



# RK500-12 (Liquid cooling) pH Sensor



## Overview

With the rapid development of fields such as data centers, new energy vehicles, and high-end manufacturing, liquid cooling technology, leveraging its efficient heat dissipation capabilities, has gradually become the mainstream cooling solution for high heat density equipment. However, the stable operation of liquid cooling systems is highly dependent on the cleanliness of the cooling liquid. If particulate matter, corrosion products, microbial impurities, or other contaminants are mixed into the cooling liquid, it will not only reduce heat dissipation efficiency but may also block pipelines, corrode equipment components, and cause system failures or even downtime accidents.

The pH value reflects the acidity or alkalinity of the cooling liquid. Once it becomes imbalanced, it can trigger a series of cascading issues. Excessive acidity can corrode metal components such as pipelines and server components, causing equipment damage and leakage risks. The RK500-12 liquid-cooled pH sensor utilizes advanced glass electrode technology paired with a high-precision signal processing chip to achieve precise measurement of pH values. It can sensitively capture subtle changes in the pH value of the cooling liquid. Whether in acidic or alkaline environments, it can provide accurate and stable monitoring data, providing a reliable basis for evaluating the operating status of the liquid cooling system.

## Features

## Applications

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Low impedance sensitive glass film</li> <li>Automatic temperature compensation</li> <li>It is resistant to hydrolysis and can be applied in alkaline environments</li> <li>Simple operation and high reliability</li> <li>Internal signal isolation ensures strong anti-interference capability</li> <li>Wide voltage power supply (7-30VDC)</li> <li>Low drift, small size, and fast response speed</li> </ul> | <ul style="list-style-type: none"> <li>Liquid cooling industry</li> <li>Environmental protection</li> <li>Aquaculture</li> <li>Water conservancy</li> </ul> |
|--|---|

## Technical Parameter

| Item              | Technical Specification                              |
|-------------------|--|
| Main material     | 316L+ Titanium alloy                                 |
| Applicable medium | Deionized water, PG25,EG25                           |
| O-ring material   | EPDM   |
| Screw thread      | Upper:G3/4   |
| Sealing method    | End face sealing                                     |
| Outlet mode       | Direct outlet, customizable M16 aviation plug outlet |
| Accuracy          | ±0.1pH   |
| Resolution        | 0.01pH   |
| Power consumption | <0.2W  |

### Technical Parameter

| Item                  | Technical Specification                           |
|-----------------------|---|
| Operating temperature | 0-+60°C   |
| Temp. compensation    | Thermal resistance                                |
| Range                 | 0-14pH  |
| Supply                | 7-30VDC   |
| Output                | 4-20mA&RS485 at the same time                     |
| Response time         | 10 seconds (98% flowing liquid)                   |
| Pressure resistance   | <1MPa(10Bar)                                      |
| Ingress protection    | IP68  |
| Storage               | 10-60°C@20%-90%RH                                 |
| Cable length          | 5m default, other cable lengths can be customized |

### pH Scale

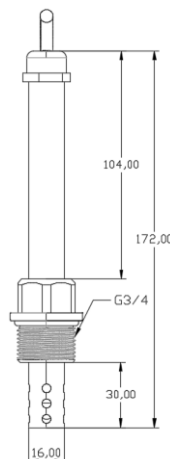
| pH value | Description      | pH value | Description         |
|----------|------------------|----------|---------------------|
| <4.5     | Strongly acidity | 7.5-8.5  | Faintly alkalinity  |
| 4.5-5.5  | Acidity          | 8.5-9.5  | Alkalinity          |
| 5.5-6.5  | Faintly acidity  | >9.5     | Strongly alkalinity |
| 6.5-7.5  | Neutral          | ...      | ...                 |

### Electrode Maintenance

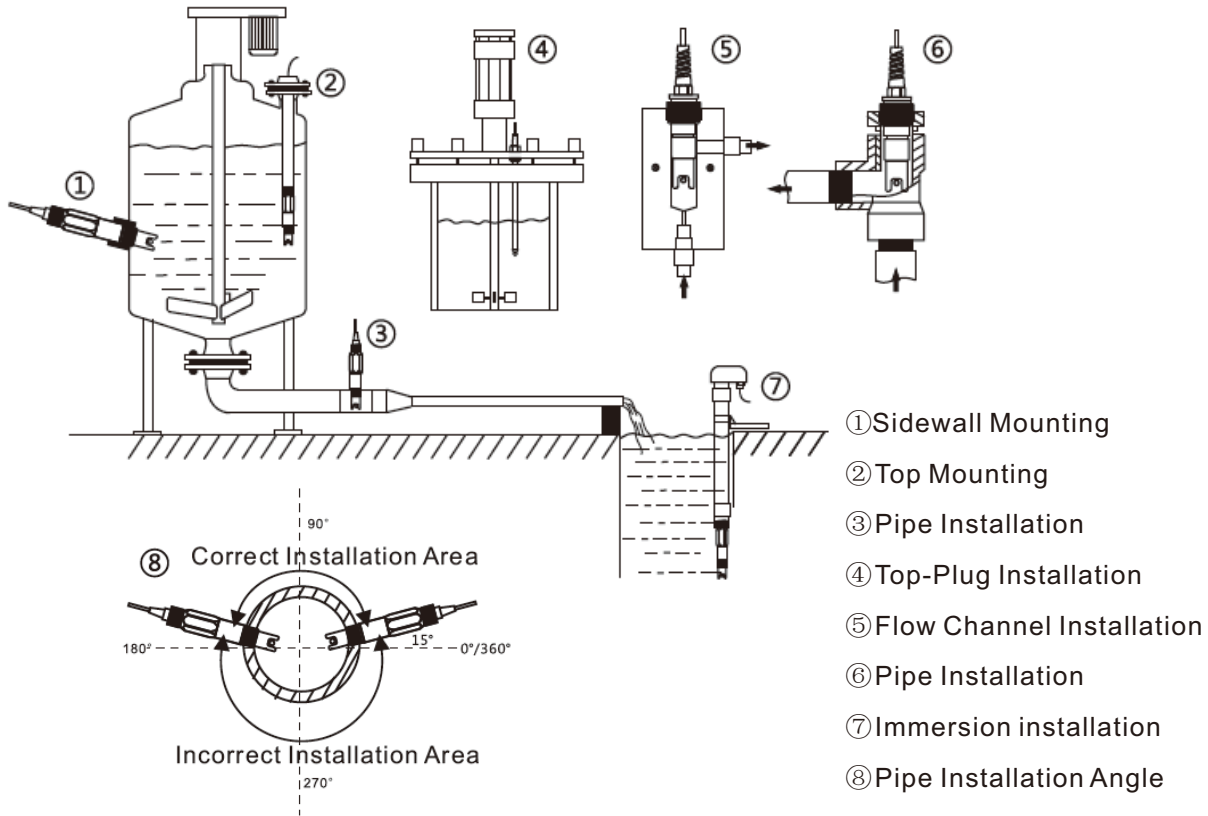
When the probe is not in use, it can be soaked in 3mol/l KCL solution or saturated KCL solution. It is strictly prohibited to immerse the electrode in distilled water, deionized water, or tap water with very low ion content. If the pH electrode is contaminated with inorganic substances, it can be cleaned with 0.1mol/l HCl or sodium hydroxide solution for a few minutes, and then rinsed with distilled water. If the pH electrode is contaminated with organic matter, it can be cleaned with alcohol or acetone, and then rinsed with distilled water. (Note: When using, remove the protective cap in front of the electrode) According to the work environment, clean the electrodes with tap water every 3 or 6 months.

### Dimension

Unit:mm



## Installation & Fixed



## Parameter Selection Table

| Remark | Series | Type | Supply | Range | Cable Length  |
|--------|--------|------|--------|-------|---------------|
| RK     | 500    | 12   | A      |       | 7-30VDC       |
|        |        |      | X      |       | Other         |
|        |        |      |        | A     | 0-14pH        |
|        |        |      |        |       | 5000 Unit(mm) |
|        |        |      |        |       | ... Unit(mm)  |

Example: RK500-12AA5000 Supply:7-30V, Range: 0-14pH, Cable length:5m.

| Revision time | Reviser | Current Version | Remarks |
|---------------|---------|-----------------|---------|
| 20260224      | Echo    | V5.0.1          |         |