

# Wireless Top-Mounted Ultrasonic Level Sensor with 1 x Digital Output

Wireless Sensor Network Based on LoRa Technology



## R900PB03AO1 Data Sheet

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## Introduction

R900PB03AO1 is a wireless ultrasonic level sensor with a digital output (GPIO output: 3V or low level 0V). The propagation medium of the ultrasonic sensor is air, so the measured object can be any liquid or solid with a certain flat surface. It can be used for liquid level detection, material level detection, etc. The ultrasonic detection angle is about 15°, which is suitable for distance detection in smaller spaces.

It transmits digital signals to a third-party device when a value exceeds the threshold. With up to 7 flexible installation options, R900PB03AO1 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 2\* 3.6V ER18505 batteries (also support ER14505 batteries with battery converter case)
- 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 A 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
- Low power consumption and longer battery life

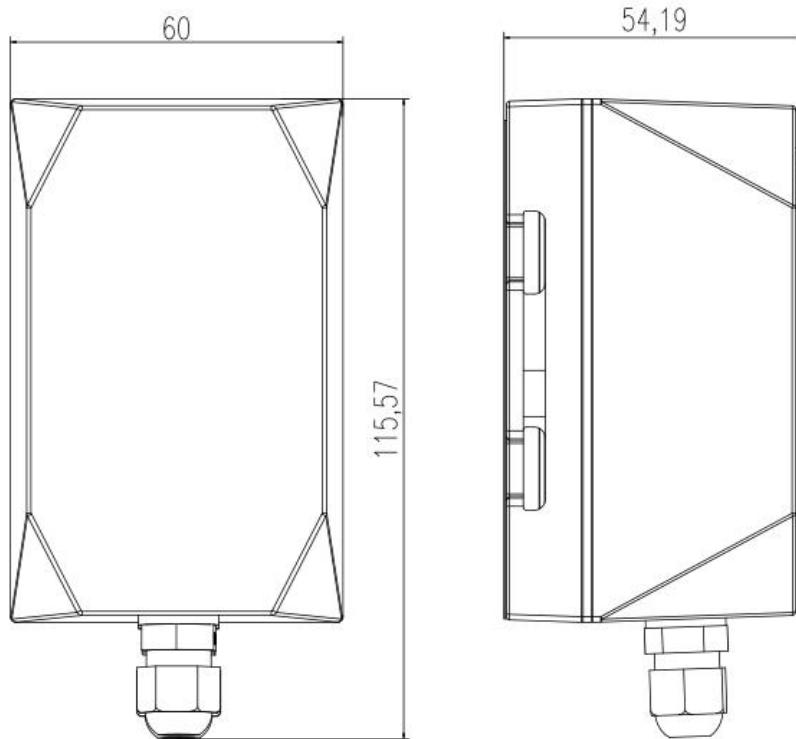
Note: Battery life is determined by the sensor reporting frequency and other variables, please visit [http://www.netvox.com.tw/electric/electric\\_calc.html](http://www.netvox.com.tw/electric/electric_calc.html) for battery life and calculation.

## Applications

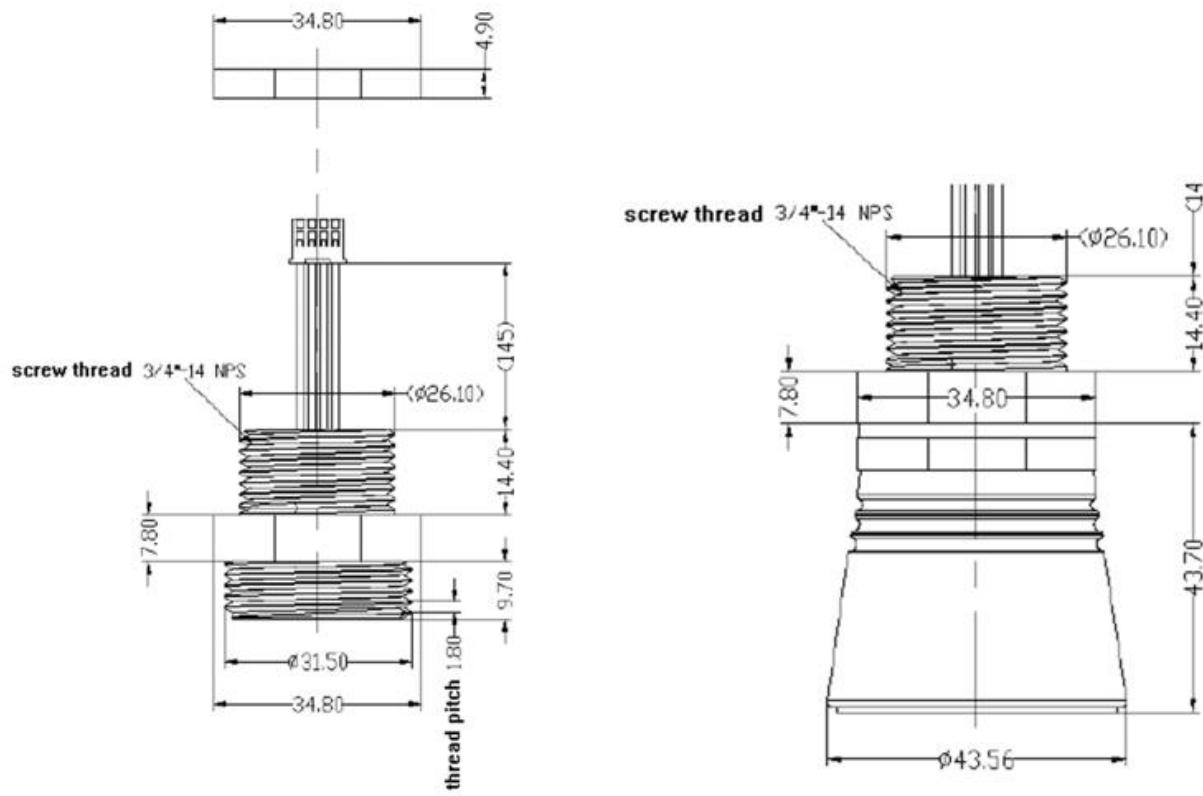
- Water tank and well water level detection
- Horizontal distance measurement

## Dimensions

### Main Unit



### Ultrasonic Level Sensor



## Electrical Specifications

Power Supply	2* ER18505 3.6V 4000mAh lithium battery in parallel (support 2* ER14505 3.6V 2400mAh battery with battery converter case)
Battery Lifespan	5.97 years (when powered by 2* ER18505 batteries, the temperature = 25°C, report once every 30 minutes, TX power = 20dBm, and LoRa SF = 10)  Battery life may vary depending on the report interval, TX power, and spreading factor (SF). It can be calculated and updated according to the following website: <a href="http://elecalc.netvoxcloud.com:8080/electric_calc/electric_calc.html?lang=cn">http://elecalc.netvoxcloud.com:8080/electric_calc/electric_calc.html?lang=cn</a>
Standby Current	33uA
Wake-up Current	7mA
RF Receiving Current	12mA @3.3V
RF Transmitting Current	138mA @3.3V, TX power = 22dB
Low Voltage Alarm	3.2V
Battery Measurement Error	±0.1V

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

## Ultrasonic Level Sensor

Operating Current	< 15mA
Power Supply	DC 3.5V to 5V
Measurement Range	0.25m to 8m
Blind Distance	0m to 0.25m
Detection Angle	About 15°
Measurement Accuracy	±(1+S*0.3%) cm S: the detected distance between the device and the detected object

## Digital Output

Output	3V
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## 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

## Physical Properties

### Main Unit

Dimensions	L: 115.5mm x W: 60mm x H: 54mm
Ambient Operating Temperature	-20°C to +55°C
Ambient Storage Temperature	-40°C to +85°C
Ambient Humidity	<90%RH (no condensation)
Installation	Standard: <sup>(1)</sup> screws + bracket <sup>(2)</sup> screws <sup>(3)</sup> double-sided tape Optional: <sup>(1)</sup> magnet <sup>(2)</sup> DIN rail buckle <sup>(3)</sup> swivel bracket Prepared by customers: <sup>(1)</sup> cable tie

### Ultrasonic Level Sensor

Operating Temperature	-15°C to +55°C
Operating Humidity	<80% RH
Installation	Top mounted

### Digital Output

Cable Length	1 m
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