Wireless 1-Gang Water pH / ORP / Temperature Sensor

with 1 x Digital Output

Wireless Sensor Network Based on LoRa Technology

R900PD05AO1 Data Sheet

Wireless 1-Gang Water pH / ORP / Temperature Sensor with 1x Digital Output

Introduction

NETVOX R900PD05AO1 is a multifunctional wireless LoRa device that supports pH measurement for acid / alkaline / salt solutions (with water temperature sensing), ORP water quality monitoring, and one DO output. It transmits digital signals to a third-party device when a value exceeds the threshold. With up to 7 flexible installation options, R900PD01O1 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 smart phone to the device.

Features

- Powered by DC12V
- Support RS-485
- Detect water pH, ORP, and temperature
- Main unit: IP65
- 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

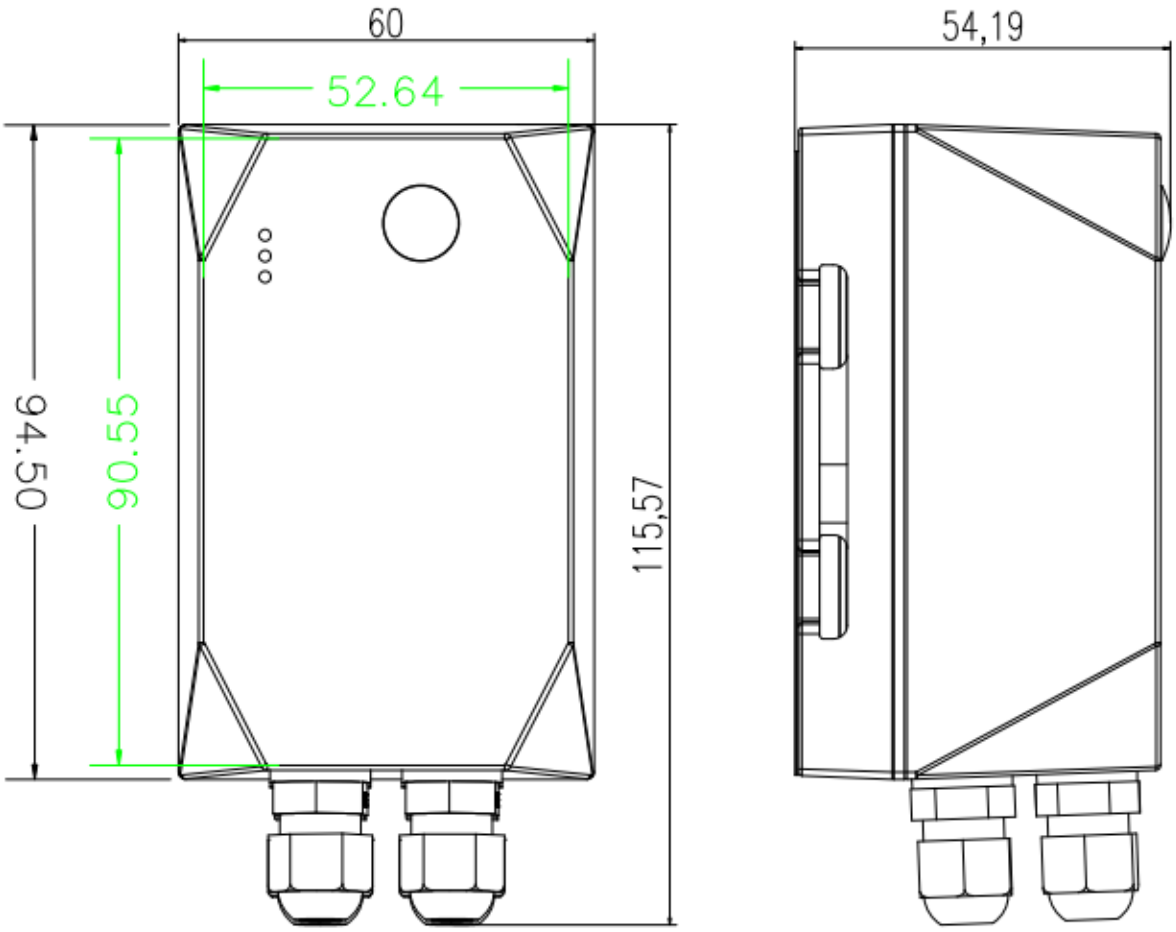
Applications

- pH detection
- Water temperature detection
- ORP detection

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

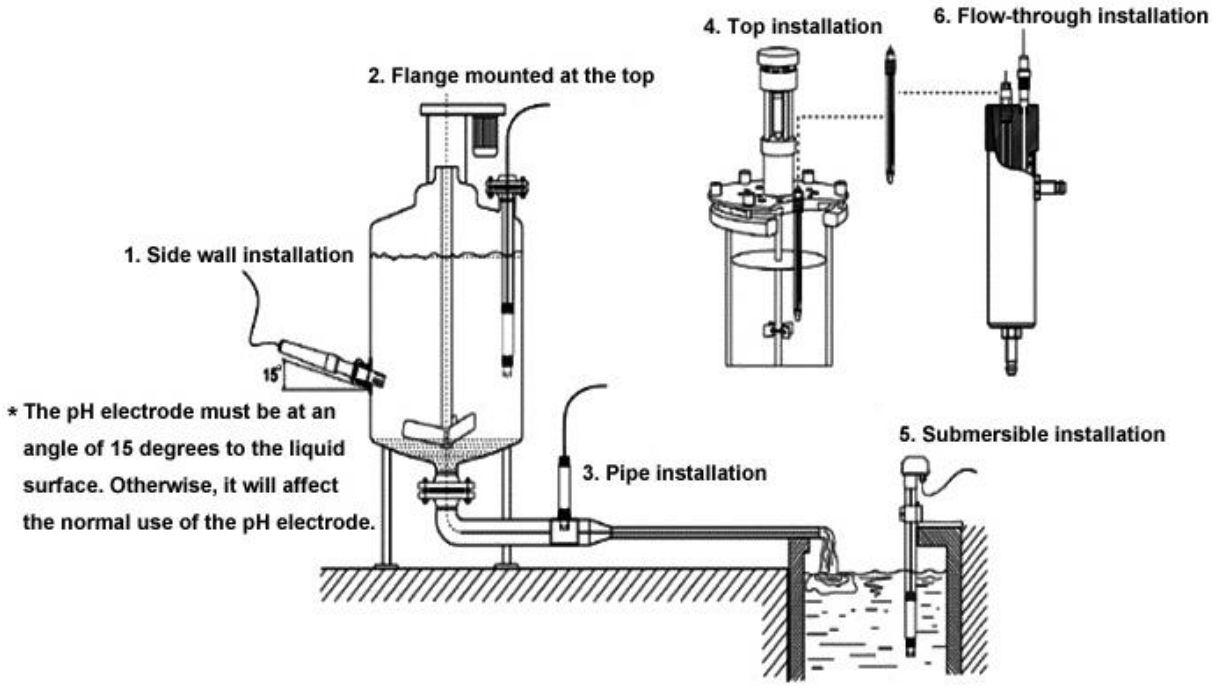
ORP Sensor

Housing Material	ABS/PC alloy
Measuring Principle	Platinum electrode method
Calibration Method	One-point calibration
Power Supply	12 ~ 24VDC
Power Consumption	0.2W@12V
Signal Output	RS-485 (Modbus/RTU)
Measuring Range	-1500 ~ +1500mV
Resolution	1mV
Accuracy	±20mV
Response Time	<30 s
Operation Conditions	0 to 50°C ≤0.2MPa
Storage Temperature	-5 to 65°C
Cable Length	5 M Note: 10m / 15m / 20m cable could be customized.
Protection Level	IP68
Installation Method	Immersion installation

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