



YEX-S1PRO-NHN

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Online Ammonia Nitrogen Sensor User Manual



Changsha Yex Technology Co., Ltd.

Mobile/WhatsApp: +8615111147890

Email: sales@yexsensor.com

Website: www.yexsensor.com

Address: 1303, Building A, Runjia Park Road, Yuelu District, Changsha City, Hunan Province, China





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一. Application Environment

This product is suitable for online ammonia nitrogen measurement in natural waters, industrial water, laboratories, municipal wastewater, and similar applications.

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

Principle: Ion-selective electrode method (ion-active exchange membrane)

Features: Temperature and pH compensation

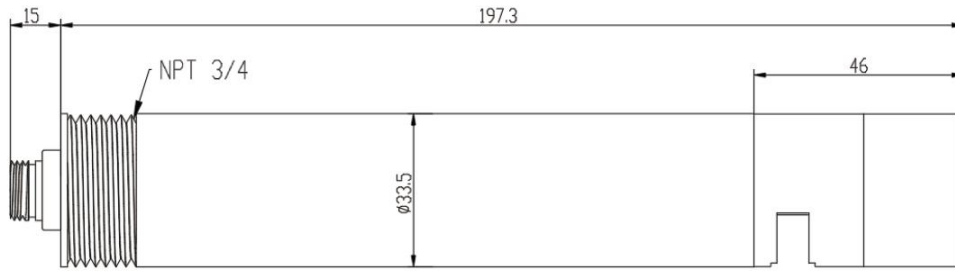
Installation: 3/4 NPT pipe thread; suitable for immersion or installation in a pipe or tank.

二. Technical Performance and Specifications

1. Technical Parameters

Model	YEX-S1PRO-NHN
Power Supply / Consumption	12-24VDC (0.4W)
Ammonia Nitrogen Range	0-1000.00mg/L
Resolution / Accuracy	0.01 / $\pm 10\%$ of reading; $\pm 0.1^{\circ}\text{C}$
PH Range	0~14(PH)
Resolution / Accuracy	0.01/ $\pm 0.1\text{PH}$; $\pm 0.1^{\circ}\text{C}$
Response Time	5min
Communication Interface	RS485 (MODBUS)
Housing Material	316L+ABS
Compensation	Automatic temperature and pH 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
Measurement Principle	Ion-Selective Electrode Method

2. Dimensional Drawing



传感器接头为M16-5芯防水接头母头

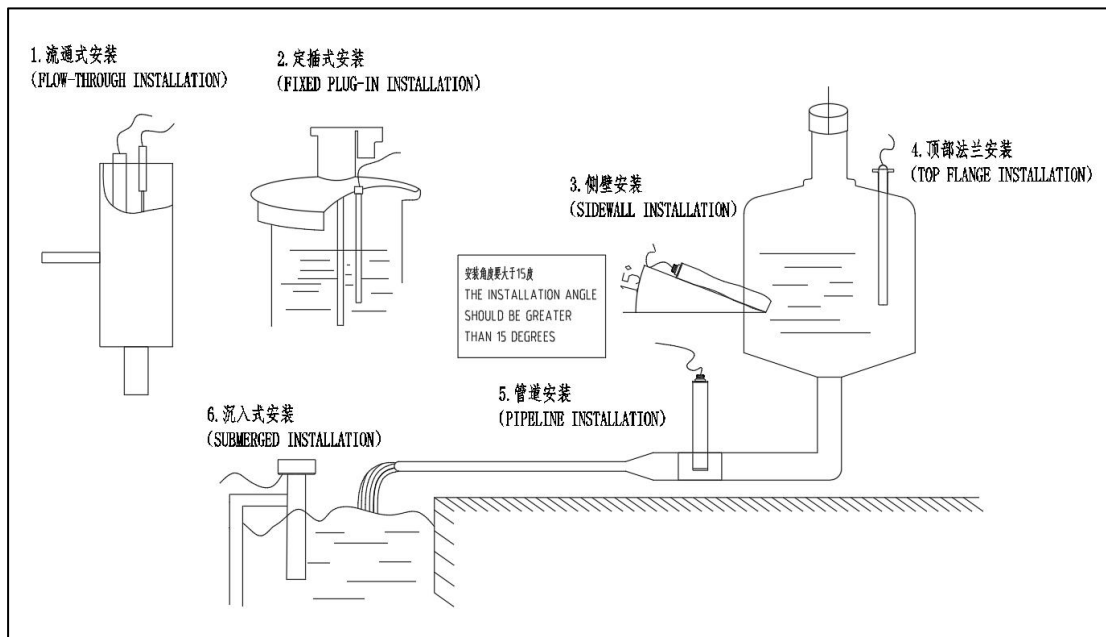
三. Connection and Installation

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.

For light-scattering products, keep the sensor window more than 10 cm from the bottom and more than 3 cm from the container walls; otherwise, reflected light may affect the reading.

四. 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, probe, and aviation connector clean. Use a soft-bristled brush to clean the probe and prevent damage.
- If readings become inaccurate after long-term use, calibrate the sensor according to the communication protocol.

五. Data Communication

1. Communication Settings

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

2. Register Addresses

Register Name	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: 15) 0 is the non-response broadcast address 255 is the response general address
Product Model	0x0001	Unsigned (unsigned integer)	1 (2 bytes)	R	14
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	0-14
Ammonia Nitrogen Value	0x000A	Float (floating-point, CDAB)	2 (4 bytes)	R	
Ammonium Ion Value	0x000C	Float (floating-point, CDAB)	2 (4 bytes)	R	
Free Ammonia Value	0x000E	Float (floating-point, CDAB)	2 (4 bytes)	R	
Nitrate Nitrogen Value	0x0010	Float (floating-point, CDAB)	2 (4 bytes)	R	
Total Nitrogen Value	0x0012	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 pH K	0x0032	float(floating-point,	2 (4 bytes)	W	Write K value

Value		CDAB)			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
Direct-Write Ammonia Nitrogen K Value	0x003C	Float (floating-point, CDAB)	2 (4 bytes)	W	Write K value Default: 1.0
Direct-Write Ammonia Nitrogen B Value	0x003E	Float (floating-point, CDAB)	2 (4 bytes)	W	Write B value Default: 0.0

3. Command Example

➤ Read Data

Read request : 0F 03 00 06 00 06 24 E7

Response : 0F 03 0C 94 CD 41 C9 AO 76 40 D1 1D 43 41 1F 29 9C

Parsed in float CDAB format: 94 CD 41 C9 = 25.19°C, AO 76 40 D1 = 6.55 PH

1D 43 41 1F = 9.94 Ammonia Nitrogen

六. Calibration

The sensor has been factory-calibrated. Recalibration is unnecessary unless required.

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

0F 10 00 30 00 02 04 00 00 41 C8 F5 95

2. Data Calibration

The K and B values can be written directly.