



YEX-S1PRO-PH

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Online pH Sensor User Manual



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I. Product Description

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

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

Electrode: High-performance pH electrode with a PTFE liquid junction.

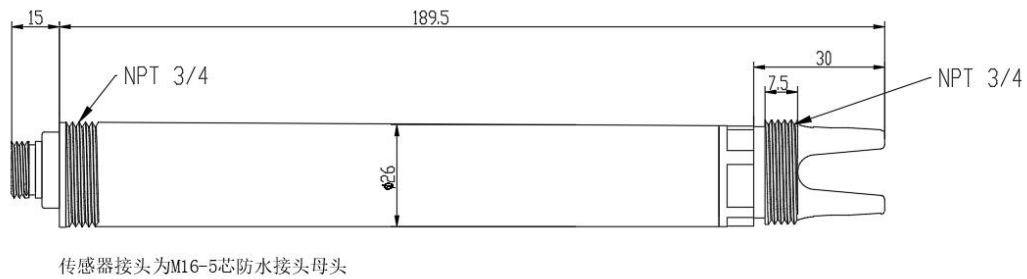
Installation: 3/4 NPT pipe thread; suitable for immersion or installation in a pipe or tank.

II. Technical Parameters

1. Technical Parameters

Model	YEX-S1PRO-PH
Power Supply / Consumption	12-24VDC (0.4W)
PHRange	0-14.00
Resolution	0.01
Accuracy	±0.1PH, ±0.1°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°C (non-freezing); pressure < 0.2 MPa
Ingress Protection	IP68
Installation Method	Immersion installation, NPT 3/4 thread

2. Dimensional Drawing



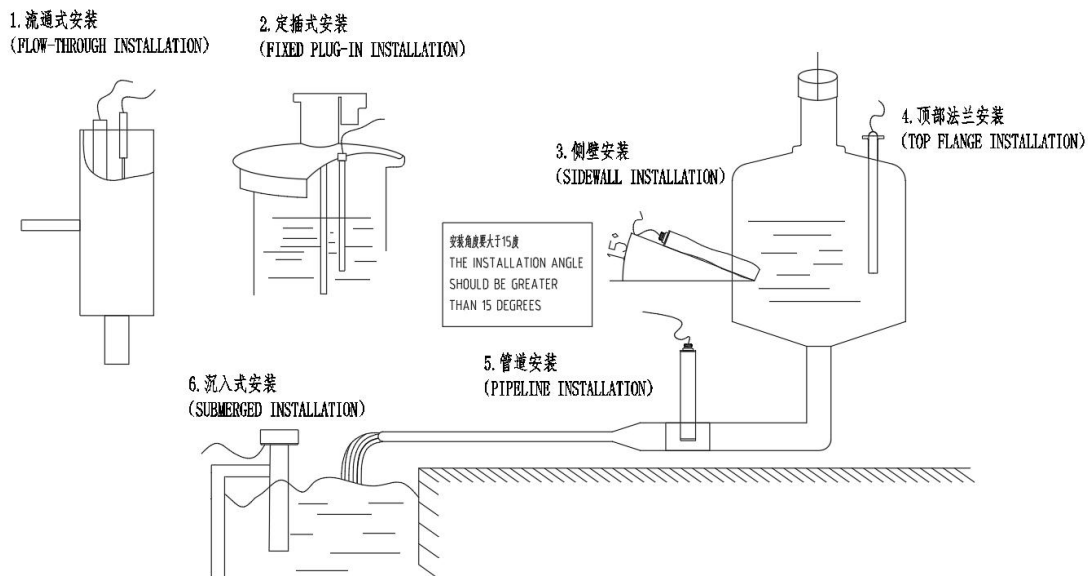
III. Connection and Installation

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

Use and Maintenance

- Before first use, soak the sensor in 3 mol/L KCl solution for 2 hours, then rinse with deionized (or distilled) water and wipe dry for more accurate readings.
- 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.
- For long-term storage, keep the sensor immersed in 3 mol/L KCl solution. The protective cap contains KCl solution.
- Keep the terminals, probe, and aviation connector clean and clean them promptly.
- Do not leave the probe in deionized water, strong acids or alkalis, or protein solutions for extended periods, as this may damage the electrode.
- 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

Register	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: 3) 0 is the non-response broadcast address 255 is the response general address
Product Model	0x0001	Unsigned(unsigned integer)	1 (2 bytes)	R	3
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(unsigned integer)	1 (2 bytes)	R/W	Read to obtain the code; write 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				
Temperature	0x0006	float(floating-point, CDAB)	2 (4 bytes)	R	(-40-120)°C
pH Value	0x0008	float(floating-point, CDAB)	2 (4 bytes)	R	(0.00-14.00)
Temperature Calibration	0x0030	float(floating-point, CDAB)	2 (4 bytes)	W	Write the actual temperature
Direct-Write pH K Value	0x0032	float(floating-point, CDAB)	2 (4 bytes)	W	Write K value Default: 1.0
Direct-Write pH B Value	0x0034	float(floating-point, CDAB)	2 (4 bytes)	W	Write B value Default: 0.0
PH Zero-Point Calibration	0x0036	float(floating-point, CDAB)	2 (4 bytes)	W	Write the pH value; 6.86 is recommended
PH Slope Calibration	0x0038	float(floating-point, CDAB)	2 (4 bytes)	W	Write the pH value; 9.18 is recommended
PH Slope Calibration	0x003A	float(floating-point, CDAB)	2 (4 bytes)		Write the pH value; 4.00 is recommended

3. Command Example

➤ Read Data

Read request: 03 03 00 06 00 04 A5 EA

Response: 03 03 08 58 00 41 DB AC 05 41 0E 71 32

Parsed in float CDAB format: 58 00 41 DB = 27.41 °C, AC 05 41 0E = 8.91 PH

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

03 10 00 30 00 02 04 00 00 41 C8 CA C5

2. PH Calibration

➤ PH Zero-Point Calibration

Place the sensor in a solution near pH 6.86 and wait for the reading to stabilize. Send the actual pH value to 0x0036 (for example, send 7.0 for pH 7.0 or 6.86 for pH 6.86).

Example: send 6.86

03 10 00 36 00 02 04 85 1F 40 DB 12 78

➤ PH Slope Calibration9.18

Place the sensor in a solution near pH 9.18 and wait for the reading to stabilize. Send the actual pH value to 0x0038.

Example: send 9.18

03 10 00 38 00 02 04 E1 48 41 12 FC D2

➤ PH Slope Calibration4.0

Place the sensor in a solution near pH 4.00 and wait for the reading to stabilize. Send the actual pH value to 0x003A.

Example: send 4.0



03 10 00 3A 00 02 04 00 00 40 80 4B 1C

Alternatively, write the K and B values directly.