

# Wireless Capacitive Proximity Sensor

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Wireless Sensor Network Based on LoRa Technology



## R718VB DataSheet

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## Wireless Capacitive Proximity Sensor

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### 1. Introduction

R718VB is to detect the level of toilet tank water, liquid hand soap, and liquid level of non-metallic pipes (pipe outside diameter:  $D \geq 11\text{MM}$ ). This device is connected to a non-contact capacitive sensor, which can be installed on the exterior of the container. Without direct contact, the sensor can detect the current level of water or liquid hand soap within the measurement range. The collected data could be transmitted to and displayed by other devices through the wireless network.

### 2. Features

- SX1276 wireless communication module
- 2 ER14505 battery AA size (3.6V/section) in parallel
- Non-contact capacitive sensor
- Main body: IP65/IP67 (optional); sensor probe: IP65
- Magnetic base
- LoRaWAN™ Class A compatible
- Frequency hopping spread spectrum technology
- Configuration parameters through third-party software platforms; Data read and alerts can be set via SMS text and email (optional)
- Applicable to 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](http://www.netvox.com.tw/electric/electric_calc.html). On this website, users can find various types of battery lifetime in different configurations.

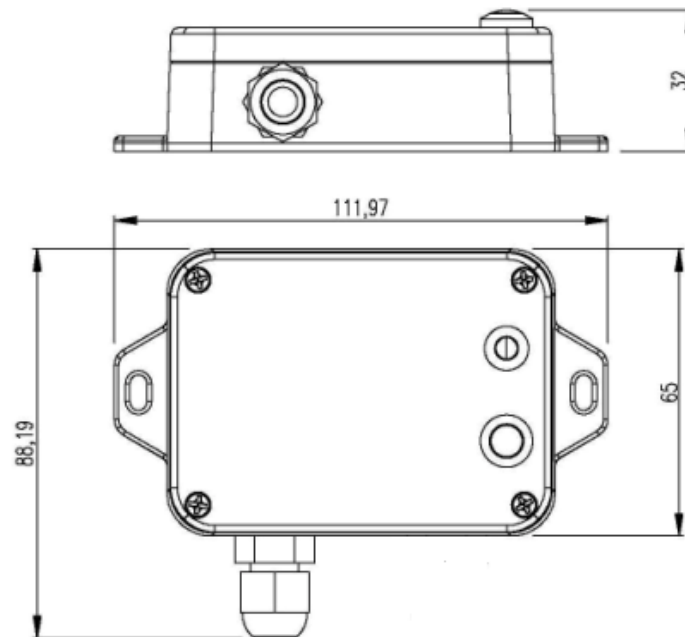
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### 3. Applications

- Flush toilet water level detection
- Liquid hand soap level detection
- Non-metallic pipe (pipe major diameter:  $D \geq 11\text{mm}$ ) liquid level detection
- Others

### 4. Dimensions

Main body: L: 112mm \* W: 88.19mm \* H: 32mm



## Wireless Capacitive Proximity Sensor

### 5. Electrical Specifications

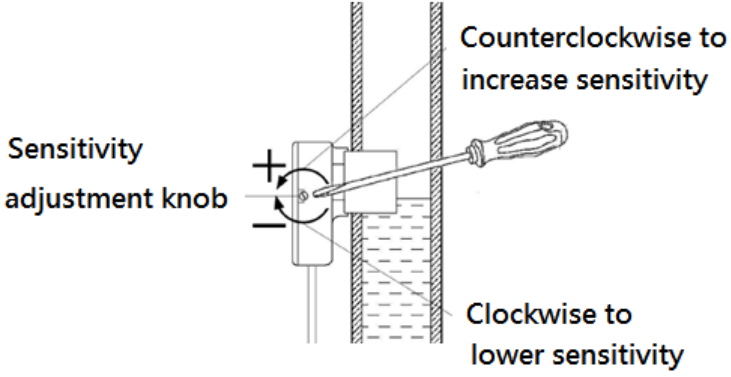
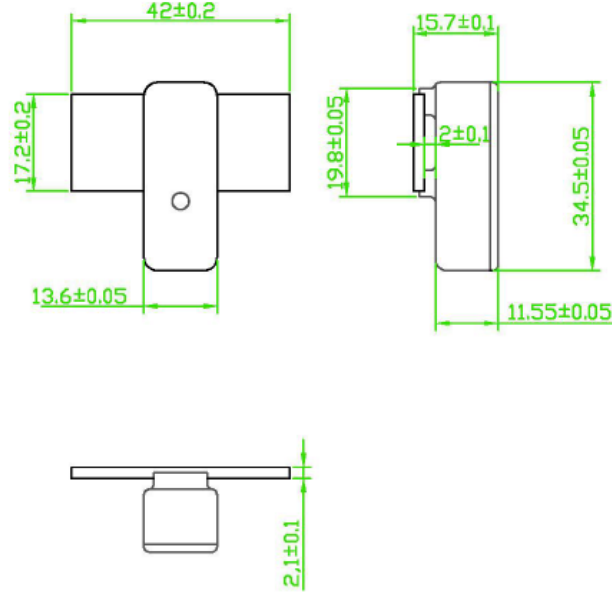
|                      |  |
|----------------------|--|
| Power Supply         | 2 ER14505 lithium batteries (3.6V, 2400 mAh/section) in parallel   |
| Battery Life         | 4.6 years<br>(conditions: ambient temperature 25°C, report once every 15 minute, txpower = 20 dBm, LoRa spreading factor SF = 10 ) |
| Standby Current      | 30 uA  |
| Wake-Up Current      | 6.3mA @3.3V  |
| Low Battery Alarm    | 3.2V   |
| RF Receiving Current | 11mA @3.3V   |
| RF Emission Current  | 120mA @3.3 V   |

Note: Specific electrical characteristics will vary depending on the power supply voltage

### 6. Non-Contact Capacitive Sensor

|   |  |
|---|--|
| Model   | XKC-Y26-V  |
| Power Supply                                      | +5 V   |
| Working Temperature                               | -5°C to 105°C  |
| Working Humidity                                  | 5% to 100%   |
| Induction Container<br>(Non-Metal) Wall Thickness | ≤20mm (glass, plastic, non-absorbent ceramic, acrylic, rubber, or composite materials)   |
| Applicable Pipe Diameter Range                    | ≥11mm  |
| Material  | ABS  |
| Waterproof Level                                  | IP65   |
| *Sensitivity                                      | The sensitivity of the non-contact capacitive sensor must be adjusted according to different liquids and the thickness of non-metallic containers. |

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|                               |  |
|-------------------------------|--|
| <p>Sensitivity Adjustment</p> | <p>Sensitivity from high to low: 12 circles in total</p>                         |
| <p>Sensor Size</p>            |   |
| <p>Installation Method</p>    | <p>Stick the probe with mucilage glue</p> <p>When used in pipeline liquid level detection, users can also use nylon cable ties and pipes to tighten the probe.</p> |

Note: Sensitivity

The distance between the liquid level and the sensor could influence the sensitivity. When the liquid level is below the sensor and can be detected, users should lower the sensitivity. On the other hand, when the liquid level is at the same level as the sensor but cannot be detected, users should raise the sensitivity.

Caution: 1. Avoid metal materials when installing the probe to get accurate results

2. The liquid with high concentration may stick to the surface of the container and affect the results of detection. To get accurate results, please be cautious while installing.

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7. Frequency

|                          |  |
|--------------------------|--|
| Frequency Range          | 863MHz-928MHz 470MHz-510MHz  |
| TX Power                 | US915 20dbm;<br>AS923 16dbm;<br>AU915 20dbm;<br>CN470 19.15dbm;<br>EU868 16dbm;<br>KR920 14dbm;<br>IN865 20dbm;                                      |
| Receiving Sensitivity    | -136dBm (LoRa, Spreading Factor=12, Bit Rate = 293bps);<br>-121 dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps)                                |
| Antenna Type             | Built-in antenna   |
| Communication Distance   | 10 km<br>(The actual transmission distance depends on the environment.)  |
| Data Transfer Rate       | 0.3kbps ~ 50kbps (LoRa)<br>1.2kbps ~ 300kbps (FSK)   |
| Modulation               | LoRa / FSK (Note: Please choose one modulation.)   |
| Supportable LoRaWAN Band | EU863-870,US902-928,AU915-928,KR920-923,AS923-1,<br>AS923-2,AS923-3,IN865-867,CN470-510<br>(Note: optional, to be done in the factory configuration) |

8. Physical Properties

|                           |                                 |
|---------------------------|---------------------------------|
| Dimensions                | L: 112mm * W: 88.19mm * H: 32mm |
| Body Weight               | About 150g                      |
| Ambient Temperature Range | -20°C to 55°C                   |
| Ambient Humidity Range    | <90% RH (no condense)           |
| Storage Temperature Range | -40°C to 85°C                   |