RK500-30 Corrosion Rate Sensor



Overview

With the large-scale deployment of immersion cooling technology, the chemical compatibility of dielectric coolants has become a critical determinant of IT equipment's operational lifespan. To address this core challenge, we introduce our Corrosion Rate Monitoring Sensor, designed to provide round-the-clock reliability assurance for liquid cooling systems.
Utilizing a combined Linear Polarization Resistance (LPR) and Electrochemical Impedance Spectroscopy (EIS)approach, the sensor overcomes the limitations of conventional single-method measurements. It achieves high signal-to-noise ratio acquisition of trace metal ion activities within the coolant and enables the precise quantification of corrosion kinetics. Structurally, a fully sealed stainless-steel housing coupled with an IP68 rating ensures long-term structural integrity in complex liquid environments. Via RS485/Modbus protocols, real-time corrosion data streams directly to host systems, facilitating accurate early-stage trend prediction. This capability drives the transition from reactive maintenance to proactive, predictive operations, thereby maximizing the return on investment (ROI) in critical computing infrastructure.

Features

- Built-in Automatic Temperature Compensation (ATC)
- Flexible wide-voltage input (7–30 VDC)
- Simple to deploy and built for long-term reliability
- Monitors both localized pitting and average corrosion rates simultaneously
- Incorporates advanced anti-polarization circuitry for stable readings
- Galvanically isolated internal signals ensure robust performance against EMI

Applications

- Immersion Cooling
- Industrial Circulating Water
- Wastewater Treatment
- Water Conservancy

Technical Parameter

Item	Technical Specification		
Main material	316L		
Measurement principle	LPR (Linear Polarization Resistance) & EIS (Electrochemical Impedance Spectroscopy)		
Compatible pipeline material①	Stainless Steel (Default), Aluminum, Copper		
Applicable medium	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	±0.001 mm/a		
Resolution	0.0001 mm/a		

Technical Parameter

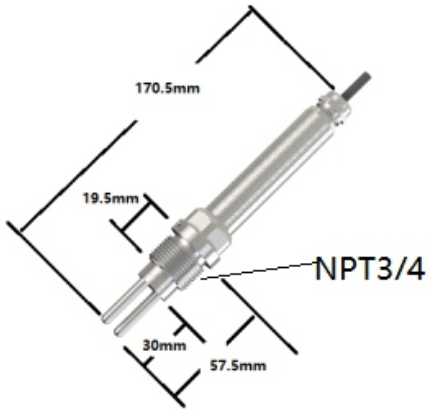
Item	Technical Specification
Range	0 ~ 1 mm/a
Operating temperature	0-+60℃
Supply	7-30VDC
Output	4-20mA&RS485 at the same time
Response time	1s
Drift	≤ 0.3% FS / 24h
Pressure resistance	1MPa(10Bar)
Ingress protection(probe)	IP68
Storage	10-60℃@20%-90%RH
Cable length	5m default, other cable lengths can be customized

①Please confirm the material of the installation pipeline before placing an order.

Dimension

Unit:mm

Configuration:NPT3/4, Direct Cable Outlet



Installation Notes

●Regardless of the installation method used, ensure no air bubbles accumulate near the measuring electrodes.

●If selecting the M16 aviation plug for cable outlet, maintain a minimum straight section length of 70 mm at the outlet end to prevent cable damage or core wire breakage caused by an insufficient bending radius.

Parameter Selection Table

Remark	Series	Type	Supply	Range	Process Connection	Cable	Cable Length	
RK								
	500							
		30						
			A					7-30VDC
			X					Other
				A				0-1mm/a
				X				Other
					A			G3/4
					B			NPT3/4
					C			50.5 Chuck
					X			Other
						A		M16 connector
						B		Direct line
							5000	Unit(mm)
							…	Unit(mm)

Example: RK500-30AAAA5000 Supply:7-30VDC, Range: 0-1mm/a, Process connection: G3/4, Cable: M16 connector,Cable length:5m.

Revision time	Reviser	Current Version	Remarks
20260723	Echo	V5. 0	