

Industrial pH electrode(SKU:FIT0348)



[Industrial pH Electrode - Armor Casing](#)

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Introduction

- This pH combination electrode is made of sensitive glass membrane with low impedance. It can be used in a variety of PH measurements with fast response, good thermal stability. It has the good reproducibility, difficult to hydrolysis, and basically eliminate the alkali error .In 0 to 14pH range, the output voltage of the electrode is linear. The reference

system which consist of the Ag/AgCl gel electrolyte salt bridge has a stable half-cell potential and excellent anti-pollution performance. The ring PTFE membrane is not easy to be clogged, so the electrode is suitable for long-term online detection.

- **This product is only a part. Its usage is same with the [pH meter \(SKU:SEN0161\)](#), and the Industrial one is suitable for long-term monitoring.**

Applications

The electrode is suitable for all kinds of printing, circuit board factory, wastewater containing chromium and other industrial and domestic sewage pH monitoring.

Specification

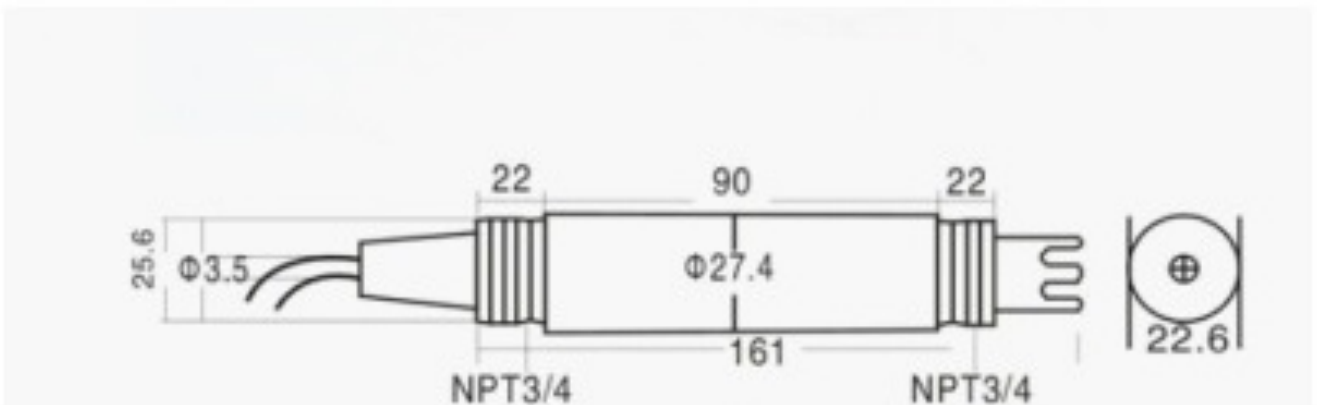
- Length (with protective cover) : 17.7cm
- Diameter : 2.74cm
- Wire Length : 5m
- Connector : BNC
- Measuring Range : 0-14pH
- Measuring Precision: $\leq 0.02\text{pH}$
- Suitable Temperature: 0-60°C
- Response Time: 10sec
- Drift : $\leq 0.02\text{PH}/24\text{hours}$
- Resistance of Sensitive Membrane: $\leq 200 \times 10^6 \Omega$
- Slope: $\geq 95\%$
- Electrode's Equipotential Point: $7 \pm 0.5\text{PH}$

pH Electrode Characteristics

The output of the pH electrode is Millivolts, and the relationship between pH value and output voltage is shown as follows (25 °C):

VOLTAGE (mV)	pH value	VOLTAGE (mV)	pH value
414.12	0.00	-414.12	14.00
354.96	1.00	-354.96	13.00
295.80	2.00	-295.80	12.00
236.64	3.00	-236.64	11.00
177.48	4.00	-177.48	10.00
118.32	5.00	-118.32	9.00
59.16	6.00	-59.16	8.00
0.00	7.00	0.00	7.00

Dimensional Drawing



Use and Maintenance

- Electrode must be known before the measurement standard buffer solution PH value calibrated to improve the measurement accuracy, PH value of the buffer to be reliable, and the closer the measured value , the better , generally no more than three PH.
- Sensitive glass bubble ball electrode tip is not in contact with a hard object, any breakage and hair will rub the electrode failure.
- Electrode receptacle must be kept clean and dry height, if tarnished available medical cotton and ethanol to wipe and dry , definitely prevent the output ends of a short circuit , otherwise it will lead to inaccurate measurements or failure.

- Measurements should be taken before the bubble inside the glass bulb rejection to, otherwise it will cause measurement errors, measurement, should stir the electrode in the test solution still placed to accelerate response.
- Both before and after measurements and clean the electrode with deionized water to ensure measurement accuracy, the viscosity was measured in a sample, the electrodes need to use deionized water to remove the solvent.
- Passivated electrode will produce long-term use, the phenomenon is sensitive to low gradient, slow response, inaccurate readings, then you can lower end of the electrode bulb with 0.1M solution soak for 24 hours (preparation 0.1M dilute hydrochloric acid : 9ml hydrochloride diluted with distilled water to 1000ml), then use 3Mkcl solution soak for several hours to restore performance.
- Glass bulb liquid surface contamination or blockage, but also make the electrode passivation, at this time, should be based on the nature of the pollutant, the appropriate cleaning solution.
- Electrode cycle is about a year, after aging should be promptly replaced with new electrodes.

Step to Use the pH Meter

Cautions:

- Please use an external switching power supply, and the voltage as close as possible to the +5.00V. More accurate the voltage, higher the accuracy!
- Before the electrode in continuous use every time, you need to calibrate it by the standard solution, in order to obtain more accurate results. The best environment temperature is about 25 °C, and the pH value is known and reliable, close to the measured value. If you measure the acidic sample, the pH value of the standard solution should be 4.00. If you measure the alkaline sample, the pH value of the standard solution should be 9.18.Subsection calibration, just in order to get a better accuracy.
- Before the pH electrode measured different solutions, we need to use water to wash it. We recommend using deionized water.
- **Step 1:** Connect equipment according to the graphic, that is, the pH electrode is connected to the BNC connector on the pH meter board, then use the connection lines, the pH meter board is connected to the analog port 0 of the [Arduino controller](#). When the Arduino controller gets power, you will see the blue LED on board is on.
- **Step 2:** Upload the sample code to the Arduino controller.
- **Step 3:** Put the pH electrode into the standard solution whose pH value is 7.00, or directly shorted the input of the BNC connector. Open the serial monitor of the Arduino IDE, you can see the pH value printed on it, and the error does not exceed 0.3. Record the pH value printed, then compared with 7.00, and the difference should be changed into the "Offset" in the sample code. For example, the pH value printed is 6.88, so the

difference is 0.12. You should change the "# define Offset 0.00" into "# define Offset 0.12" in your program.

- **Step 4:** Put the pH electrode into the pH standard solution whose value is 4.00. Then wait about one minute, adjust the gain potential device, let the value stabilize at around 4.00. At this time, the acidic calibration has been completed and you can measure the pH value of an acidic solution.
- **Note: If you want to measure the pH value of other solution, you must wash the pH electrode first!**
- **Step 5:** According to the linear characteristics of pH electrode itself, after the above calibration, you can directly measure the pH value of the alkaline solution, but if you want to get better accuracy, you can recalibrate it. Alkaline calibration uses the standard solution whose pH value is 9.18. Also adjust the gain potential device, let the value stabilize at around 9.18. After this calibration, you can measure the pH value of the alkaline solution.

Sample Code can be found at: <https://github.com/TexasStateDrifter/driftersoftware> in the "Sensor Sample Code" folder.

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