



Recorder



Flow



Pressure



Temp



Analyzer



Level

Datasheet
pH Sensor
TPS-ADP2400



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pH Sensor

SUP-ADP2400

This product is a digital pH sensor specifically designed for aquaculture applications. It is equipped with a digital communication interface (1 × RS485) and is used to measure pH variations in aqueous solutions within the specified measurement range.

The sensor supports the standard RS485 interface with the Modbus RTU protocol, enabling remote communication with host systems such as PLCs, industrial PCs, or SCADA systems.

Features

- Compact design for easy installation
- Isolated power supply design for enhanced data stability and strong resistance to electromagnetic interference
- Supports both automatic temperature compensation (ATC) and manual temperature compensation
- Compatible with USA, NIST, and user-defined pH buffer solutions for calibration
- RS485 interface with support for Modbus RTU protocol
- Communication protocol allows user-defined calibration solutions, device ID configuration, and factory reset



pH Sensor

Measuring Principle

pH is a measure of the acidity or alkalinity of a medium. An electrochemical potential is generated across the electrode membrane, the magnitude of which depends on the pH value of the medium. Hydrogen ions (H^+) selectively accumulate on the outer surface of the membrane, forming an electrochemical boundary layer with a potential difference.

An integrated Ag/AgCl reference system serves as the reference electrode. Based on the Nernst equation, the measured potential is converted into the corresponding pH value.

Parameters

Measured variables	pH value , temperature (optional)
Measuring range	pH: (0.00~14.00) Temperature (optional): (0~60) °C
Accuracy	pH : 0.02 Temperature: 0.5°C
Resolution	pH: 0.01 pH; Temperature: 0.1 °C
Temperature compensation (optional)	NTC10K or NTC22K
Communication	RS485 interface; Modbus RTU
Power supply	(6~30)VDC
Power consumption	12VDC @ 10mA Typical
Medium temperature	(0~50)°C
Pressure resistance	1.0 MPa
Ambient temperature	(0~50)°C
Storage temperature	(0~50)°C
Weight	210g (excluding leads)

Wiring

(1) Wiring

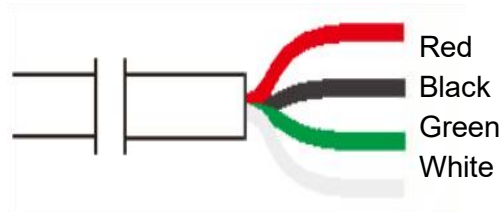


Table 1 Cable definition

Line color	Definition
Red	Power supply (VCC)
Black	GND
White	RS 485 output B
Green	RS 485 output A

(2) Wiring Precautions

- Before powering on, please check the wiring definitions, power supply, and communication interface methods.
 - To avoid accidents, do not power on the device until all wiring is complete.
 - Please ensure that electrical interfaces are waterproofed.
 - Extending the wiring is prohibited.
-

Calibration

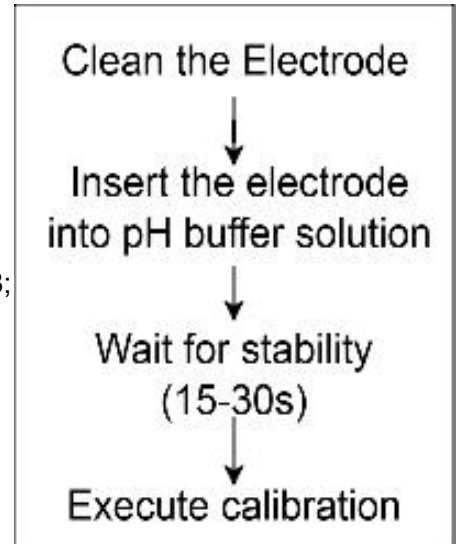
Calibration Cycle: Please clean the electrode regularly according to the measurement environment.

Replace it if the environment is rough and foul.

(1) Max. Calibration point

(2) Calibration procedure

- 1st point: You can choose either pH 7.00 or pH 6.86;
- 2nd point: You can choose any one of pH 4.00 / pH 10.00 / pH 9.18;
- 3rd point: pH 4.00 / pH 10.00 / pH 9.18 and other remaining uncalibrated solutions.



Reference information:

- During calibration, immerse the electrode in the standard liquid and wait for the signal to stabilize before performing the calibration operation.
 - If the sensor is left dry for an extended period, it must be immersed in a pH 4.00 standard solution for at least 30 minutes before calibration.
 - Zero point range: pH 7.00 / pH 6.86 $\pm$ 60.0mV
 - Slope range: S>70.0%. When S<75%, it is recommended to replace the electrode in time.
-

Dimensions and Structure

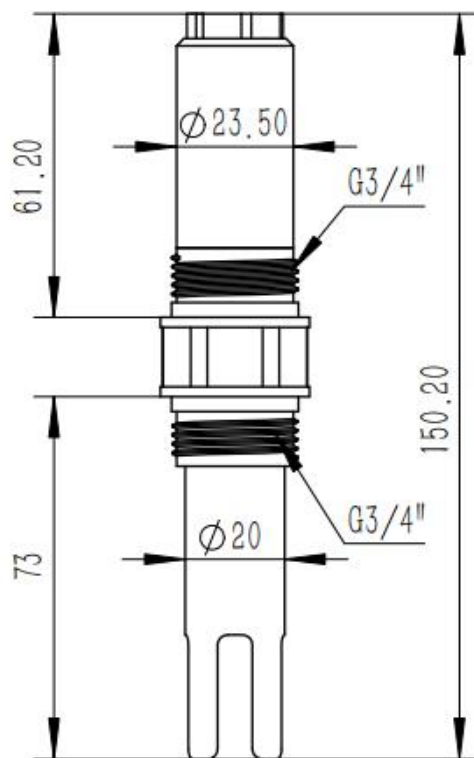


Fig 1 Thread type dimensions (unit: mm)

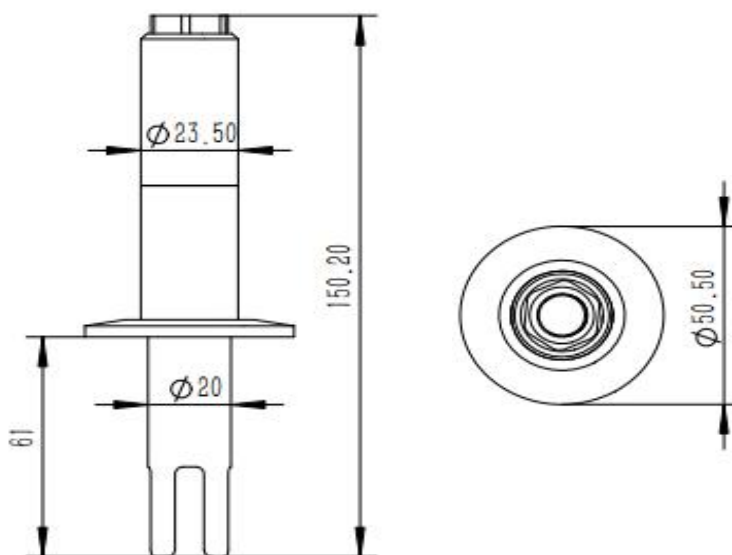


Fig 2 Clamp type dimensions (unit: mm)

Housing material: 304SS

Installation

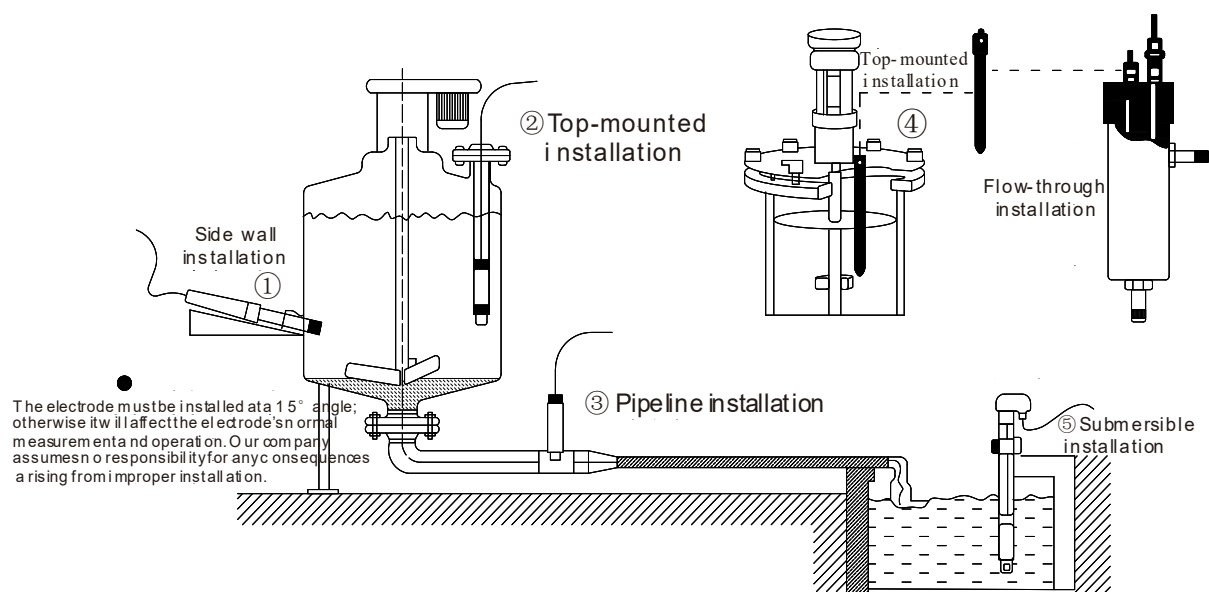


Fig 3 Typical electrode installation methods



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