# AVC-WS102 Series Datasheet

Aiming to create better and safer working environments and life experiences through the products we deliver.


**AVCOMM Technologies, Inc** **www.avcomm.us**

**Email:** info@avcomm.us

**Phone:** (713) 933-4534

**Address:** 333 West Loop North, Suite 460
Houston, TX 77024
United States

# AVC-WS102PH

## *Water Quality Analysis PH Sensor*
## *AVC-WS102PH*


AVC-WS102PH is a smart water quality analysis PH sensor, which can be used in general water treatment, sewage treatment, aquaculture, surface water monitoring, environmental protection engineering, cooling tower circulating water, beverage and food, industrial sewage discharge monitoring, etc. At the same time built-in temperature detection, measuring range 0 ~ 80 ℃. Signal output mode supports RS485 (Modbus RTU).

## Features & Benefits

| System Parameter | |
|---|---|
| **Power supply** | DC10~30V |
| **Power consumption** | 0.6W |
| **Cable length** | 5m or customize |
| **Electrode withstand voltage** | 0.6MPa |
| **Protection grade** | IP68 |
| **Operating temperature & humidity** | 0~60℃；<85% |
| **Dimension** | 110x85x44 （mm） |
| **Inspection Parameter** | |
| **PH measurement range** | 0~14pH |
| **PH Resolution** | 0.01pH |
| **PH measurement error** | ±0.15pH |
| **Temperature measurement range** | 0~80℃ |
| **Temperature resolution** | 0.1℃ |
| **Temperature measurement error** | ±0.5℃ |
| **Output** | RS485 (Modbus RTU) |
| **Communication Protocol Basic Parameter** | |
| **Protocol** | Modbus RTU |
| **Data bits** | 8 bit |
| **Parity bit** | No |
| **Stop bit** | 1 |
| **Error Detecting Code** | CRC |
| **Baud Rate** | 2400bit/s、4800bit/s、9600 bit/s can be set，factory default 4800bit/s |

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## Features & Benefits

| AVC-WS102PH Register Address | | |
|---|---|---|
| **Register Address** | **Operation** | **Description** |
| 0x0000 | 0x03/0x04 | PH Value（100 times of the actual value） |
| 0x0001 | 0x03/0x04 | Temperature（10 times of the actual value） |
| 0x0050 | 0x03/0x04/0x06 | PH Deviation Value (100 times of the actual value） |
| 0x0051 | 0x03/0x04/0x06 | Temperature Deviation Value （10 times of the actual value） |
| 0x0060 | 0x03/0x04/0x06 | Manual Compensation（1: Yes 0: No） |
| 0x0061 | 0x03/0x04/0x06 | Manually Compensate Temperature (10 times of the actual value) |
| 0x0120、0x0121 | 0x10 | Electrode Calibration（100 times of the actual value） |

## Ordering Information

| Model | Description |
|---|---|
| **AVC-WS102PH** | PH Sensor, 0~14pH, Temp. Measuring Range: 0~60°C, 5 Meter Cable, RS485 Modbus, 10~30V Power |

## *Water Quality Analysis Dissolved Oxygen Sensor AVC-WS102DOS*

AVC-WS102DOS use fluorescence measurement principle, does not consume oxygen or require electrolyte, which can be used in water treatment, aquaculture, environmental monitoring, etc. At the same time, built-in temperature detection with automatic temperature compensation. Signal output mode supports RS485 (Modbus RTU).

## Features & Benefits

| System Parameter | |
|---|---|
| **Power supply** | DC10~30V |
| **Power consumption** | 0.2W |
| **Shell material** | Corrosion-resistant plastic, stainless steel |
| **Cable length** | 5m or customize |
| **Protection grade** | IP68 |
| **Operating temperature & humidity** | 0~40℃ |
| **Electrode withstand voltage** | 0.6MPa |
| **Dimension** | 171x30（mm） |
| Inspection Parameter | |
| **Measuring Range** | 0~20mg/L (0~200% saturation) |
| **Measurement error** | ±3%FS；±0.5℃（25℃） |
| **Resolution** | 0.01mg/L；0.1%；0.1℃ |
| **Response time** | ≤60sec |
| **Output** | RS485(Modbus RTU) |
| **Communication Protocol Basic Parameter** | |
| **Protocol** | Modbus RTU |
| **Data bits** | 8 bit |
| **Parity bit** | No |
| **Stop bit** | 1 |
| **Error Detecting Code** | CRC |
| **Baud Rate** | 2400bit/s、4800bit/s、9600 bit/s can be set，factory default 4800bit/s |

## Features & Benefits

| AVC-WS102DOS Register Address | | |
|---|---|---|
| **Register Address** | **Operation** | **Description** |
| 0000H、0001H | 03 | Dissolved Oxygen Saturation (%；Floating-point number big-endian) |
| 0002H、0003H | 03 | Dissolved Oxygen Concentration (mg/L；Floating-point number big-endian) |
| 0004H、0005H | 03 | Temperature（℃；Floating-point number big-endian) |
| 1010H | 06 | Calibration（Write 0x0001 calibration zero，Write 0x0002 calibrate 100% saturation ） |
| 1020H | 03/06 | Salinity（‰；default 0) |
| 1022H | 03/06 | Atmospheric pressure (kPa；default 101.33，actual value expand 100 times) |
| 0x0120、0x0121 | 0x10 | Dissolved Oxygen Saturation（%；Floating-point number big-endian) |

## Ordering Information

| Model | Description |
|---|---|
| **AVC-WS102DOS** | Dissolved Oxygen Sensor, 0~20mg/L, 5 Meter Cable, RS485 Modbus, 10~30V Power |

## *Water Quality Analysis Oxidation Reduction Potential Sensor AVC-WS102ORP*

AVC-WS102ORP is a device for measuring the redox potential of a solution. The ORP composite electrode made of high-purity platinum has strong anti-acid and alkali resistance and oxidation resistance. The electrodes are automatic compensation according to temperature. It can be used for online monitoring of redox potentials such as cyanide and chromium in wastewater Signal output mode supports RS485 (Modbus RTU).


Modbus

## Features & Benefits

| System Parameter | |
|---|---|
| **Power supply** | DC10~30V |
| **Power consumption** | 0.6W |
| **Cable length** | 5m or customize |
| **Electrode withstand voltage** | 0.6MPa |
| **Protection grade** | IP68 |
| **Operating temperature & humidity** | 0~60℃；<85% |
| **Dimension** | 110x85x44 （mm） |
| **Inspection Parameter** | |
| **Measurement range** | -1999~1999mV |
| **Resolution** | 1mV |
| **ORP measurement error** | ±1mv |
| **Output** | RS485 (Modbus RTU) |
| **Communication Protocol Basic Parameter** | |
| **Protocol** | Modbus RTU |
| **Data bits** | 8 bit |
| **Parity bit** | No |
| **Stop bit** | 1 |
| **Error Detecting Code** | CRC |
| **Baud Rate** | 2400bit/s、4800bit/s、9600 bit/s can be set，factory default 4800bit/s |

## Features & Benefits

| AVC-WS102ORP Register Address | | |
|---|---|---|
| **Register Address** | **Operation** | **Description** |
| 0x0000 | 0x03/0x04 | ORP Value (16-bit signed integer) |
| 0x0050 | 0x03/0x04/0x06 | ORP Offset (16-bit signed integer) |
| 0x0051、0x0052 | 0x03/0x04/0x10 | Slope (Floating-point big-endian) |
| 0x0120、0x0121 | 0x10 | Electrode Calibration (16-bit signed integer) |

## Ordering Information

| Model | Description |
|---|---|
| **AVC-WS102ORP** | Oxidation Reduction Potential (ORP) sensor, -1999mV ~1999mV, 5 Meter Cable, RS485 Modbus, 10~30V Power |

# *Water Quality Analysis Residual Chlorine Sensor AVC-WS102CL*


AVC-WS102CL is a device for measuring Residual Chlorine concentration (hypochlorous acid, hypochlorite concentration) in water. The use of three-electrode system has the advantages of high measurement accuracy, long working life and no need for frequent calibration. It can be used for circulating water automatic control dosing, swimming pool chlorination and accurate measurement of residual chlorine in drinking water treatment plants, swimming pools, and hospital wastewater. Signal output mode supports RS485 (Modbus RTU).

## Features & Benefits

| System Parameter | |
|---|---|
| **Power supply** | DC10~30V |
| **Power consumption** | 0.19W |
| **Cable length** | 5m or customize |
| **Electrode withstand voltage** | 0.6MPa |
| **Protection grade** | IP68 |
| **Operating temperature & humidity** | 0~60℃；<85% |
| **Dimension** | 110x85x44 （mm） |
| **Inspection Parameter** | |
| **Measurement range** | 0~20mg/L |
| **Resolution** | 0.01mg/L |
| **Measurement error** | 3% or more than 0.03mg/L |
| **Repeatability error** | ±0.03mg/L |
| **Response time** | <30s |
| **Output** | RS485 (Modbus RTU) |
| **Communication Protocol Basic Parameter** | |
| **Protocol** | Modbus RTU |
| **Data bits** | 8 bit |
| **Parity bit** | No |
| **Stop bit** | 1 |
| **Error Detecting Code** | CRC |
| **Baud Rate** | 2400bit/s、4800bit/s、9600 bit/s can be set，factory default 4800bit/s |

## Features & Benefits

| AVC-WS102CL Register Address | | | |
|---|---|---|---|
| **Register Address** | **Operation** | **Data Type** | **Description** |
| 0x0000 | 0x03/0x04 | 16-bit unsigned integer | Residual chlorine concentration value (100 times of the actual value) |
| 0x07D0 | 0x03/0x04/0x06 | 16-bit unsigned integer | 1~254 (factory default 1) |
| 0x07D1 | 0x03/0x04/0x06 | 16-bit unsigned integer | 0=2400；1=4800；2=9600 |
| 0x1010，0x1011 | 0x03/0x04/0x06 | Floating-point number | Residual chlorine coefficient A (actual value) |
| 0x1012，0x1013 | 0x03/0x04/0x06 | Floating-point number | Residual chlorine deviation value B (100 times of the actual value) |

## Ordering Information

| Model | Description |
|---|---|
| **AVC-WS102CL** | Residual Chlorine Sensor, 0~20mg/L, 5 Meter Cable, RS485 Modbus, 10~30V Power |

## *Electrical Conductivity/EC Sensor*
## *AVC-WS102EC*


The AVC-WS102EC is a sensor that measures the EC value of a solution with an automatic temperature compensation function that compensates the current temperature EC to a specified temperature. It can be widely used in continuous monitoring of aqueous solutions EC value such as water quality of section, aquaculture, sewage treatment, environmental protection, pharmaceuticals, food, tap water, etc. Signal output mode supports RS485 (Modbus RTU).

## Features & Benefits

| | |
|---|---|
| **System Parameter** | |
| **Power supply** | DC 7~30V |
| **Power consumption** | 0.4W |
| **Cable length** | 5m or customize |
| **Protection grade** | IP68 |
| **Operating temperature & humidity** | -20~60℃；<85% |
| **Dimension** | 110x85x44 （mm） |
| **Inspection Parameter** | |
| **EC measurement range** | K=1：1~2000μs/cm；K=10：10~20000μs/cm |
| **EC resolution** | 0.1μs/cm；1μs/cm |
| **EC measurement error** | ±1%FS |
| **Temperature measurement range** | -20~100℃ |
| **Temperature resolution** | 0.1℃ |
| **Temperature measurement error** | ±0.5℃ |
| **Temperature compensation range** | -20~100℃ (Default compensation temperature 25°C) |
| **Temperature compensation coefficient** | Default 0.02 |
| **Salinity measurement range** | 0~11476ppm |
| **TDS measurement range** | 0~13400ppm |
| **Output** | RS485 (Modbus RTU) |
| **Communication Protocol Basic Parameter** | |
| **Protocol** | Modbus RTU |
| **Data bits** | 8 bit |
| **Parity bit** | No |
| **Stop bit** | 1 |
| **Error Detecting Code** | CRC |
| **Baud Rate** | 2400bit/s、4800bit/s、9600 bit/s can be set，factory default 4800bit/s |

## Features & Benefits

| AVC-WS102DOS Register Address | | |
|---|---|---|
| **Register Address** | **Operation** | **Description** |
| 0000H | 03 | EC value (The measurement range of 1~2000 is 10 times of the actual value. The measurement range of 10~20000 is the actual value.) |
| 0001H | 03 | Temperature (10 times of the actual value) |
| 0002H | 03 | Salinity（ppm） |
| 0003H | 03 | TDS（ppm） |
| 0050H | 03/06 | Temperature deviation value (10 times of the actual value) |
| 0051H | 03/06 | EC deviation value（The measurement range of 1~2000 is 10 times of the actual value. The measurement range of 10~20000 is the actual value.) |
| 0052H,0053H | 03/16 | EC temperature compensation coefficient (floating point number) |
| 0054H,0055H | 03/16 | Cell constant (floating point number) |
| 0110H,0111H | 16 | Calibration（The 0110H register is written to 0004. The 0111H register is written to the calibrated standard solution value. The measurement range of 1~2000 is 10 times of the actual value. The measurement range of 10~20000 is the actual value. |

## Ordering Information

| Model | Description |
|---|---|
| **AVC-WS102EC** | Electrical Conductivity/EC Sensor, 1~20000μs/cm, Temp. Measuring Range: -20~100°C, 5 Meter Cable, RS485 Modbus, 7~30V Power |