

Wireless 1-Gang Ceiling Type Ultrasonic Material Level Detection with 1 x Digital Output

Wireless Sensor Network Based on LoRa Technology



R900PB06AO1 Data Sheet

Wireless 1-Gang Ceiling Type Ultrasonic Material Level Detection with 1 x Digital Output

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Introduction

R900PB06AO1 is a wireless communication device that uses ultrasonic technology to measure distance and provides one digital output channel (GPIO output: 3 V or low level 0 V).

R900PB06AO1 measures distance using ultrasonic waves. Since the propagation medium of the ultrasonic sensor is air, the measured object can be any liquid or solid with a relatively flat surface. It is suitable for applications such as liquid level detection and material level detection. The ultrasonic detection angle of the R900PB06AO1 is approximately 20°, and it features a stronger transmission signal, making it more suitable for detecting objects such as grain piles, sand, and soil.

It transmits digital signals to a third-party device when a value exceeds the threshold. With up to 7 flexible installation options, R900PB06AO1 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

- Ultrasonic Material Level Detection
- 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
- Offline data retransmission function
- 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 for battery life and calculation.

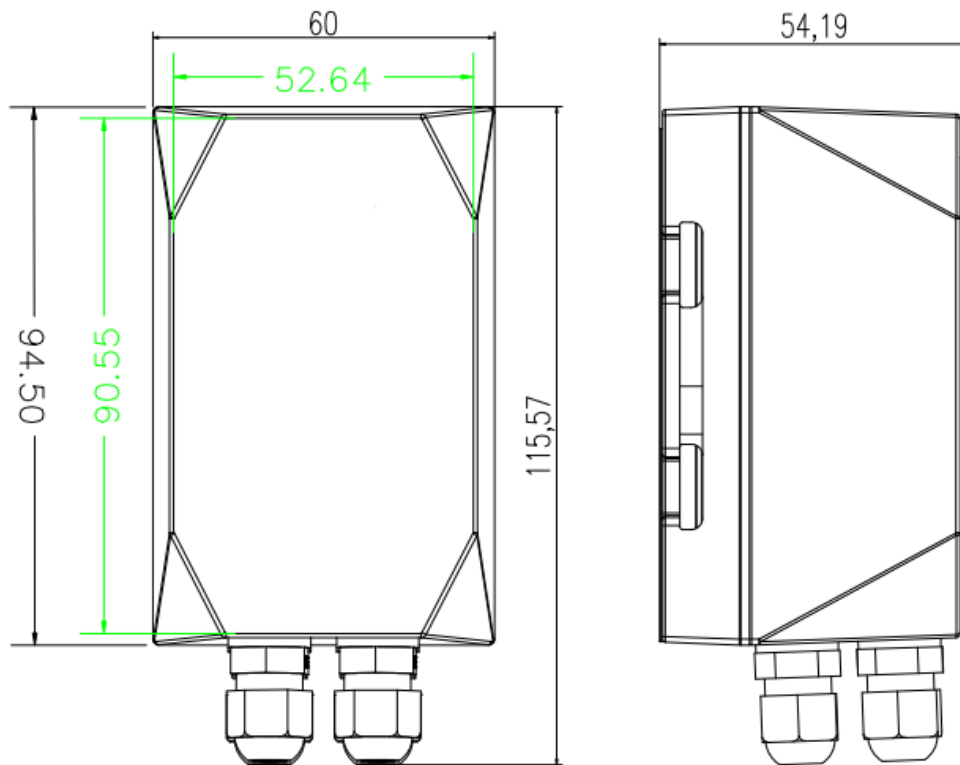
Applications

- Material level detection, grain piles, sand, and soil monitoring
- Others

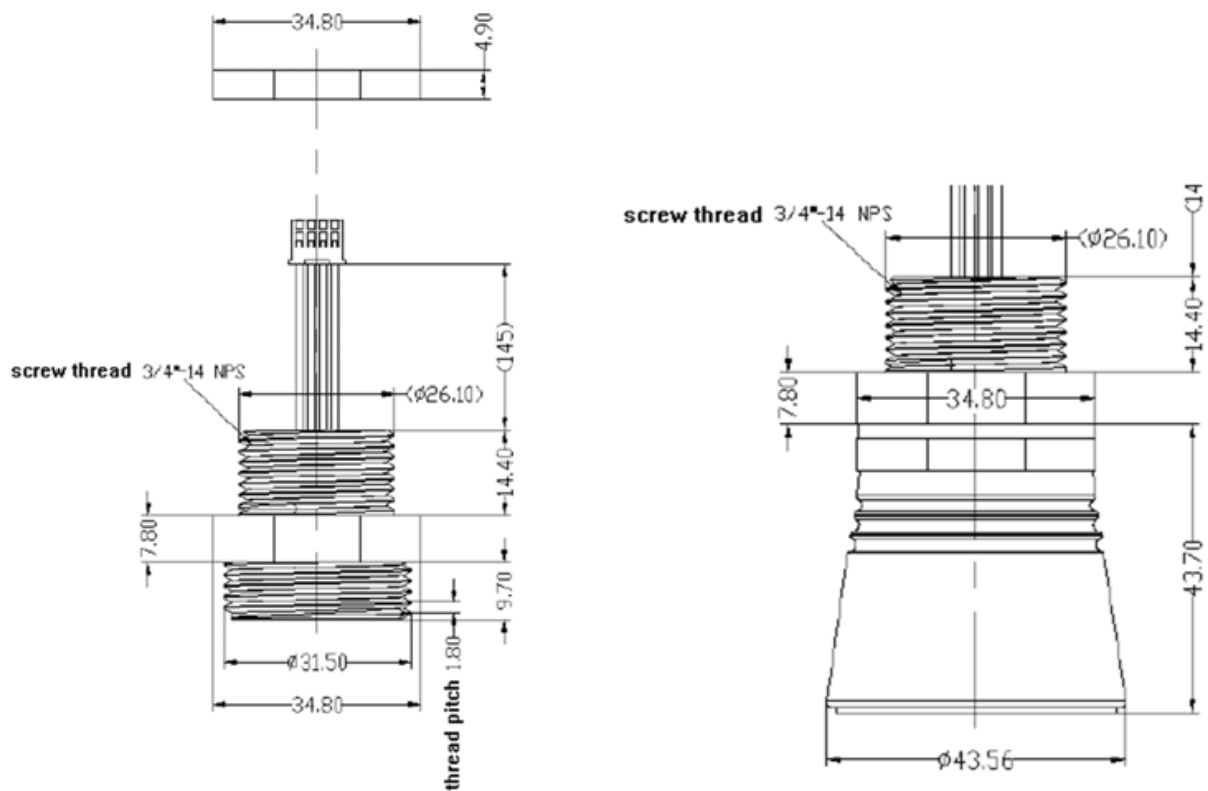
Wireless 1-Gang Ceiling Type Ultrasonic Material Level Detection with 1 x Digital Output

Dimensions

Main Unit



Ultrasonic Level Sensor



Wireless 1-Gang Ceiling Type Ultrasonic Material Level Detection with 1 x Digital Output**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: http://elecalc.netvoxcloud.com:8080/electric_calc/electric_calc.html?lang=cn
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 20°
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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Wireless 1-Gang Ceiling Type Ultrasonic Material Level Detection with 1 x Digital Output**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

Wireless 1-Gang Ceiling Type Ultrasonic Material Level Detection with 1 x Digital Output**Physical Properties****Main Unit**

Dimensions	L: 115.57mm x W: 60mm x H: 54.19mm
Ambient Operating Temperature	-20°C to +55°C
Ambient Storage Temperature	-40°C to +85°C
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

Ultrasonic Level Sensor

Operating Temperature	-15°C to +55°C
Operating Humidity	<80% RH
Installation	Top mounted
Cable length	50cm

Digital Output

Cable Length	1 m
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