

WATER QUALITY MONITORING / DATA SHEET

SS300-02 Five-Element Water Quality Transmitter

An integrated probe for simultaneous pH, conductivity, temperature, salinity and TDS measurement, with automatic or manual temperature compensation and Modbus-RTU communication.

Overview

- Combines five water-quality measurements in one compact, IP68-rated probe.
- Supports submerged or in-line installation through NPT3/4 threaded connections.
- Provides configurable RS485 Modbus-RTU communication for monitoring and control systems.
- Designed for non-corrosive weak-acid/weak-alkali water, wastewater, agriculture and aquaculture.



Measured 5 Parameters	Interface RS485	Protocol Modbus-RTU	Protection IP68
Key Functions • Automatic or manual temperature compensation. • K=1 or K=10 conductivity electrode constant options. • Configurable device address and baud rate. • Two-point pH and single-point conductivity calibration.		Applications • Industrial and domestic wastewater. • Agricultural water and aquaculture. • Process-water and tank monitoring. • Laboratory or field water-quality logging.	

SYSTEM DATA

Technical Specifications

Item	Specification
Supply Voltage	DC 7-30 V
Power Consumption	≤0.4 W
Communication	RS485; Modbus-RTU; 1200-115200 bit/s configurable; 4800 bit/s default
pH Range / Resolution	0.00-14.00 pH / 0.01 pH
pH Accuracy	±0.15 pH
Conductivity Range	K=1: 1-2000 μ S/cm; K=10: 10-20000 μ S/cm
Conductivity Resolution / Accuracy	K=1: 0.1 μ S/cm; K=10: 1 μ S/cm / ±1% FS
Salinity Range	K=1: 0-1000 ppm; K=10: 5-11476 ppm
TDS Range	K=1: 0-1100 ppm; K=10: 5-13400 ppm
Temperature Range / Resolution	0-80 °C / 0.1 °C
Temperature Accuracy	±0.5 °C
Temperature Compensation	-5 to +80 °C; automatic or manual; manual default 25 °C
Conductivity Temp. Coefficient	0.02 default
Operating Environment	0-80 °C, non-freezing
Sensor Element Temperature	-20 to +80 °C
Ingress / Pressure	IP68 / 0.6 MPa
Cable	5 m default; other lengths available on request

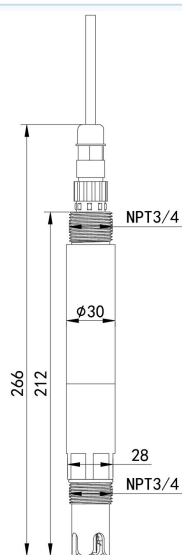
MEASUREMENT

Five-Element Measurement Set

Parameter	Range (K=1 / K=10)	Resolution	Accuracy
pH	0.00-14.00	0.01 pH	±0.15 pH
Conductivity	1-2000 / 10-20000	0.1 / 1 μ S/cm	±1% FS
Temperature	0-80 °C	0.1 °C	±0.5 °C
Salinity	0-1000 / 5-11476	1 ppm	—
TDS	0-1100 / 5-13400	1 ppm	—

MECHANICAL

Dimensions and Installation



Overall length 266 mm • body Ø30 mm • NPT3/4

Installation Guidance

- Submerged installation: route the cable through a waterproof tube and seal the NPT3/4 connection.
- In-line installation: connect the NPT3/4 thread to the process pipe using a suitable seal.
- Keep the sensing end fully immersed and free of air bubbles during measurement.
- Do not place the connector or cable plug in water before it is fully locked and sealed.

WIRING

Power and RS485 Wiring

Wire Color	Function	Connection
Brown	Power positive	DC 7-30 V
Black	Power negative	0 V / GND
Yellow	RS485-A	Differential data line A
Blue	RS485-B	Differential data line B

Before commissioning, connect only one transmitter, verify the COM port and test the current baud rate and address. The factory defaults are address 0x01 and 4800 bit/s; both can be changed through the configuration tool.

COMMUNICATION

Modbus RTU Interface

Serial Settings • 8 data bits, no parity, 1 stop bit. • Baud rate 1200-115200; 4800 bit/s default. • Address 1-254; function codes 0x03/0x04/0x06/0x10.	Frame Format • Modbus-RTU frame: address, function, data and CRC. • Keep at least 4 byte times of silence between frames. • 16-bit register values are transmitted high byte first.
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Register / PLC Address	Measurement or Setting	Function	Data Format
0x0000 / 40001	pH	0x03/0x04	Unsigned ×100
0x0001 / 40002	Conductivity	0x03/0x04	K=1 ×10; K=10 ×1
0x0002 / 40003	Temperature	0x03/0x04	Signed ×10
0x0003 / 40004	Salinity	0x03/0x04	Unsigned ×1
0x0004 / 40005	TDS	0x03/0x04	Unsigned ×1
0x0050 / 40081	pH offset	0x03/0x04/0x06/0x10	Signed ×100
0x0051 / 40082	Conductivity offset	0x03/0x04/0x06/0x10	K=1 ×10; K=10 ×1
0x0052 / 40083	Temperature offset	0x03/0x04/0x06/0x10	Signed ×10
0x0053 / 40084	Salinity offset	0x03/0x04/0x06/0x10	Signed ×1
0x0054 / 40085	TDS offset	0x03/0x04/0x06/0x10	Signed ×1
0x0056-57 / 40087-88	EC temp. coefficient	0x03/0x04/0x10	32-bit float, big-endian
0x0058-59 / 40089-90	Electrode constant	0x03/0x04/0x10	32-bit float, big-endian
0x0060 / 40097	Compensation mode	0x03/0x04/0x06/0x10	1 manual; 0 automatic
0x0061 / 40098	Manual compensation temp.	0x03/0x04/0x06/0x10	Signed ×10
0x07D0 / 42001	Device address	0x03/0x04/0x06/0x10	1-254
0x07D1 / 42002	Baud-rate code	0x03/0x04/0x06/0x10	0:2400; 1:4800; 2:9600; 3:19200; 4:38400; 5:57600; 6:115200; 7:1200

CALIBRATION

Calibration and Maintenance

Item	Guidance
pH calibration	Two-point calibration with two known buffers, typically 4.01 and 9.18 pH; 6.86 pH may be used for acid-side work.
Conductivity calibration	Single-point calibration with 1413 μ S/cm for K=1 or 12880 μ S/cm for K=10.
Before measurement	Rinse the probe with deionized water, remove bubbles and wait for a stable reading.
Probe care	Protect the glass bulb and platinum-black conductivity cell from hard contact and abrasive wiping.
Service interval	Calibrate before use; for long-term operation, review calibration approximately every three months.

SUPPLIED ITEMS

Package Contents

Item	Included
Transmitter	SS300-02 integrated five-element transmitter, 1 unit
Cable	5 m cable by default; customized length available
Conductivity Standard	One bottle matched to the selected conductivity range
pH Buffers	pH 4.01, 6.86 and 9.18 buffer packets
Documents	Inspection certificate and warranty card

CARE

Care and Service Notes

Item	Guidance
pH electrode	Keep the glass bulb hydrated in suitable storage solution when not in use; replace the electrode after normal aging.
pH cleaning	Rinse with deionized water and select a compatible cleaning solution for the contaminant; never scratch the glass bulb.
Conductivity cell	Use warm detergent water or alcohol for organic deposits; use about 10% citric acid for calcium or magnesium deposits.

Chemical limits	Avoid strong acids, strong bases, oxidizers, reducers, hydrofluoric acid, sulfides, bromides, iodides and organic solvents.
Connector handling	Keep the cable plug and connector out of water until the connection is fully locked and sealed.

Use the SS300-02 only within the stated operating range and in non-corrosive weak-acid or weak-alkali environments. The pH electrode is a consumable component; replace it when response becomes slow or calibration can no longer be maintained.

CONTACT / SUPPORT

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