

# Wireless Bottom-Mounted Ultrasonic Liquid Level Sensor

Wireless Sensor Network Based on LoRa Technology



**R718PA22**  
Data Sheet

## Overview

The R718PA22 is a wireless communication device that measures the liquid level with an ultrasonic liquid level sensor. Ultrasonic liquid level sensor installed at the bottom of the container, it may measure water, gasoline, diesel and small, medium, large capacity storage tanks (metal, plastic, glass material). R718PA22 main unit and the ultrasonic liquid level sensor communicate via RS485 interface, and the detected data is sent to the other equipment shown which employs compliance LoRaWAN™ wireless communication protocol standards.

## Working principle

Module R100H (R100L) and ultrasonic liquid level sensor communicate via RS485.

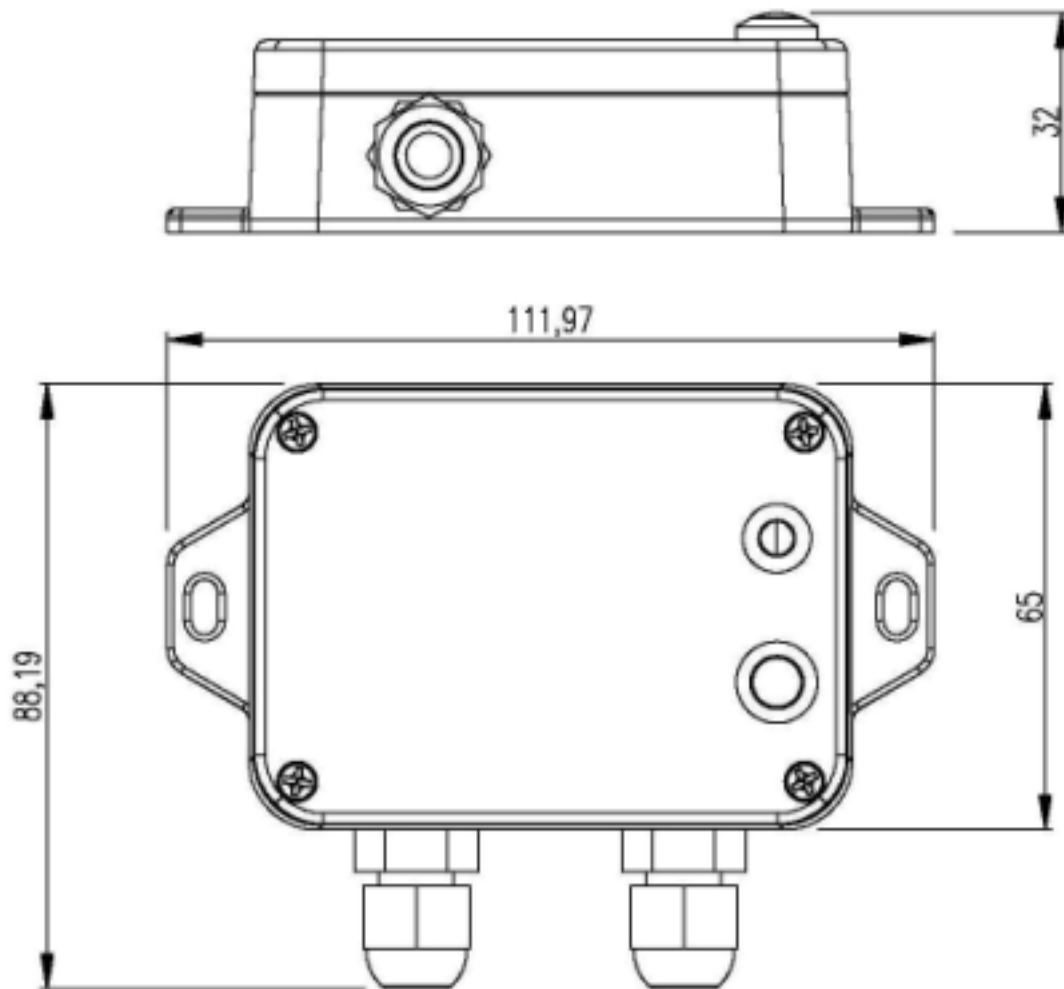
## Main characteristics

- Adopt SX1276 wireless communication module
- DC 12V adapter power supply
- IP Rating: Main body-IP65/IP67 (optional), ultrasonic probe-IP67
- The base is attached with a magnet that can be attached to a ferromagnetic material object
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum technology
- Configuration parameters can be configured through third-party software platforms
- Data can be read and alerts can be set via SMS text and email (optional)
- Applicable to third-party platforms: Actility / ThingPark / TTN / MyDevices / Cayenne

## Application scenario

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

## Dimensions



## Electrical Characteristics

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

\* Specific electrical characteristics will vary depending on the power supply voltage

## Ultrasonic Liquid Level Sensor

Power Supply	9-36V Power Supply
Working Current	Less than 50mA
Measuring Range	0.12-3m (0-0.12m is a blind zone)
Beam Angle	8°
Measurement Accuracy	1 %
Temperature Accuracy	±2-3°C, - 40~ 125°C (NTC thermistor)
Housing Material	PVDF/ABS
Size	Ø39*32mm
Weight	40g
Installation Method	Bottom mounting (AB glue)

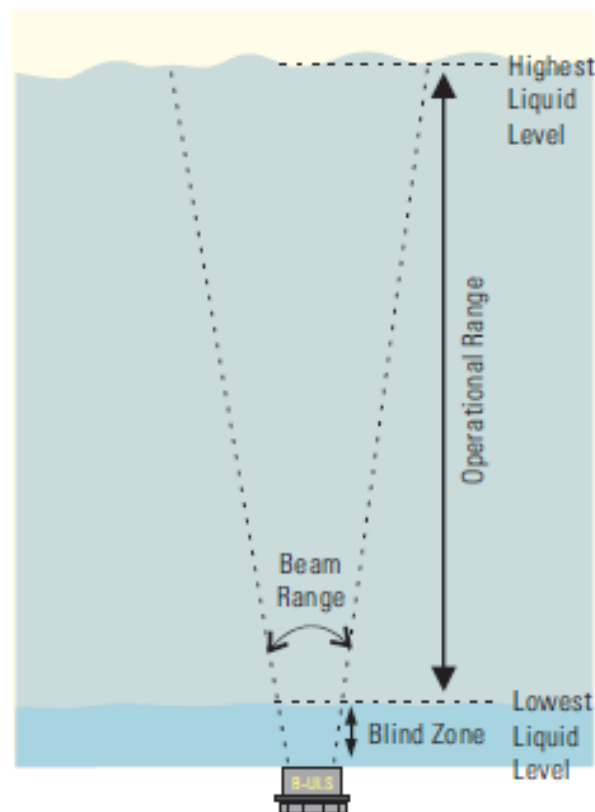
## Frequency

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 to 10 km, the actual transmission distance depends on the environment.
Data Transfer Rate	0.3kbps to 50kbps
Modulation	LoRa/FSK (Note: choose one of them)
Supportable LoRaWAN band	EU863-870, US902-928, AU915-928, KR920-923, AS923, CN470-510 Configured before shipment

### Physical characteristics

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



### Installation (Mounting)

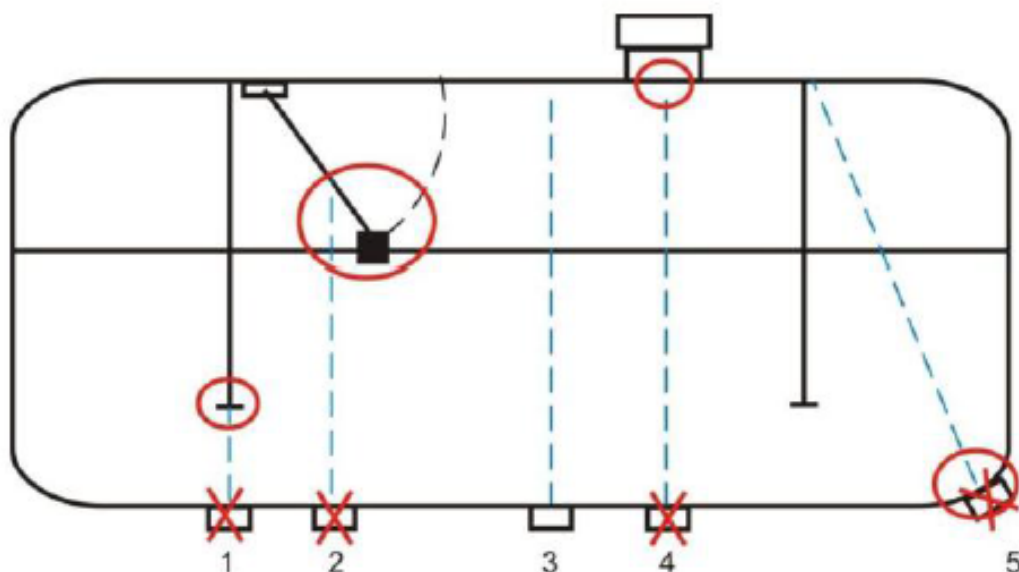
\* The data obtained by the ultrasonic level sensor is: the actual liquid height + the thickness of the bottom of the container, and the obtained data is within the measurement range of **0.12-3m**.

\* When the thickness of the bottom of the steel container is more than **8mm**, the ultrasonic liquid level sensor can not measure the farthest distance;  
The thickness of the bottom of the glass or plastic container can reach **10mm**, which can be measured normally.

\* Must pay attention to:

1. There must be a flat surface to properly install the ultrasonic level sensor at the bottom of the container.
2. Ensure that the working surface of the sensor is in a horizontal position, and the working surface is parallel to the liquid level in the tank; the radiation axis of the sensor is perpendicular to the horizontal direction.

As the picture shows



The 1, 2, and 4 points in the above figure are not suitable for mounting sensors because they are too close to the tank wall or have obstacles.

Point 5 is not suitable because it is not horizontal.

Position 3 is suitable for mounting the sensor.

Note:

Because the ultrasonic level sensor has high ultrasonic energy; **when the measured liquid is water, the water level must be higher than 50cm**, and the measured data can reach 1% accuracy