

Wireless PH Sensor

Wireless Sensor Network Based on LoRa Technology



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Introduction

R72608 is a device used for pH and water temperature detection of the water environment. It can detect and send the data of pH and temperature by the wireless communication method which adopts SX1276 wireless communication module.

Features

- Adopt SX1276 wireless communication module.
- Solar panel charging function.
- A rechargeable battery box (Users can purchase and install rechargeable lithium batteries by self.)
- PH value detection
- Water temperature detection
- Compatible with LoRaWANTM Class A
- Frequency hopping spread spectrum technology
- Applicable to the third-party platforms: Actility/ ThingPark/ TTN/ MyDevices/ Cayenne
- Low power consumption and long battery life

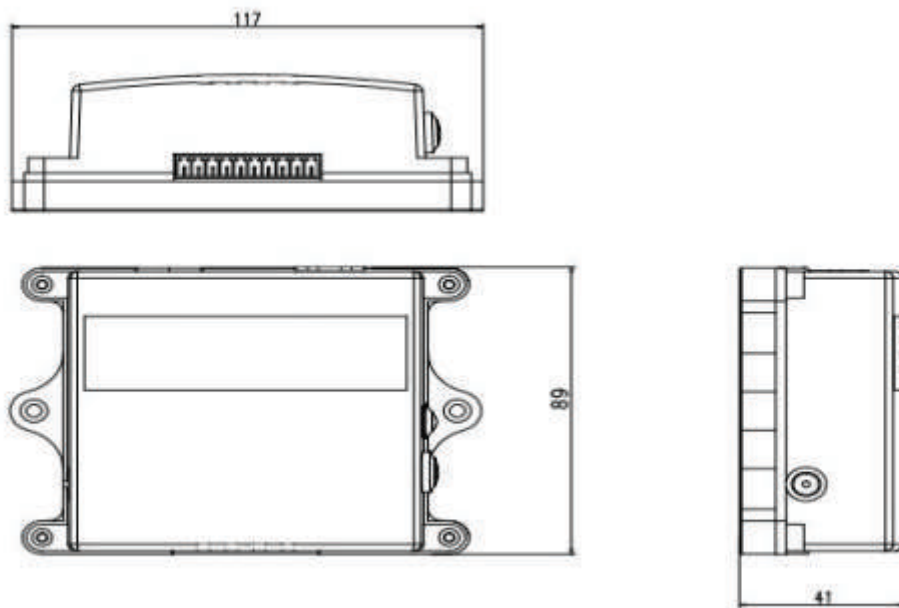
Note:

Battery life is determined by the sensor reporting frequency and other variables, please refer to http://www.netvox.com.tw/electric/electric_calc.html On this website, users can find the battery life of various models in different configurations.

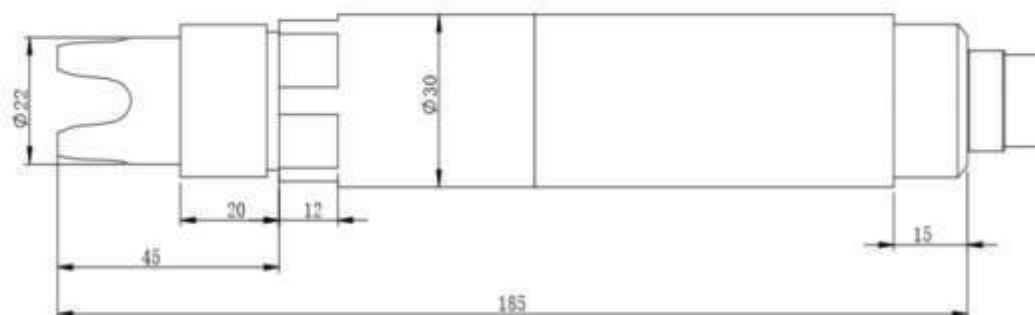
Applications

- PH detection
- Water temperature detection

Dimensions



The Host Body (Inside the waterproof cover)



PH Sensor

Electric

Power Supply	3 rechargeable lithium batteries in series (Each section of rechargeable lithium battery 3.7V)
Operating Voltage Range	9.8V to 12.6V
Low Voltage Warning	10.5V
Operating Current	<100mA (When the sensor is operating)

Battery Electric

Solar Panel Specification	5W / 18VDC
Lithium Battery Pack Charging Current	About 300mA (Ensure sufficient sunshine intensity)
Lithium Battery Pack Charging Time	About 4 days to charge fully (Ensure sufficient sunshine intensity, the value is calculated with a rechargeable battery capacity being 3200mah)
The Time That the Lithium Battery Pack Can Be Used After Full Charged Once	About 793 hours (Typical value, report the data once every 30 minutes, the value is calculated with a rechargeable battery capacity being 3200mah)

PH Sensor Parameter

Operating Water Temperature Range	0 to 65°C
Ph Value Range	0 to 14 pH
Ph Value Resolution	0.01 pH
Ph Value Accuracy	±0.3 pH
Usable Pressure Range	<0.2MPa
Temperature Compensation	Automatic Temperature Compensation (NTC)

Signal Output	RS485
Installation	Immersion mounting, 3/4 NPT thread
Cable Length	5m, other lengths can be customized
Power Consumption	0.2W@12V
PH Sensor IP Rating	IP68
PH Sensor Service Life	1 year

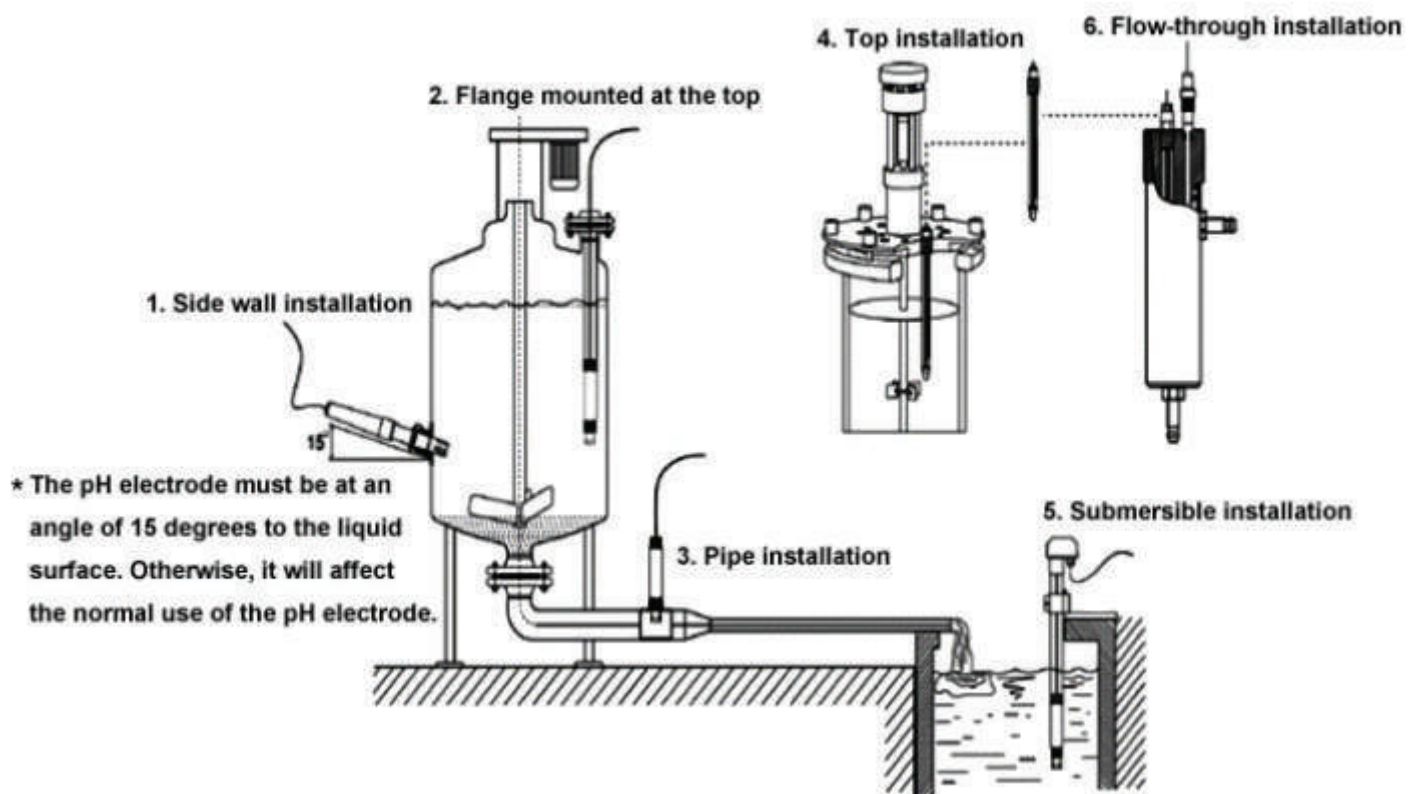
Frequency

Frequency Range	863MHz-928MHz 470MHz-510MHz
Tx Power	US915 20dbm AS923 16dbm AU915 20dbm CN470 19.15dbm EU868 16dbm KR920 14dbm IN865 20dbm
Receive Sensitivity	-121dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps) -136dBm (LoRa, Spreading Factor=12, Bit Rate=293bps)
Antenna Type	Built-in antenna
Communication Distance	10km (visible linear obstacle-free transmission distance, actual transmission distance depending on the environment)
Data Transfer Rate	LoRa: 0.3kbps ~ 50kbps FSK: 1.2kbps ~ 300kbps
Modulation	LoRa / FSK (Note: choose one of them)
Supportable LoRaWAN Band	EU863-870, US902-928, AU915-928, KR920-923, AS923, CN470-510 (Note: The frequency band is optional and needs to be configured before shipment)

Physical

Dimension	Host body: 117 mm* 89 mm * 41 mm Mask part: D 220 mm * H 280 mm Solar panel: 290 mm * 150 mm * 25 mm
Ambient Temperature Range	-20°C ~ 55°C
Ambient Humidity Range	< 90%RH (No condensation)
Storage Temperature Range	-40°C ~ 85°C

PH Sensor Installation



PH Sensor Installation

When measuring the pH sensor, it should be cleaned in distilled water (or deionized water), and the filter paper should be used to absorb moisture to prevent impurities from being introduced into the liquid to be tested. 1/3 of the sensor should be inserted into the solution to be tested.

The sensor should be washed when not in use, inserted into a protective sleeve with a 3.5 mol/L potassium chloride solution, or the sensor inserted into a container with a 3.5 mol/L potassium chloride solution. If the liquid in the cover of the pH sensor dries out, you could replace the liquid with potassium chloride liquid or tap water. Please do not use purified water or deionized water.

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 grease. With a longer sensor, its glass film may become translucent or with deposits, which can be washed with dilute hydrochloric acid and rinsed with water. The sensor is used for a long time. When a measurement error occurs, it must be calibrated with the meter for calibration.

When the calibration and measurement cannot be performed while the sensor is being maintained and maintained in the above manner, the sensor has failed. Please replace the sensor.