

# DC413 Smart Manhole Detector

## NB-IoT\_Datasheet



**V1.0**  
**Date 2021-6-03**

## Change Notes

**V1.0** Initial version.

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## Disclaimer

**CNDingtek**® Keep own best to solved the manuals should be accurate very close to the configuration, protocol operation and installation. But **CNDingtek**® reserves the right to modify the hardware, software,color, specification, guide, package without further notice.

Due to the manually photos of products and after its printing reasons, the photos in this document maybe different from the real released product, please use the released product as the final reference.

## 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 CNDingtek®.
- The battery can not work Temperature more than +85°C .



## 1 Overview

The DC413 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. Furthermore it detects the liquid /solid level in the well and upload to the cloud server while alarm level triggered.

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 emotely 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 8 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 8 years
- Low-power and wireless technology NB-IoT
- IP68 waterproof protection Level
- Sensitivity can be adjusted online
- Water level detection function
- Move detection function

## 3 Application



- Manhole movement detection.
- Sewerage/water level measurement.

## 4 Specification

<b>Overviwer</b>	Dimension	115*115*40mm
	Net weight	150g
	color	Black
	Shell material	ABS
<b>Detector</b>	Principle	Accelerating detection; Ultrasonic level detection
	Accuracy rate	Can be adjusted on line
	Accuracy of angle	2°
	Accuracy of height	3cm or 1%, the bigger one
	Detection range	4m(vertical distance)
	Blind area	15cm
<b>Radio</b>	Wireless	NB-IoT
	Frequency	B1,B3,B5,B8,B20,B28 and so on
<b>Power</b>	Internal battery	<b>No rechargeable</b> lithium battery 8500mAh@3.6V
	Battery life	If you upload data 4 times a day, the battery life is more than 8 years
	Power consume	<120mA@3.6V(upload), <30uA @3.6V (sleep)
<b>Environment</b>	Operation temperature	-20 ~ +70°C
	Storage temperature	-40 ~ +85°C
	Protection level	IP68

## 5 Mechanical Size



115mm\*115mm\*40mm

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

## 6 Network Diagram

The network diagram work model of manhole sensor from DC413 NB-IoT module to user. Collect the device-related data from the DC413 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.

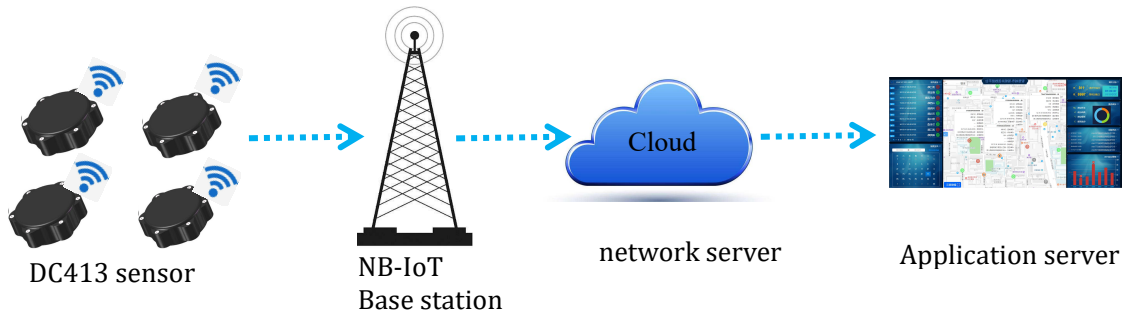


Figure6.1 Network diagram

## 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 pltfm 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 sent or received 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 initialize DC413 device;1 per batch of equipment

## 10 Package



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