Wireless Water pH / Turbidity / Residual Chlorine Sensor

with 1 x Digital Output

Wireless Sensor Network Based on LoRa Technology

R900PD01AO1 Data Sheet

Wireless Water pH / Turbidity / Residual Chlorine Sensor with 1 x Digital Output

Introduction

R900PD01AO1 is a wireless water pH, turbidity, and residual chlorine sensor with a digital output. It transmits digital signals to a third-party device when a value exceeds the threshold. With up to 7 flexible installation options, R900PD01AO1 integrates easily into various environments. In addition, with support for Netvox NFC app, users can easily configure settings, update firmware, and access data simply by tapping their smartphone to the device.

Features

- Powered by DC12V
- Support RS-485
- Detect pH, turbidity, and residual chlorine
- Main unit: IP65; Sensor: IP68
- Built-in vibration sensor for tamper alarm
- Up to 7 installation methods for different kinds of applications
- Support NFC. Configure and upgrade firmware on Netvox NFC app
- Store up to 10000 data
- LoRaWAN™ Class C compatible
- Frequency hopping spread spectrum
- Configuration parameters can be configured through third-party software platforms, data can be read, and alarms can be set via SMS text and email (optional)
- Applicable to the third-party platforms: Actility / ThingPark, TTN, MyDevices / Cayenne

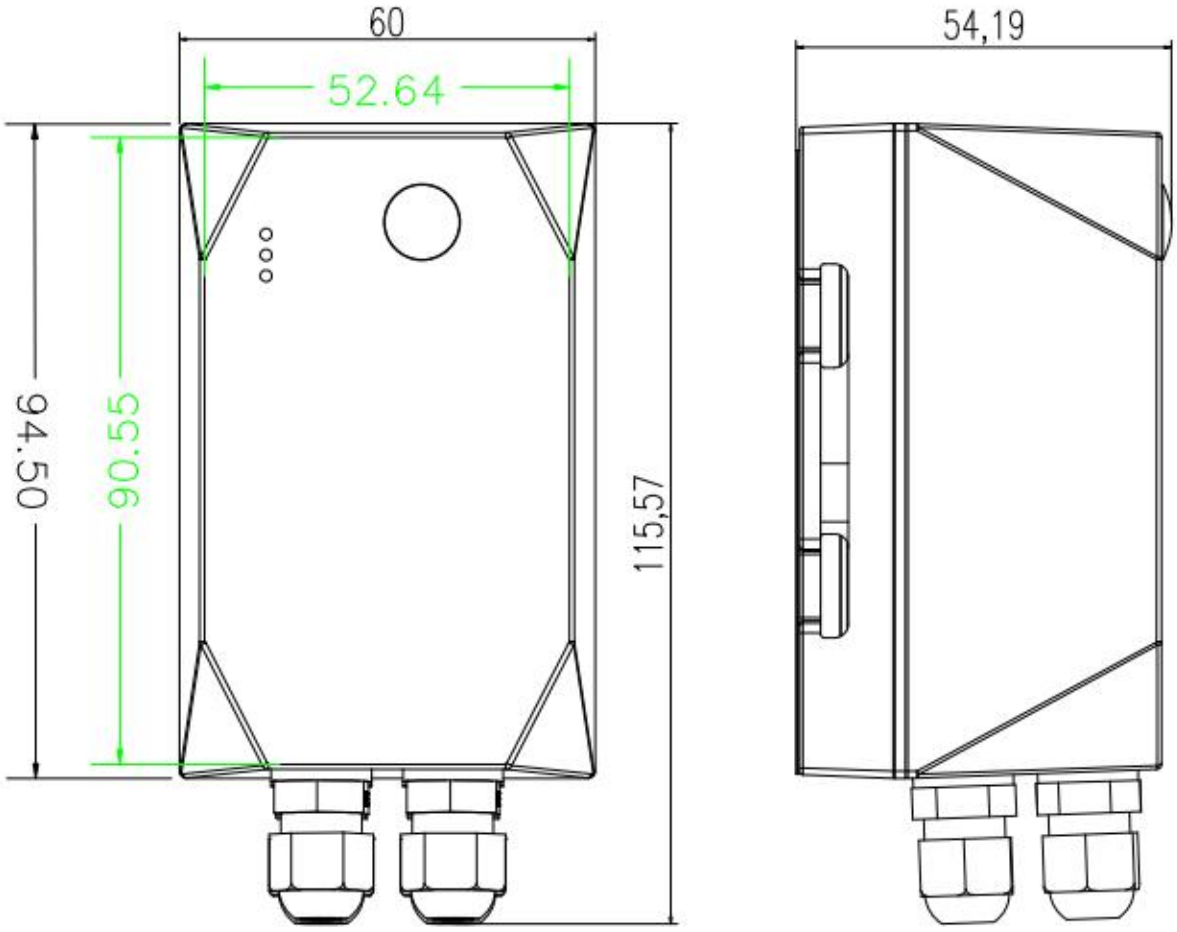
Applications

- pH detection
- Water temperature detection
- Turbidity detection
- Residual chlorine detection for circulating water system, swimming pool, drinking water treatment, and wastewater treatment

Dimensions

R900 (main unit)

L:115.57mm x W:60mm x H: 54.19mm



Electrical Specifications

Power Supply	Powered by DC12V adapter (theoretical voltage: 12V to 23V)
Wake-Up Current	< 200 mA (connected pH, turbidity, and residual chlorine sensors)

Note: The electrical specifications may vary due to the voltage of the power supply.

Physical Properties

Main Unit

Dimensions	L: 115.57mm x W: 60mm x H: 54.19mm
Ambient Operating Temperature	-20℃ to +55℃
Ambient Storage Temperature	-40℃ to +85℃
Ambient Humidity	<90%RH (no condensation)
Installation	Standard: (1) screws + bracket (2) screws (3) double-sided tape Optional: (1) magnet (2) DIN rail buckle (3) swivel bracket Prepared by customers: (1) cable tie

Digital Output

Cable Length	1m

Residual Chlorine Sensor

Power Supply	7 – 30 VDC
Power Consumption	0.19 w
Signal Output	RS-485
Measuring Range	0 – 10 mg/L
Resolution	0.01 mg/L
Accuracy	±5% FS
Response Time	<30 s
Operation Conditions	Temperature: 0 – 50℃ pH: 4 – 9 Flow Velocity: 30 – 60L/h
Pressure	0.6 MPa
Cable Length	5 M Note: 10m / 15m / 20m cable could be customized.
Protection Level	IP68

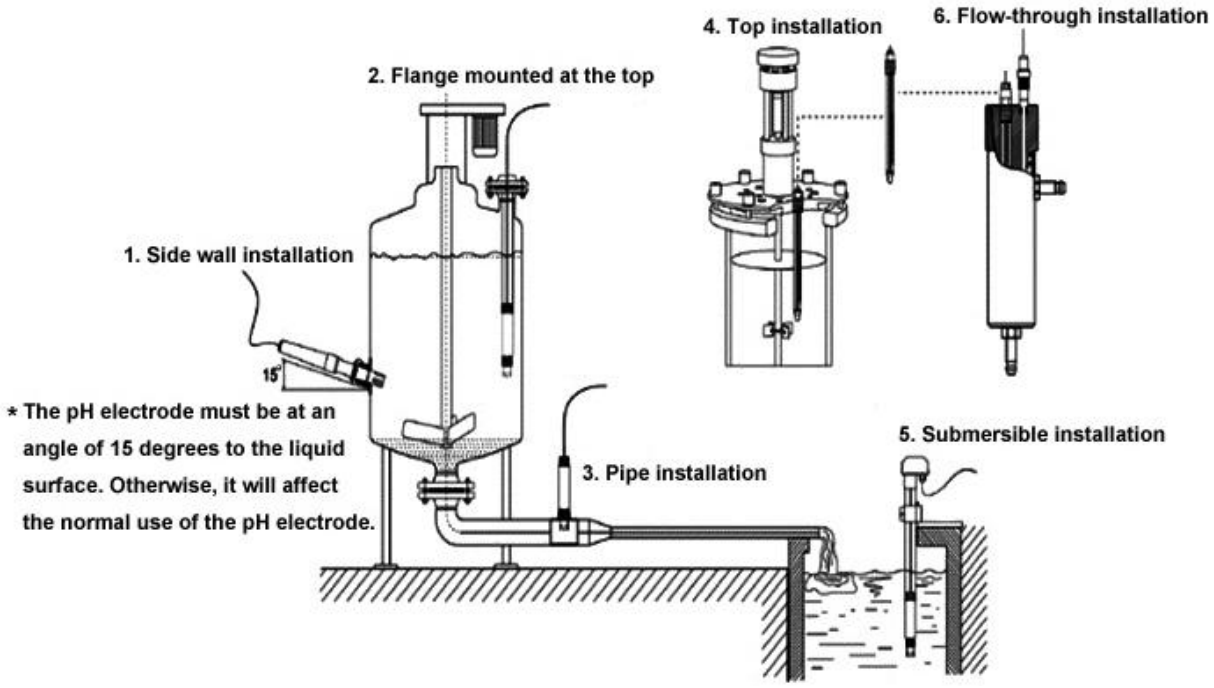
Turbidity Sensor

Working Principle	Scattered light measurement
Measurement Range/Resolution	0 to 1000 NTU / 0.1 NTU / 0.1℃
Accuracy	0 to 1000 NTU: ±5% or ± 3 NTU ±0.5℃
Calibration	Two-point calibration
Temperature Compensation	Automatic temperature compensation (Pt1000)
Signal Output	RS-485 (Modbus / RTU)
Working Conditions	0 °C to +50°C, < 0.2 MPa
Storage Temperature	-5°C to +65°C
Installation	3/4” NPT thread, immersion installation
Cable Length	5m (other lengths can be customized)
Power Consumption	＜0.3W@ 12V
Power Supply	12 – 24 VDC ± 10%
Protection Level	IP68

pH Sensor

Operating Voltage	12 VDC to 24 VDC
Operating Water Temperature Range	0 °C to +65°C
pH Value Range	0 to 14pH
pH Resolution	0.01 pH
pH Value Accuracy	-0.3pH to + 0.3 pH
Usable Pressure Range	<0.2MPa
Temperature Compensation	Automatic Temperature Compensation (NTC)
Signal Output	RS-485
Installation	3/4” NPT thread, immersion installation
Cable Length	5m (other lengths can be customized)
Calibration Method	Two-point calibration
Power Consumption	0.2W@12V
Protection Level	IP68

pH Sensor Installation



pH Sensor Maintenance

- Before using the pH sensor, please clean it with distilled water (or deionized water), and dry it with filter paper to prevent impurities from entering the liquid to be tested. After cleaning, dip 1/3 of the sensor into a liquid.
- Please clean the sensor when it's not in use. Insert it in a protective case or a container with 3.5 mol/L potassium chloride solution.
- Please check if the terminal is dry. If it is stained, wipe it with absolute alcohol and dry it. Avoid long-term immersion in distilled water or protein solution and prevent contact with silicone oil.
- For an aging sensor, its glass membrane may become translucent or have sediments, which can be washed with dilute hydrochloric acid and rinsed with water.

When the calibration and measurement cannot be performed after the sensor is maintained based on the instructions, please replace the electrode.

Frequency

Frequency Range	863MHz-928MHz 470MHz-510MHz
TX Power	US915 22dBm AS923 16dBm AU915 22dBm CN470 19.15dBm EU868 16dBm KR920 14dBm IN865 20dBm
RX Sensitivity	–123 dBm for 2-FSK (at 1.2 Kbit/s), –148 dBm for LoRa® (at 10.4 kHz, SF= 12)
Antenna Type	Built-in antenna
Communication Range	10km (line of sight) Note: The actual transmission distance depends on the environment.
Data Transfer Rate	FSK: 0.6 – 300Kbit/s Lora: 0.018 – 62.5Kbit/s
Modulation	LoRa / FSK Note: One modulation is required.
Available LoRaWan Band	EU863-870, US902-928, AU915-928, KR920-923, AS923-1, AS923-2, AS923-3, IN865-867, CN470-510 Note: configured before shipment