# LiDAR For Material Level Detection Sensor R718PE02D Data Sheet

### Wireless Sensor Network Based on LoRa Technology



**Copyright©Netvox Technology Co., Ltd.**

This document contains proprietary technical information which is the property of NETVOX Technology. It shall be maintained in strict confidence and shall not be disclosed to other parties, in whole or in part, without written permission of NETVOX Technology. The specifications are subject to change without prior notice.

## LiDAR For Material Level Detection Sensor

## Introduction

R718PE02D is a wireless communication device that uses LiDAR radar for single-point ranging for the material level detection industry. Based on the ToF (Time of Flight) schematic, the R718PE02D provides stable, accurate, and reliable ranging performance by optimizing the optical system and built-in algorithms. It is not easily affected by the surface state of the detected object, and the ranging performance can reach up to 25m. The product is equipped with a unique dust-removal wiper structure. The radar-driven dust-removal wiper can complete the dust removal operation of the optical mirror, so it can maintain the accuracy of distance measurement in an environment with severe dust pollution and dust accumulation. The R718PE02D body and the LiDAR sensor communicate through the UART serial communication and transmit the detected data to other devices for display through the wireless network. It adopts a wireless communication method that conforms to the LoRa$^{TM}$ protocol standard.

## Operating Principles

RF module and LiDAR radar communicate through UART.

## Features

- SX1276 wireless communication module
- Powered by DC 5V/2A
- Main body IP30; sensor IP5X (partially waterproof)
- UART serial communication
- LoRaWAN$^{TM}$ Class C device
- Frequency hopping spread spectrum
- Support third-party platforms: Actility/ThingPark, TTN, MyDevices/Cayenne
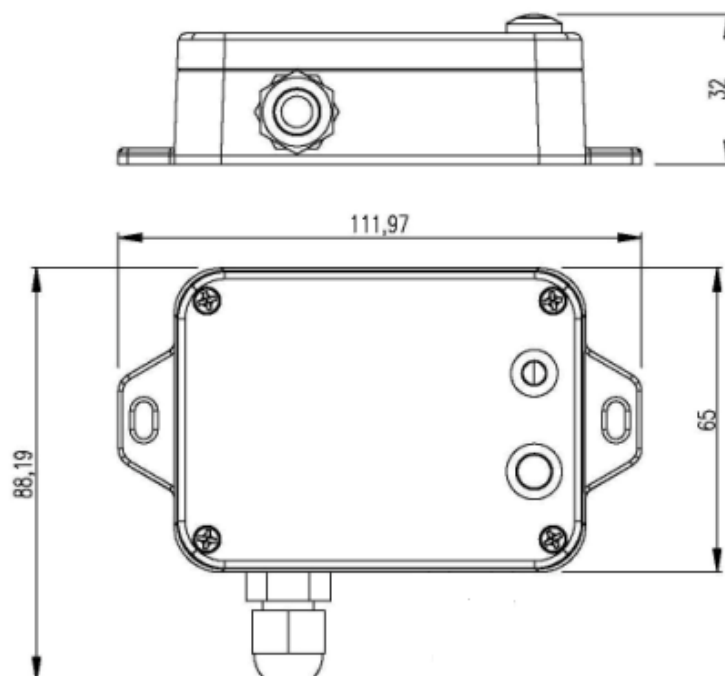
## Application
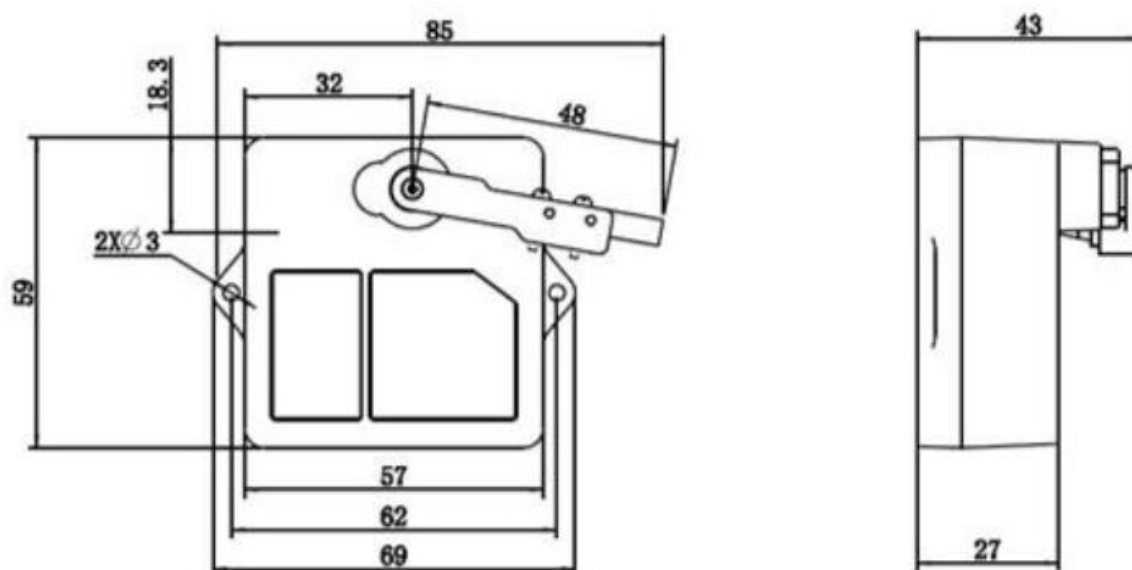
- Material level detection
- Other ranging occasions

## LiDAR For Material Level Detection Sensor

## Dimensions

Main body: 112mm x 88.19mm x 32mm



LiDAR radar: 85mm x 59mm x 43mm

# LiDAR For Material Level Detection Sensor

## Electrical Specification

| Power Supply | DC 5V/2A |
|---|---|
| Power Consumption | ≤2W, peak current: 1A |

## R-100H module

| Wake-up Current | (0.8mA-8mA) @3.3V |
|---|---|
| Receiving Current | 11mA @3.3V |
| Transmitting Current | 120mA @3.3V |

*Specific electrical characteristics may vary depending on the power supply voltage.

## LiDAR Sensor Parameters

| Operating current | ≤400mA; peak current: 1A | |
|---|---|---|
| Measurement Range | 90% Reflectivity, 0K lux | 0.1m to 25m |
| | 10% Reflectivity, 0K lux | 0.1m to 12m |
| | 90% Reflectivity, 100K lux | 0.1m to 25m |
| | 10% Reflectivity, 100K lux | 0.1m to 12m |
| Blind Zone | 0 to 0.1m | |
| Range Resolution | 1cm | |
| Detection Angle | 3º | |
| Measurement Accuracy | ±6 cm（0.1-6m）, ±1%（6-25m） | |
| Operating Temperature | -20°C to 60°C | |
| Storage Temperature | -30°C to 80°C | |
| Storage Humidity | <60%RH | |
| Cable length | 120cm | |

**LiDAR For Material Level Detection Sensor**

## Frequency

| | |
|---|---|
| Frequency Range | 863MHz-928MHz　470MHz-510MHz |
| Power Output | 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><br>-121dBm (FSK,Frequency deviation=5kHz, Bit Rate=1.2kbps) |
| Antenna Type | Build-in antenna |
| Communication Distance | 10km(visible linear obstacle-free transmission distance, actual transmission distance depends on the environment) |
| Data Transfer Rate | 0.3kbps~50kbps(LoRaWAN)<br><br>1.2kbps∼300kbps　(FSK) |
| Modulation | LoRa/FSK (Note: choose one modulation) |
| Available LoRaWAN Band | EU863-870．US902-928．AU915-928，KR920-923，AS923，CN470-510，IN865<br>(Note: optional, to be done in the factory configuration) |

## Physical Properties

| | |
|---|---|
| Dimensions | Mail body: L:112mm x W:88.19mm x H:32mm<br><br>Sensor: 85mm x 59mm x 43mm |
| DC 5V Transformer Cable Length | 1.5m |
| Ambient Temperature Range | -15℃ to 55℃ |
| Ambient Humidity Range | <60%RH (No condensation) |
| Storage Temperature | -25℃ to 70℃ |