

Wireless Bottom-Mounted Ultrasonic Liquid Level Sensor

Wireless Sensor Network Based on LoRa Technology



R718PA22 Data Sheet

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Wireless Bottom-Mounted Ultrasonic Liquid Level Sensor

Introduction

The R718PA22 is a wireless communication device that measures the liquid level with an ultrasonic liquid level sensor. You can install the ultrasonic liquid level sensor at the bottom and measure water, gasoline, and diesel in different sizes of containers made of metal, plastic, or glass. The data would be transmitted to other devices through the wireless network which complies with the LoRaWAN™ wireless communication protocol standards.

Features

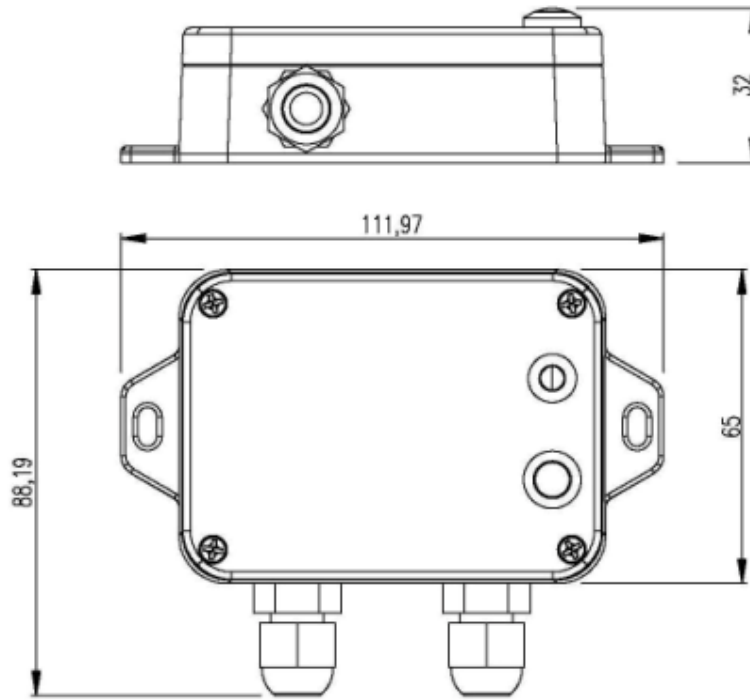
- SX1276 wireless communication module
- DC 12V adapter power supply
- Main body: IP65/IP67 (optional); ultrasonic probe: IP67
- Magnetic base (attached to a ferromagnetic material)
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum technology
- Configuration parameters can be configured through third-party software platforms
- Read data and set alerts through SMS and email (optional)
- Applicable to third-party platforms: Actility / ThingPark / TTN / MyDevices / Cayenne

Applications

- Tank level
- Diesel metering
- High and low level alarm
- Irrigation control
- Remote monitoring level

Wireless Bottom-Mounted Ultrasonic Liquid Level Sensor

Dimensions



Electrical Specifications

Power Supply	DC 12V
Working Current	<50mA (external sensor)

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

Ultrasonic Liquid Level Sensor

Power Supply	9–36V
Working Current	< 50mA
Measuring Range	0.12–3m (blind zone: 0–0.12m)
Beam Angle	8°
Measurement Accuracy	±1 %
Temperature Accuracy	±2–3°C, -40 – 125°C (NTC thermistor)
Housing Material	PVDF/ABS

Wireless Bottom-Mounted Ultrasonic Liquid Level Sensor

Dimensions	Ø39*32mm
Weight	40g
Installation Method	Bottom mounting (AB glue)

Frequency

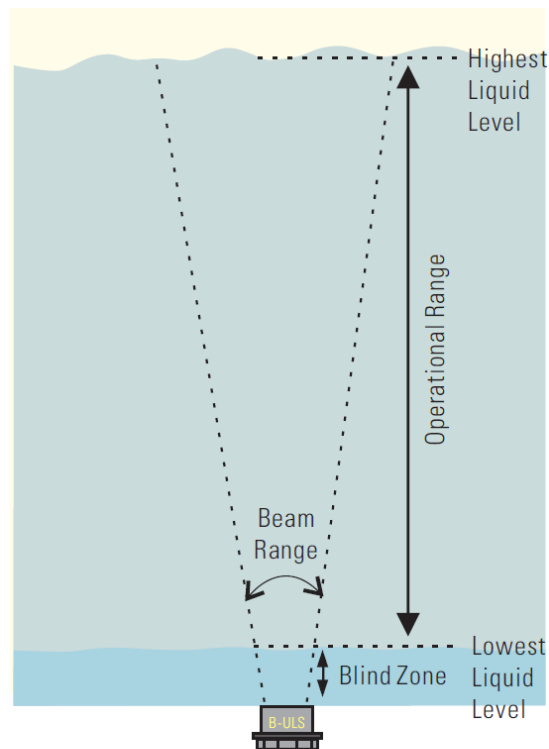
Frequency Range	863MHz-928MHz 470MHz-510MHz
TX Power	US915 20dbm AS923 16dbm AU915 20dbm CN470 19.15dbm EU868 16dbm KR920 14dbm IN865 20dbm
Receiving Sensitivity	-136dBm (LoRa, Spreading Factor = 12, Bit Rate = 293bps) -121dBm (FSK, Frequency deviation=5kHz, Bit Rate = 1.2kbps)
Antenna Type	Built-in antenna
Communication Distance	Up to10 km (The actual transmission distance depends on the environment.)
Data Transfer Rate	LoRa: 0.3kbps–50kbps FSK: 1.2kbps–300kbps
Modulation	LoRa / FSK (Note: One modulation method is required.)
Supportable 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 Bottom-Mounted Ultrasonic Liquid Level Sensor

Physical Properties

Dimensions	L: 112 mm x W: 88.19 mm x H: 32 mm
Ambient Temperature Range	-20°C–55°C
Body Weight	About 200g
Ambient Humidity Range	<90% RH (no condense)
Storage Temperature Range	-40°C–80°C

Installation and Measurement



Installation (Mounting)

1. The data obtained by the ultrasonic level sensor: the actual liquid height + the thickness of the bottom of the container, and the obtained data is within the measurement range of **0.12–3m**.

Note: The above information is provided by the supplier. There is no relevant container in the factory and no actual test has been made. The customer should refer to the actual test situation.

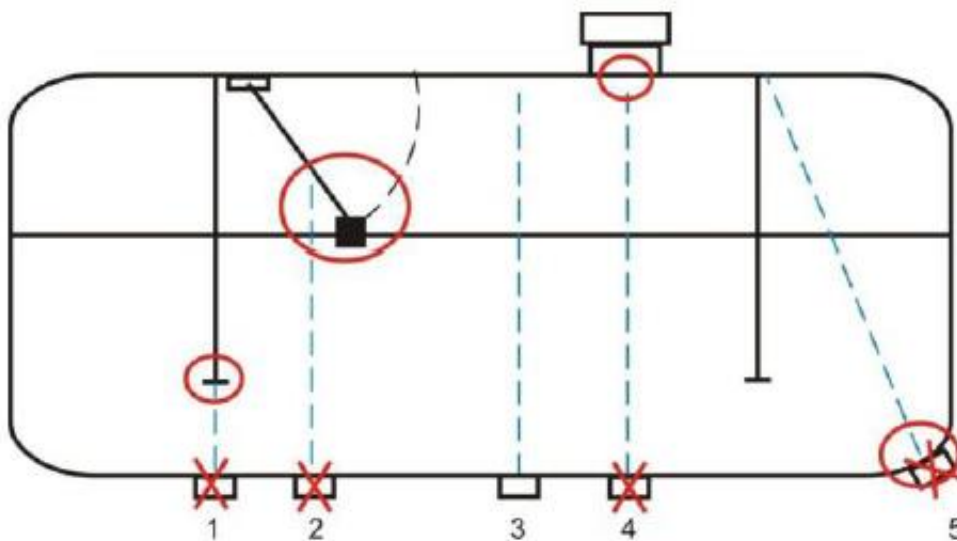
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2. When the thickness of the bottom of a steel container is more than 8mm, the sensor works properly but cannot reach its farthest measurement range — 3 meters.

When the thickness of the bottom of a glass and plastic container is about 10mm, the sensor works properly. However, when the thickness is more than 10mm, the sensor is unable to measure the farthest distance.

*Must pay attention to:

1. The ultrasonic level sensor should be installed at the bottom of the container with a flat surface.
2. The working surface of the sensor should be placed in a horizontal position and parallel to the liquid level. The radiation axis should be perpendicular to the horizontal direction.



Position 1, 2, and 4 aren't suitable for installing sensors due to the limited distance and obstacles. Position 5 is not suitable either because it is not horizontal. Position 3 is the suitable spot to install the sensor.

Note: Due to the high ultrasonic energy, the level should be 50cm at least when users are measuring water so that the measurement accuracy would be $\pm 1\%$.