RK500-12LC (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 RK500-12LC 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

- Low impedance sensitive glass film
- Automatic temperature compensation
- It is resistant to hydrolysis and can be applied in alkaline environments
- Simple operation and high reliability
- Internal signal isolation ensures strong anti-interference capability
- Wide voltage power supply (7-30VDC)
- Wetted material matching liquid cooling industry

Applications

- Liquid cooling industry
- Environmental protection
- Aquaculture
- Water conservancy
- Sewage treatment

Technical Parameter

Item	Technical Specification		
Main material	316L+ Titanium alloy		
Applicable medium①	Deionized water, PG25,EG25		
O-ring material	EPDM		
Process connection	Upper:G3/4	Upper and lower NPT3/4 threads	50.5 Chuck
Sealing method	End face seal	Thread seal	Gasket
Cable	M16 connector , Direct line		
Accuracy	±0.1pH@25℃		
Resolution	0.01pH		
Power consumption	＜0.2W		

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Technical Parameter

Item	Technical Specification
Operating temperature	0-+60℃
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（probe)	IP68
Storage	10-60℃@20%-90%RH
Cable length	5m default, other cable lengths can be customized

①Please verify the medium to be used before placing your order.

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	•••	...

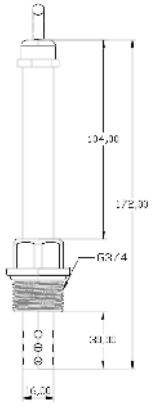
Electrode Maintenance

When the probe is not in use, it needs to 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 6 months

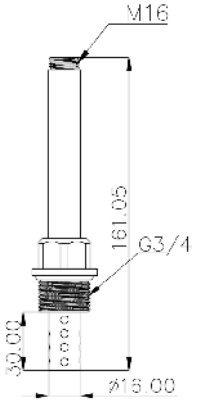
Dimension

Unit:mm

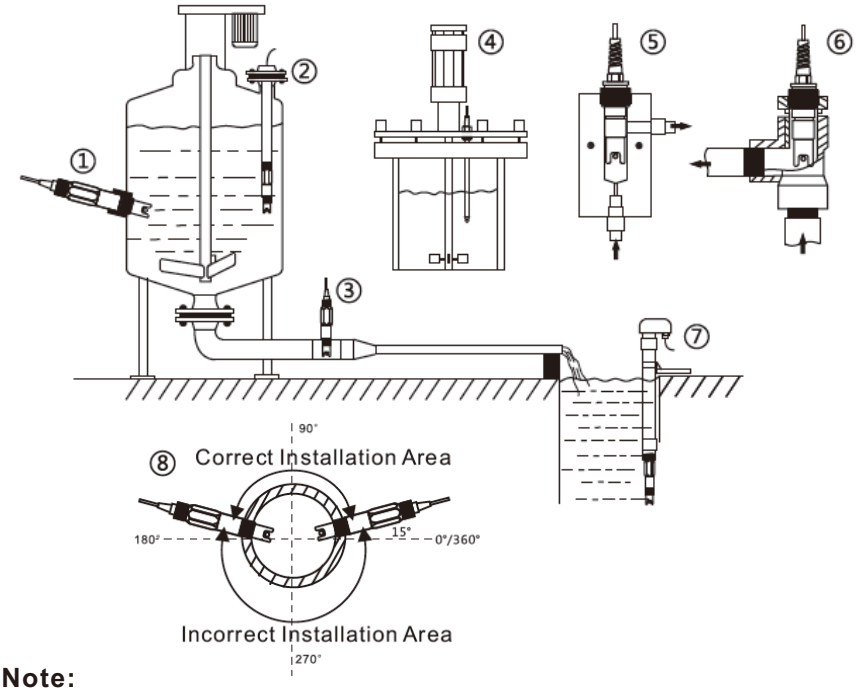
G3/4, Direct line



G3/4, M16 connector



Installation & Fixed



①Sidewall Mounting
②Top Mounting
③Pipe Installation
④Top-Plug Installation
⑤Flow Channel Installation
⑥Pipe Installation
⑦Immersion installation
⑧Pipe Installation Angle

Note:
Regardless of the installation method used, please avoid generating bubbles near the measuring electrode.
When selecting theM16 connector, the length of the reserved straight section at the outlet end should not be less than 70 mm to avoid cable breakage or core wire breakage caused by a too small bending radius.

Parameter Selection Table

Remark	Series	Type	Supply	Range	Process Connection	Cable	Cable Length	
RK								
	500							
		12LC						
			A					7-30VDC
			X					Other
				A				0-14pH
					A			G3/4
					B			NPT3/4
					C			50.5 Chuck
					X			Other
						A		M16 connector
						B		Direct line
							5000	Unit(mm)
							...	Unit(mm)

Example: RK500-12LC AAAA5000 Supply:7-30VDC, Range: 0-14pH, Process connection: G3/4, Cable : M16 connector,Cable length:5m.

Revision time	Reviser	Current Version	Remarks
20260420	Echo	V5. 1. 1	