



YEX-S1PRO-EC

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Online Conductivity Sensor User Manual



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I. Product Description

This product is suitable for online conductivity measurement in natural waters, industrial water, soil, municipal wastewater, and similar applications.

Signal output: RS485 (MODBUS); 4-20 mA optional.

Electrode: High-stability titanium electrode.

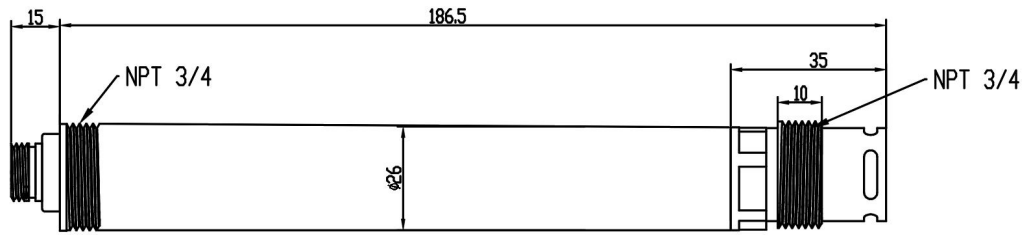
Installation: 3/4 NPT pipe thread; suitable for immersion or installation in a pipe or tank.

II. Technical Performance and Specifications

1. Technical Parameters

Model	YEX-S1PRO-EC
Power Supply / Consumption	12-24VDC (0.4W)
Range	Conductivity: 0-3000 μ S/cm 0-10000 μ S/cm 0-30000 μ S/cm range customizable
	Salinity 0-3000ppm 0-10000ppm 0-30000ppm Range/unit customizable
	TDS 0-3000ppm 0-10000ppm 0-30000ppm Range/unit customizable
Resolution	1
Accuracy	$\pm 1.5\%$; $\pm 0.1^{\circ}\text{C}$
Response Time	10s
Communication Interface	RS485 (MODBUS)
Housing Material	316L+ABS
Temperature Compensation	Automatic temperature compensation
Cable	5 m four-core shielded cable
Operating Environment	Temperature: 0-50 $^{\circ}\text{C}$ (non-freezing); pressure < 0.2 MPa
Ingress Protection	IP68
Installation Method	Immersion installation, NPT 3/4 thread

2. Dimensional Drawing



传感器接头为M16-5芯防水接头母头

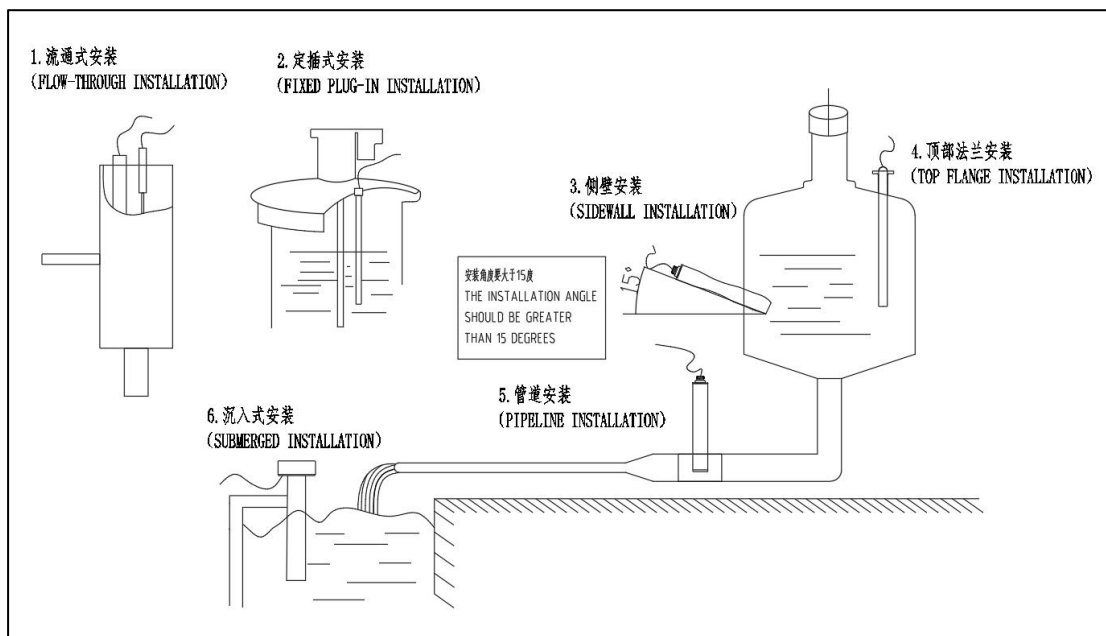
III. Connection and Installation

1. Connection

1 - Red: power positive; 2 - Black: power negative; 3 - Green: RS485-B; 4 - Yellow: RS485-A; 5 - Optional 4-20 mA output

Note: 1, 2, 3, and 4 are the pin numbers of the aviation connector. Wire colors may vary by batch; follow the markings or aviation-connector pin numbers.

2. Installation



Note: Electrochemical sensors contain liquid and must not be installed upside down or horizontally. Install at an inclination of more than 15 degrees.

IV. Maintenance and Care

1. Use and Maintenance

- Insert at least one-third of the sensor into the test liquid so that the electrode tip is fully immersed and the temperature measurement is more accurate.
- Keep the terminals, electrode tip, and aviation connector clean. Use a soft-bristled brush to clean the electrode tip and prevent damage.
- If readings become inaccurate after long-term use, calibrate the sensor according to the communication protocol.

V. Data Communication

1. Communication Settings

Baud rate: 9600; start bits: 1; data bits: 8; parity: none; stop bits: 1.

2. Register Addresses

Register	Data Address	Data Type	Number of Registers (bytes)	Read/Write	Description
Device Address	0x0000	Unsigned (unsigned integer)	1 (2 bytes)	R/W	1-254(default address: 1) 0 is the non-response broadcast address 255 is the response general address
Product Model	0x0001	Unsigned (unsigned integer)	1 (2 bytes)	R	1
Restore Factory Settings	0x0002	Unsigned (unsigned integer)	1 (2 bytes)	R/W	Write 1 to restore factory settings; write 0 for no action; read has no meaning
Software Version	0x0003	Unsigned (unsigned integer)	1 (2 bytes)	R	1
Baud Rate	0x0004	Unsigned	1 (2 bytes)	R/W	Read to obtain the code; write

		(unsigned integer)			the corresponding code to change the baud rate 0:2400, 1:4800, 2:9600, 3:19200, 4:38400, 5:115200 Other values are ignored
Reserved	0x0005			R/W	
Temperature	0x0006	Float (floating-point, CDAB)	2 (4 bytes)	R	(-40-120)°C
Conductivity Value	0x0008	Float (floating-point, CDAB)	2 (4 bytes)	R	
Salinity Value	0x000A	Float (floating-point, CDAB)	2 (4 bytes)	R	
TDS Value	0x000C	Float (floating-point, CDAB)	2 (4 bytes)	R	
Temperature Calibration	0x0030	Float (floating-point, CDAB)	2 (4 bytes)	W	Write the actual temperature
Direct-Write Conductivity K Value	0x0032	Float (floating-point, CDAB)	2 (4 bytes)	W	Write K value Default: 1.0
Direct-Write Conductivity B Value	0x0034	Float (floating-point, CDAB)	2 (4 bytes)	W	Write B value Default: 0.0
Conductivity Zero-Point Calibration	0x0036	Float (floating-point, CDAB)	2 (4 bytes)	W	Write 0 in air or purified water
Conductivity Slope Calibration	0x0038	Float (floating-point, CDAB)	2 (4 bytes)	W	Write the known conductivity value while immersed in the reference solution

3. Command Example

➤ Read Data

Read request : 01 03 00 06 00 04 A4 08

Response : 01 03 08 B0 00 41 DC 29 3C 42 C6 71 32

Parsed in float CDAB format: B0 00 41 DC = 27.58 °C, 29 3C 42 C6 = 99.08μS/cm

VI. Calibration

The sensor is factory-calibrated by default. Do not recalibrate unless necessary.

1. Temperature Calibration

Immerse more than one-third of the sensor in the test liquid and wait for the temperature reading to stabilize. Send the actual temperature to 0x0030 according to the protocol, then read the temperature to verify the calibration result.

Example: send 25.0°C

01 10 00 30 00 02 04 00 00 41 C8 C1 7D

2. Conductivity Calibration

Conductivity Zero-Point Calibration

In air or purified water, write 0 to 0x0036.

Example: send 0

01 10 00 36 00 02 04 00 00 00 00 70 91

Conductivity Slope Calibration

Place the sensor in a solution of known conductivity, wait for the reading to stabilize, and send the conductivity value to 0x0038.

Example: send 900

01 10 00 38 00 02 04 00 00 44 61 03 F5

Alternatively, write the K and B values directly.