Wireless Ultrasonic Level/Distance Sensor

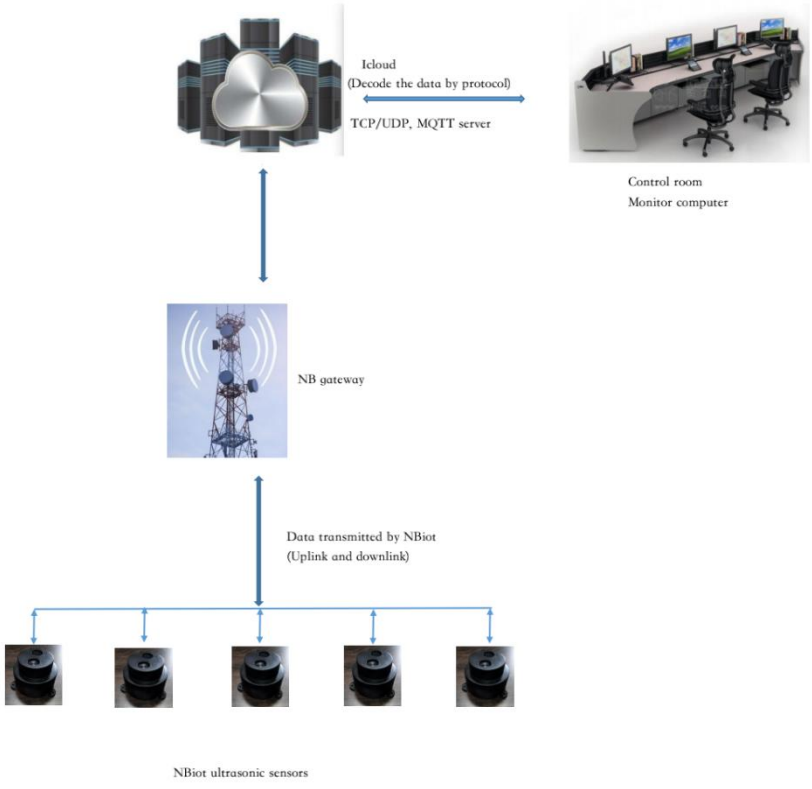
I. Introduction

Wireless ultrasonic level gauge/level gauge is a low-power and high-performance product with integrated IP68 protection level of ultrasonic sensor, wireless NBiot or LoraWan remote transmission, and large-capacity battery. It is widely used in municipal, water, and smart cities. , automation, etc.

II. System

The wireless ultrasonic distance/level system consists of: application objects, long-life wireless ultrasonic range finder, cloud management software, the key product is "low-power wireless ultrasonic sensor", cloud management software is a software customized product.

Low power consumption ultrasonic sensor



System diagram

III. Product review:

1. Ultrasonic ranging products provide reliable continuous level or distance measurement for water, liquid, glue or solid materials. These sensors are ideal for applications ranging from 18cm to 250cm.

2. The ultrasonic range finder can be easily connected to the control system electronically and mechanically, combined with the most advanced ultrasonic technology and processing algorithms, the design is reasonable and the complete system is integrated.

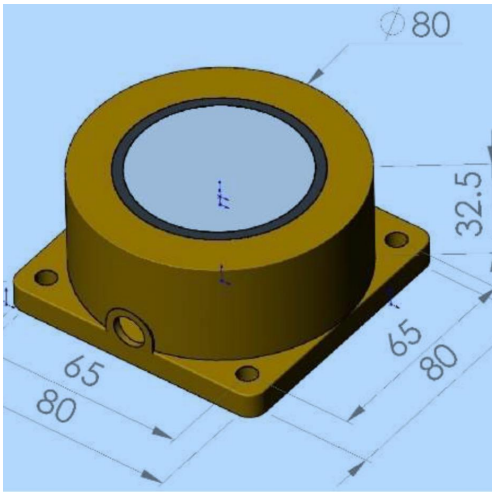
3. Ultrasonic sensor conforming to IP68 standard, the product conforms to RoHS.

4. Ultrasonic distance/level meters can also provide accurate non-contact measurements for applications such as factory automation, process control or tank level monitoring.

5. Ultrasonic rangefinders are powered by 3.6~5.5V DC battery , they use asynchronous UART TTL signal to communicate with customer's control system. Their power-on time is very short (less than 300ms), which allows system integrators to develop very low-power operation, where 3.6~5.5V DC is briefly applied to the sensor to obtain a distance measurement and then removed. This capability is especially important in battery powered installations. The sensor is protected against overvoltage and reverse polarity in both DC power and UART communication. Perform continuous temperature compensation for precise measurement accuracy.

6. Provides wireless communication with LoraWan or NBiot sensors (5 years battery life if data is transmitted every 2-3 hours).

7. Sensors stand out from others because of their user-friendly setup, versatile control options, field-proven reliability, and affordable cost.



Measurements

IV. Characteristic

1. 3.6~5.5V power supply

2. Communication via Tx/Rx UART or Bluetooth, LoraWan, NBiot, Wifi

3. Fast power-on response with level measurement, suitable for low-power systems

4. Plug and Play Setup

5. Temperature Compensation

6. Small blind spot

7. Tamper-proof and durable

8. IP68 enclosure protection class

9. Preservation of Accuracy in Harsh Environmental Conditions

V. Application

1. Measurement of water level, level/material level and distance

2. Smart city applications such as garbage bins, water wells, underground pipe networks, etc.

3. Bulk material management

4. Location detection

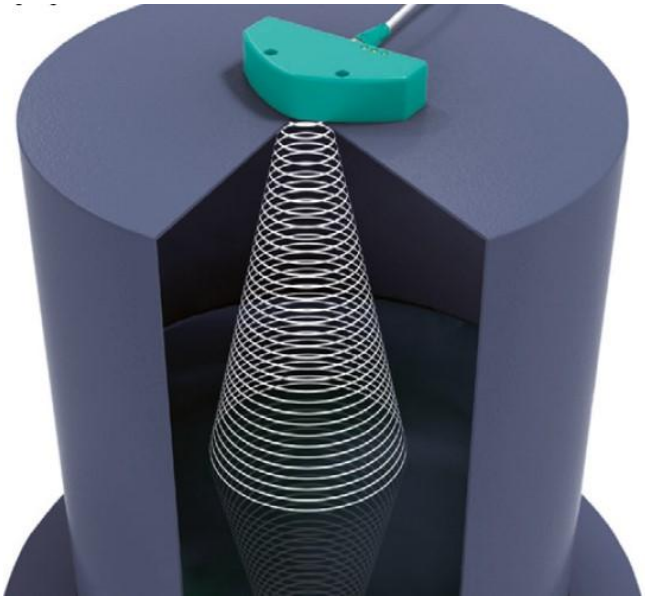
VI. Parameters

Measureing range	180---2500mm
Resolution	0.25mm
Accuracy	FS±1%
Sensitivity	Adjustable by user
Beam Angle	12°Cone
Power warm-up	<200ms
Temperature compensation	Internal temperature compensation
Mechanical Parameters	
Housing material	PVC or PVDF
Transducer surface	PPA or PVDF
Connection interface	4 wires（4pin）or wireless LoraWan, NBiot, Bluetooth
Ambient	
Working temperature	-40°C ~ 70°C
Storage temperature	-40°C ~ 85°C
Humidity	0~95%，no freeze
Electric Parameters	
Battery	9000mAh (5years if data transmit interval is 2-3 hours)
Working voltage	3.6--5.5V DC
Currency	15mA（Typical value）

UART TTL	3.3V
Measurement frequency	10hz（Default）

VII. Installation

Install it on the top cover (drill holes) or install it on the reverse side of the top cover with screws, try to install it in the middle of the tank to avoid sound waves hitting obstacles.



VIII：Communication

Format of the response:

Shift, byte	Size of the field, byte	Value	Description
0	1	6Ah	Prefix
+1	1	00h..FFh	Net address of the sender (0x0A)
+2	1	06h	Operation code
+3	1	00h..FFh	Temperature in Celsius degrees (-128...127)
+4	2	0000h..C012h	Distance (mm)
+6	1	3...E1...3h	baud rate
			Baud rate: 1- 9600 2- 19200 3- 115200
+7	1	00...64h	Signal strength(60-100 is ok)
+8	1	00h..FFh	Verification sum

Example: 6A 01 06 1B 0A F0 11 00 DF resolves to 01 address temperature 27℃ distance 2800mm

command to change the data transmitting interval: A1 XX, XX is hex, unit is Minute.

For example, if you want to change the interval to 10 minutes, you can send the command A1 0A. If you want to change the interval to 2 hours, it's 120 minutes, then send the command: A1 78

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