opening: 28 mm. • NPT 3/4 threaded connections at the top and lower process interface. • Integrated construction with IP68 water resistance and 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; keep the sensing section fully immersed.
In-line / Pipe	Connect the NPT 3/4 thread to a compatible pipe fitting using a suitable seal and maintain a stable flow.
Probe Position	Remove trapped air bubbles before measurement and keep the sensing surfaces clear of sediment or deposits.
Cable Protection	Keep cable connectors dry until the connection is fully locked; do not place an unlocked plug in water.

INTERFACES

RS485 Modbus-RTU

Item	Default	Details
Physical layer	RS485	Half-duplex multi-drop communication
Protocol	Modbus-RTU	Standard register-based protocol
Serial format	8 data bits, no parity, 1 stop bit	CRC error check
Baud rate	4800 bit/s default	1200 to 115200 bit/s configurable
Device address	0x01 default	1-254 configurable

Register	Value	Description
0x0000-0x0001	Conductivity	32-bit unsigned; scaled according to the selected K range
0x0002	Temperature	16-bit signed; actual value $\times 10$
0x0003-0x0004	Salinity	32-bit unsigned; ppm
0x0005-0x0006	TDS	32-bit unsigned; ppm
0x0050-0x0052	Calibration offsets	Temperature and conductivity correction values
0x0057-0x005A	Compensation / K	Temperature coefficient and electrode constant
0x0120-0x0122	Calibration	Write calibration key and standard-solution value
0x07D0-0x07D1	Address / baud	Device address and baud-rate selection

CONFIGURATION

Electrode and Calibration Options

Option	Selection / Guidance
Electrode constant	K=1; 1-10000 μ S/cm; use 12880 μ S/cm standard solution for calibration
Electrode constant	K=10; 10-100000 μ S/cm; use 111310 μ S/cm standard solution for calibration
Temperature compensation	-5 to 80 °C; 25 °C reference temperature and 0.02 coefficient by default
Communication	Modbus address and baud rate configurable through the RS485 parameter tool
Product package	Integrated EC transmitter, certificate / warranty card, 5 m cable and one matching conductivity standard solution

SERVICE

Calibration and Maintenance

Item	Guidance
Before measurement	Rinse the electrode, remove bubbles from the sensing area and wait for a stable value.
Electrode storage	For extended storage, keep the electrode dry; before reuse, soak it in distilled water for several hours.
Cleaning	Use warm detergent water or alcohol for organic deposits; use 10% citric acid for calcium or magnesium deposits.
Calibration interval	Calibrate before use; for long-term service, maintain and recalibrate at least every three months, adjusted to the application.
Safety	Do not use as a safety or emergency-stop device. Do not open or repair a visibly faulty unit; contact support.

Use SS301-03 only within the stated operating range and with the electrode constant matched to the measurement range. Keep the probe clean and fully immersed in the measured solution for reliable readings.

CONTACT / SUPPORT

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