# Water Quality Sensors Catalogue

Shandong Renke Control Technology Co.,Ltd.

## Our water quality sensor types list:

- 1. Water pH sensor
- 2. Water conductivity sensor
- 3. Dissolved oxygen sensor
- 4. Turbidity sensor
- 5. Residual chlorine sensor
- 6. ORP sensor
- 7. Total Suspended Solids Sensor
- 8. COD sensor
- 9. Blue-green algae sensor
- 10. Chlorophyll sensor
- 11. 5 in 1 water quality sensor
- 12. Oil in water sensor
- 13. Water ion sensors

# 1. Water pH sensor

## 1.1 Integrated pH sensor

The RS-PH-N01-3-T is an instrument for measuring the pH value (hydrogen ion concentration index, acidity/alkalinity) of solutions. It features automatic temperature compensation, allowing for easy switching between automatic and manual temperature compensation. This pH electrode has an integrated design with no moving parts, making it simple to use. It has an IP68 protection rating. It is suitable for measuring non-corrosive weak acid and weak base liquids such as industrial wastewater, domestic sewage, agricultural water, and aquaculture water.

<table>
<tr>
<td></td>
<td>Power supply: DC 7~30V<br>Power consumption: 0.3W<br>pH measure range: 0~14pH<br>Resolution: 0.01pH<br>pH measure error: ±0.15pH<br>Repeatability error: ±0.02pH<br>Temperature range: 0~60℃<br>Resolution: 0.1℃<br>Temperature measurement error: ±0.5℃<br>Withstand voltage: 0.6MPa<br>Line length: default 5m (can be customized)<br>Output signal: RS485</td>
</tr>
<tr>
<td colspan="2">Advantages：<br>1. The reference design employs a dual salt bridge, resulting in enhanced resistance to contamination.<br>2. The Modbus communication address is configurable, and the baud rate is modifiable.</td>
</tr>
</table>

## 1.2 Industrial pH sensor

The RS-PH-*-2-*-T is an industrial-grade pH sensor. It consists of a pH electrode and a signal transmission device. The pH electrode is replaceable depending on the application environment; we offer composite electrodes, planar desulfurization electrodes, PTFE electrodes, glass electrodes, antimony electrodes, and more for your selection. It can be used in various applications such as wastewater treatment, aquaculture, biopharmaceuticals, mineral suspensions, and flue gas desulfurization.

<table>
<tr>
<td>
</td>
<td>Power supply: DC10~30V (0-10V is DC24V)<br>Power consumption: 0.6W (RS485), 1.2W (Analog)<br>pH range: 0~14pH<br>Resolution: 0.01pH<br>pH measurement error: ±0.15pH<br>Repeatability error: ±0.02pH<br>Electrode applicable temperature: 0~80℃<br>Electrode withstand voltage: 0.6MPa<br>Electrode wire: 5m (10m, 15m, 20m for optional)<br>Electrode use period: 6~12 months<br>Output signal: RS485/0-5V/0-10V/4-20mA</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Complete variety, covering a wide range<br>2. High precision, high sensitivity and high stability<br>3. With automatic temperature compensation function<br>4. Obvious price advantage</td>
</tr>
</table>

# 2. Water conductivity sensor

## 2.1 Integrated conductivity sensor

The RS-EC-N01-3-T is an instrument for measuring the conductivity of solutions. It features built-in automatic temperature compensation for high measurement accuracy. Its integrated design eliminates moving parts, making it easy to use. It is IP68 rated for protection. It can be widely used in applications such as cross-sectional water quality monitoring, aquaculture, wastewater treatment, environmental protection, pharmaceuticals, and drinking water treatment.

<table>
<tr>
<td></td>
<td>Power supply: DC 7~30V<br>Power consumption: 0.4W<br>EC range: K=1: 1~2000μS/cm (resolution 0.1μS/cm), K=10: 10~20000μS/cm (resolution 1μS/cm)<br>EC measure error: ±1%FS<br>Temperature measure range: 0~+80℃(resolution: 0.1℃)<br>Temperature measure error: ±0.5℃<br>Temperature compensation range: 0~+80℃<br>Temperature compensation coefficient: default 0.02<br>Salinity range: K=1: 0~1000ppm; K=10: 0~11476ppm<br>TDS range: K=1: 0~1100ppm; K=10: 0~13400ppm<br>Transmitter element temperature resistance -20~+80℃<br>Pressure resistance: 0.6MPa<br>Line length: default 5m (customizable)<br>Output signal: RS485</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Integrated design for easy installation.<br>2. Features salinity and TDS conversion.<br>3. ModBus communication address is configurable, and baud rate is modifiable.</td>
</tr>
</table>

## 2.2 Industrial conductivity sensor

The RS-EC-*-2-*-T is an industrial-grade conductivity sensor. It consists of an EC electrode and a signal transmission device, with selectable RS485, 4-20mA, 0-5V, and 0-10V outputs. The EC electrode is available in both plastic and stainless steel housings. The stainless steel electrode is suitable for monitoring corrosive water, while the plastic housing is suitable for monitoring non-corrosive water.

<table>
<tr>
<td>
</td>
<td>Power supply DC 10~30V (0-10V is DC24V)<br>Power consumption: 0.4W (RS485), 1W (analog)<br>EC measure range:<br>K=0.01: 0.01~20μS/cm (resolution 0.001μS/cm);<br>K=0.1: 0.1~200μS/cm (resolution 0.01μS/cm);<br>K=1: 1~2000μS/cm (resolution 0.1μS/cm);<br>K=10: 10~20000μS/cm (resolution 1μS/cm)<br>EC measure error: ±1%FS<br>Temperature compensation range:0~80℃<br>Temperature compensation coefficient: default 0.02<br>Electrode line length: default 5m (customizable)<br>Output signal: RS485/0-5V/0-10V/4-20mA</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. High precision, high sensitivity and high stability<br>2. It can monitor EC and temperature at the same time, and one device can monitor multiple elements<br>3. Obvious price advantage</td>
</tr>
</table>

# 3. Dissolved oxygen sensor

RS-LDO*-*-2-20-T is an instrument for measuring dissolved oxygen concentration in solutions. It employs a fluorescence method, using imported high-quality fluorescent membranes, and requires no electrolyte or oxygen consumption. It also features built-in temperature compensation. It can be widely used in water treatment, aquaculture, environmental monitoring, and other industries.

<table>
<tr>
<td></td>
<td>Power supply: DC 10~30V (0-10V is DC24V)<br>Power consumption: 0.2W (RS485), ≤0.8W (analog)<br>Measurement principle: fluorescence method<br>DO range: 0~20mg/L (0~200% saturation)<br>Measurement error: ±0.3mg/L<br>Resolution: 0.01mg/L<br>Response time: ≤60s<br>Equipment working conditions: 0~40℃<br>Waterproof grade: IP68<br>Pressure resistance: 0.6MPa<br>Electrode line length: default 5m<br>Output signal: RS485/0-5V/0-10V/4-20mA</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Using imported membrane head, high precision, high sensitivity and high stability<br>2. There is no need to replace the diaphragm regularly, frequent calibration problems, and long-term maintenance-free (compared to the extremely popular method)<br>3. Simultaneously monitor dissolved oxygen, saturation, and temperature,and one device measures multiple factors.</td>
</tr>
</table>

# 4. Turbidity sensor

RS-ZD-*-*-*-T is a highly protective turbidity sensor. It employs a 90° scattering light principle, utilizing an infrared LED light source and fiber optic transmission path design. Internal filtering algorithms enhance its resistance to external light interference. Built-in temperature compensation makes it suitable for long-term online monitoring.



Power supply: DC 10~30V (0-10V is DC24V)

Power consumption: 0.2W (RS485), ≤0.8W (analog)

Turbidity range: 0~50NTU, 0~200NTU, 0~1000NTU, 0~4000NTU

Measure error: ±5%FS (25℃); ±0.5℃

Resolution: 0.01NTU (0~50NTU), 0.1NTU (0~200NTU), 0.1NTU (0~1000NTU), 1NTU (0~4000NTU)

Response time: ≤30sec

Working conditions: 0~40℃

Working principle 90° light scattering method

Electrode line length: default 5m

Casing material: corrosion-resistant plastic

Output signal: RS485/0-5V/0-10V/4-20mA

**Advantages:**

1. Infrared LED light source, high stability, convenient, fast, stable and easy to maintain.
2. Simultaneous monitoring of turbidity and temperature, one device measures multiple elements.
3. No probe consumption, high sensitivity, low detection limit, long life.

# 5. Residual chlorine sensor

## 5.1 Integrated free chlorine sensor

RS-CL-N01-3-T is an instrument for measuring the concentration of free chlorine (hypochlorous acid, hypochlorite ions) in water. It uses a three-electrode system, offering advantages such as high accuracy, long lifespan, and simple calibration. It is widely used in applications such as automatic dosing of circulating water systems, chlorination control in swimming pools, and drinking water treatment.

| | |
|---|---|
|  | Power supply: DC 7~30V<br>Power consumption: 0.19W<br>Measure range: 0-2mg/L, 0-10mg/L, 0-20mg/L<br>Resolution: 0.01mg/L<br>Measure error: ±5%FS<br>Repeatability error: ±0.05mg/L<br>Response time: <30s<br>Transmitter withstand voltage: 0.6MPa<br>Electrode line length: default 5m (customizable)<br>Output signal: RS485 |
| **Advantages:**<br>1. Integrated design directly outputs a 485 signal, eliminating signal interference.<br>2. 3/4" top and bottom mounting threads for easy installation.<br>3. Employs an advanced non-diaphragm constant voltage sensor, eliminating the need to replace diaphragms or reagents. | |

## 5.2 Industrial free chlorine sensor

The RS-CL-*-2-*-T is an industrial-grade free chlorine sensor. It employs an advanced non-membrane constant voltage sensor, eliminating the need to replace diaphragms or reagents. The free chlorine electrode uses a dedicated shielded wire, providing strong anti-interference capabilities. It can be used for long-term monitoring of chlorine in drinking water, swimming pool water, and hospital wastewater.

<table>
<tr>
<td></td>
<td>Power supply: DC 10~30V (0-10V is DC24V)<br>Power consumption: 0.3W (RS485), 0.9W (analog)<br>Measure range: 0-2mg/L, 0-10mg/L, 0-20mg/L<br>Resolution 0.01mg/L<br>Measure error: 5% or 0.05mg/L<br>Repeatability error: ±0.05mg/L<br>Response time: <30s<br>Electrode applicable temperature: 0~50℃<br>Electrode withstand voltage: 0.6MPa<br>Wire length: 5m by default (customizable)<br>Output signal: RS485/0-5V/0-10V/4-20mA</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Free chlorine measurement range is selectable at 0-2 mg/L, 0-10 mg/L, and 0-20 mg/L, with a resolution of 0.01 mg/L.<br>2. Employs an advanced non-membrane constant voltage sensor, eliminating the need to replace diaphragms or reagents.</td>
</tr>
</table>

# 6. ORP sensor

## 6.1 Integrated ORP sensor

The RS-ORP-N01-3-300T-T is an instrument for measuring the redox potential of solutions. The ORP electrode is made of high-purity platinum, possessing excellent resistance to acids, alkalis, and oxidation. It features a one-piece design, built-in temperature compensation, high accuracy, fast response, good stability, and an IP68 protection rating. It is suitable for measuring the redox potential of industrial wastewater containing cyanide or chromium, as well as natural water sources such as rivers and lakes.

<table>
<tr>
<td></td>
<td>Power supply: DC 7~30V<br>Power consumption: 0.3W<br>ORP range: -1999~1999mV<br>Resolution: 1mV<br>ORP measure error: ≤±5mV (in 222mV standard solution at 25℃)<br>Temperature range: 0~60℃; Resolution: 0.1℃<br>Temperature measure error: ±0.5℃<br>Working conditions: 0~60℃<br>Withstand voltage: 0.6MPa<br>Line length: 5m by default (customizable)<br>Output signal: RS485</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Integrated design, outputs RS485 signal, simple structure.<br>2. Modbus communication address is configurable, baud rate is modifiable.<br>3. Waterproof and corrosion-resistant, protection rating is IP68.</td>
</tr>
</table>

## 6.2 Industrial ORP sensor

The RS-ORP-*-2-300T-T is an industrial-grade ORP sensor. It supports RS485 or analog signal output. The electrodes can be automatically compensated for based on temperature. It is suitable for online monitoring of redox potential in wastewater containing cyanide, chromium, etc.

<table>
<tr>
<td></td>
<td>Power supply: DC 10~30V (0-10V is DC24V)<br>Power consumption: 0.6W (RS485), 1.2W (analog)<br>ORP measurement range: -1999~1999mV<br>Resolution: 1mV<br>ORP measurement error: ±10mV<br>Transmitter temperature resistance: -20℃~+80℃, 0%RH~95%RH (non-condensing)<br>Electrode applicable temperature: 0~80℃<br>Storage temperature: 0~80℃<br>Electrode withstand voltage: 0.6MPa<br>Electrode line length: default 5m (customizable)<br>Signal output: RS485/4-20mA/0-5V/0-10V</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Made of high-purity platinum, it has strong anti-acid and alkali ability and anti-oxidation ability.<br>2. With automatic compensation function.<br>3. High precision, high sensitivity and high stability.</td>
</tr>
</table>

# 7. Total suspended solids sensor

The RS-SS-N01-2/3-T is an instrument for measuring the concentration of suspended solids in solutions. It employs optical principles and integrates a self-cleaning system to effectively prevent biofouling. It features automatic temperature compensation and uses modulated light signals to reduce visible light interference. It can be widely used in water treatment, aquaculture, environmental monitoring, and other industries.

<table>
<tr>
<td></td>
<td>Power supply: DC 12~30V<br>Power consumption: 1.2W (normal); 4.5W (during self-cleaning operation)<br>Working principle: Photoabsorption Method<br>Measuring range: 0~20000mg/L; 0~5000mg/L; 0~1000mg/L; 0~200mg/L<br>Measurement error: ±5%F.S.<br>Resolution: 0.1mg/L<br>Response time: ≤30s<br>Operating conditions: 0~40℃<br>Flow rate: <3m/s<br>Pressure resistance: <0.1MPa<br>Electrode wire length: Default 5m (Customizable)<br>Output signal: RS485</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Utilizes modulated optical signals to reduce visible light interference.<br>2. Features an integrated self-cleaning system.<br>3. Waterproof and corrosion-resistant, with an IP68 protection rating.</td>
</tr>
</table>

# 8. COD sensor

RS-COD-*-*-500-T is an instrument for measuring the chemical oxygen demand (COD) of solutions. It employs ultraviolet absorption and integrates a self-cleaning system and automatic temperature compensation. It also includes a turbidity measurement channel to effectively compensate for the impact of turbidity on COD measurement. It can be widely used in water treatment, aquaculture, environmental monitoring, and other industries.

<table>
<tr>
<td></td>
<td>Power supply DC 9~30V (0-10V is DC24V)<br>Measuring principle: dual-wavelength ultraviolet absorption method<br>Measuring range: 0~500mg/L equiv.KHP<br>Measuring error: ±5%FS equiv.KHP (25℃)<br>Resolution: 0.1mg/L<br>Repeatability ±1%FS equiv.KHP (25℃)<br>Response time: ≤20sec<br>Flow rate: <3m/s<br>Withstand pressure: <0.1MPa<br>Electrode line length: default 5m (customizable)<br>Material: corrosion-resistant plastic/stainless steel<br>Calibration frequency: 3 months<br>Self-cleaning system life: 18 months<br>Output signal: RS485/4-20mA/0-5V/0-10V</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Modulated optical signals are used to reduce visible light interference.<br>2. Dual-path measurement compensates for the impact of turbidity on COD measurement.<br>3. An integrated self-cleaning system effectively prevents biofouling.</td>
</tr>
</table>

# 9. Blue-green algae sensor

RS-BA-*-2-T is an instrument for measuring the concentration of cyanobacteria in water. It utilizes fluorescence principles, which are simpler than traditional manual counting methods. An internal filtering algorithm enhances its resistance to external light interference; it also features built-in automatic temperature compensation. It can be used for monitoring in rivers, lakes, ponds, marine surveys, aquaculture, and other similar locations.

<table>
<tr>
<td></td>
<td>Power supply DC 7~30V (0-10V is DC24V)<br>Power consumption 0.4W(RS485), ≤1W(analog)<br>Measurement range: 0~300000 cells/ml<br>Measurement error: ≤±5%FS<br>Resolution: 1cells/ml<br>Linearity: $R^2$>0.999<br>Working conditions: 0~40℃<br>Electrode line length: default 5m<br>Casing material: corrosion-resistant plastic<br>Withstand pressure: <0.6MPa<br>Output signal: RS485/4-20mA/0-5V/0-10V</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Electrode protection rating is IP68.<br>2. Filtering algorithm, strong resistance to external light interference.<br>3. Built-in automatic temperature compensation, suitable for long-term online monitoring.</td>
</tr>
</table>

# 10. Chlorophyll sensor

RS-CH-*-2-T is an instrument for measuring chlorophyll concentration in water. It utilizes the principle of fluorescence and employs an optical fiber transmission path design, making it highly resistant to external light interference. It also features built-in temperature compensation. It can be used for monitoring in rivers, lakes, ponds, marine surveys, aquaculture, and other similar locations.

<table>
<tr>
<td></td>
<td>Power supply: DC 7~30V (0-10V is DC24V)<br>Power consumption 0.4W(RS485), ≤1W(analog)<br>Measurement range: 0~400μg/L<br>Measurement error: ±5%FS (25℃)<br>Resolution: 0.1μg/L<br>Response time: ≤30s<br>Working conditions: 0~40℃<br>Protection rating: IP68<br>Electrode cable length: default 5m<br>Casing material: corrosion-resistant plastic<br>Output signal: RS485/4-20mA/0-5V/0-10V</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Electrode protection rating is IP68.<br>2. Filtering algorithm, strong resistance to external light interference.<br>3. Built-in automatic temperature compensation, suitable for long-term online monitoring.</td>
</tr>
</table>

# 11. 5 in 1 water quality sensor

RS-PHEC5-N01-3-*-T is an instrument that can simultaneously measure five water quality parameters: pH, conductivity, temperature, salinity, and TDS. It features an integrated design, simple structure, and built-in temperature compensation. With an IP68 protection rating, it can be used under prolonged immersion in water. It is suitable for non-corrosive industrial wastewater, domestic sewage, irrigation water, and aquaculture water.

| | |
|---|---|
|  | Power supply: DC 7~30V<br>Power consumption: ≤0.4W<br>pH range: 0~14pH<br>pH measurement error: ±0.15pH<br>EC range: K=1: 1~2000μS/cm; K=10: 10~20000μS/cm<br>EC measurement error: ±1%FS<br>Salinity range: K=1: 0~1000ppm; K=10: 5~11476ppm<br>TDS range: K=1: 0~1100ppm; K=10: 5~13400ppm<br>Temperature range: 0~80℃<br>Temperature measurement error: ±0.5℃<br>Temperature compensation range: -5~+80℃<br>Output signal: RS485 |

**Advantages:**

1. This all-in-one design allows for simultaneous measurement of water quality parameters including pH, conductivity, TDS, salinity, and temperature.
2. The default electrode cable length is 5 meters, but can be customized.
3. The ModBus communication address and baud rate are configurable.

# 12. Oil in water sensor

RS-OIL-N01-2-T is an instrument for measuring oily substances in water. It utilizes fluorescence principles, features built-in temperature compensation, and provides accurate and efficient measurements. It can monitor and provide early warning of oil pollution in water.

<table>
<tr>
<td></td>
<td>Power supply: DC 7~30V<br>Average power: ≤0.5W<br>Measurement range: 0~50ppm; 0~100RFU<br>Measurement error: ±5%FS (25℃); ±0.5℃<br>Resolution: 0.01ppm; 0.1RFU; Temperature: 0.1℃<br>Response time: ≤30sec, T90<br>Operating conditions: 0~40℃<br>Protection rating: IP68<br>Electrode cable length: Default 5m (Customizable)<br>Housing material: Corrosion-resistant material<br>Output signal: RS485</td>
</tr>
<tr>
<td colspan="2">Advantages:<br>1. Protection rating is IP68.<br>2. Filtering algorithm, strong resistance to external light interference.<br>3. Modbus communication address is configurable, baud rate is modifiable.</td>
</tr>
</table>

# 13. Water ion sensors

### Potassium ion: RS-LK-*-2-T

Mainly used in mineral water, drinking water, surface water, sea water, boiler feed water, tea, honey, feed, milk powder and other agricultural products, saliva, serum, urine and other biological samples, and the determination of potassium ions in ceramic raw materials.

### Nitrate ion: RS-LNO3-*-2-T

Mainly used in the determination of nitrate ions in solid leachate, rainfall and surface water, and pickled products.

### Chloride ion: RS-LCL-*-2-T

Mainly used in mineral water, drinking water, surface water, sea water, boiler feed water, tea, honey, feed, milk powder and other agricultural products, saliva, serum, urine and other biological samples, as well as the determination of chloride content in soil extract.

### Calcium ion: RS-LCA-*-2-T

Mainly used in mineral water, drinking water, surface water, sea water, boiler feed water, tea, honey, feed, milk powder and other agricultural products, saliva, serum, urine and other biological samples, and the determination of calcium ions in ceramic raw materials.

### Ammonium ion: RS-LNH-*-2-T

Mainly used in the measurement of ammonium ions in boiler feed water, surface water and fertilizers.

### Nitrite ion: RS-LNO2-*-2-T

Mainly used in the determination of nitrate ions in solid extracts and pickled products.

### Magnesium ion: RS-LMG-*-2-T

Mainly used in the monitoring of magnesium ions in mineral water, drinking water, surface water and sea water.