| | |
|---|---|
| **Product Name** | **Smart Manhole Sensor** |
| **Product SKU** | **GAOTek-IOTS-125** |
| **Product URL** | **https://gaotek.com/product/gaotek-smart-manhole-sensor/** |

**Contact us: sales@gaotek.com**

# Content

## Index

## Cautions

- The battery in this device is non-recharged type.

- Please DO NOT recharge it.

- If out of power, please replace with new battery from us.

- The battery can not work Temperature more than +85℃ .



## 1 Overview

The smart manhole Sensor is specially designed for the detection of well covers such as electrical and sewage system. When the well cover shift, open, or other abnormal situation appears, the device can timely alarm output to the use to indicate the current situation or status.

Through the built-in NB-IoT module, the detector can pass status information to the NB-IoT base station, network server, then the application server. Users can remotely monitor the manhole status, whether moved after installation or not. This equipment can be widely used in smart city projects.

Based on low-power algorithm, internal battery can work for more than 5 years. The IP68 waterproof level can meet stringent requirements for use and make it for use long life.

## 2 Features

- Internal battery can work for more than 5 years

- Low-power and wireless technology NB-IoT

- IP68 waterproof protection Level

- Sensitivity can be adjusted online

- Water level detection function

- Move detection function

- Manhole movement detection

## 3 Application



## 4 Specification

| | | |
|---|---|---|
| **Overviwer** | Dimension | 115*115*50mm |
| | Net weight | 150g |
| | color | Black |
| | Shell material | ABS |
| **Detector** | Principle | Accelerating detection; Ultrasonic level detection |
| | Accuracy rate | Can be adjusted on line |
| **Controller** | MCU | STM32, 32bit ARM® core controller |
| | Accuracy of angle | 2° |

| Radio | Wireless | NB-IoT |
|---|---|---|
| | Frequency | B1,B3,B5,B8,B20,B28 and so on |
| Power | Internal battery | No rechargeable lithium battery 8000mAh@3.6V |
| | Battery life | If you upload data 4 times a day, the battery life is more than 3 years |
| | Power consume | <120mA@3.6V(upload), <40ua @3.6V (sleep) |
| Environment | Operation temperature | -20 ~ +70°C |
| | Storage temperature | -40 ~ +85°C |
| | Protection level | IP68 |

## 5 Mechanical Size

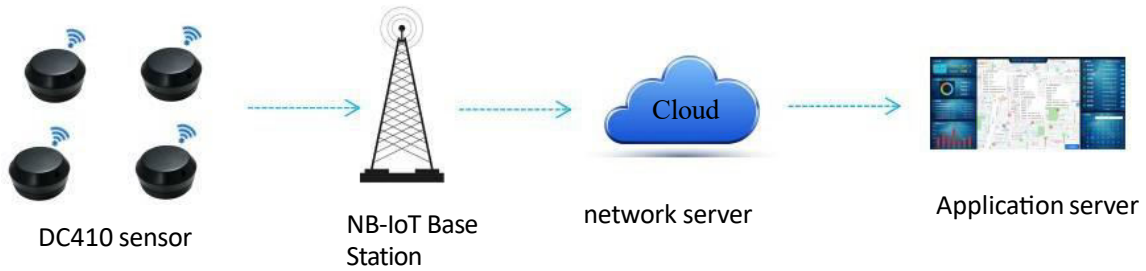

115mm*115mm*50mm

(Note: only for reference, real product update frequency without notification)

## 6 Network Diagram

The network diagram work model of manhole sensor from NB-IoT module to user. Collect the device-related data from the smart manhole Sensor, send it to the NB-IoT base station, and then the base station sends the data to the NB-IoT network server through the Internet. After that, the NB-IoT network server transmits the data to the application server.

DC410 sensor      NB-IoT Base Station      network server      Application server

# 7 Monitoring

Web has been build by CNDingtek Technical Staff through this Web you can monitor your device and check status any where any time. Through the manager pltform you can also change the sensitivity of device.

Web monitoring platform



Figure 7.1

Figure 7.2

# 8 Installation

## 8.1 Activating Power of Device

Remove the packing of device from the package and the default built-in battery is not connected; Please open the sensor ,insert NB-IoT simcard and connect the battery with the sensor. The light on the sensor circuit board will be on, which indicates that the device starts. Then you can start testing the sensor according to manual.

## 8.2 Installation

The device is recommended to fix the device to the well cover. You need to prepare the drilling tool to punch holes, then screw the device with the well cover firmly. Please make sure the hole location is close to the hole cover to facilitate so that the wireless signals can be send or receive easily.

# 9 Device List

| Device List: | | | |
|---|---|---|---|
| Number | Accessories | QTY | Remark |
| 1 | Smart manhole detector | 1 | |
| 2 | Bolt | 3 | Used for installation |
| 3 | Catalogue | 1 | |
| 4 | TTL | 1 | Used to debug |
| 5 | Magnet | 1 | Used to initializeDC400 device;1 per batch of equipment |

# 10 Package



18.7*18.7*10cm, Only for 1unit;