

# **DO200 Ultrasonic + Magnetic Parking**

## **Occupation Sensor Manual**

### **NB-IoT Version**



**V1.0**  
**Date 2018-9-15**

## Change Notes

**V1.0 Initial NB-IoT version.**

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### Disclaimer

**CNDingtek® does their best to make this document as accurate, full, clear as possible. But CNDingtek® reserves the right to modify the hardware, software, housing, color, specification, guide, package and etc without further notice.**

**Due to the photoing and 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 for more than +85°C.



## 1 Overview

The DO200 parking occupation detector is sensor which combining ultrasonic and magnetic technology. With the redundant technology of sensor, it achieves accuracy of 99%. The error is only happened while extreme environment, like flood and thunder at the same time. From the performance it overwhelms the lonely magnetic products.

With NB-IoT wireless module, it transmit the status via NB-IoT sim card via NB-IoT cell phone network to application server. Finally user can monitor the status remotely. It is applicable for smart parking application, parking bay booking and etc. Until Aug, 2018, it support B2, B4, B3, B5,B8, B20, B28 band plan, and deployed in Europe, Middle East, South-East Asia and China.

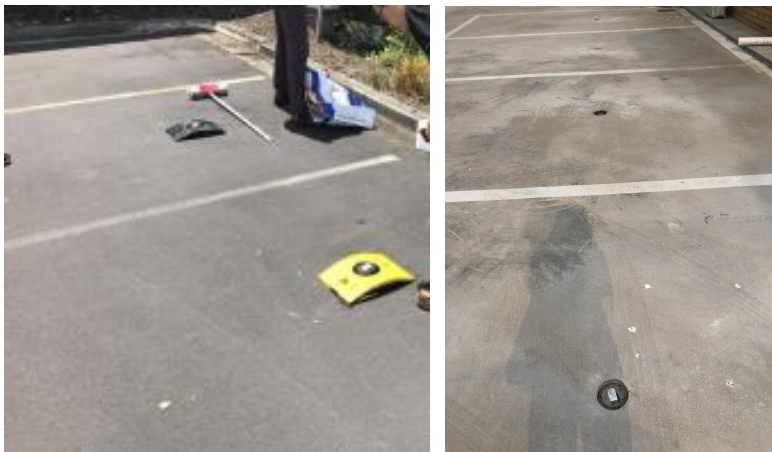
As it is with algorithm of low power consumption, the internal battery work for more than 5 years. The IP68 level ensure the enduring working outdoor.

## 2 Features

- Low power NB-IoT technology;
- Combination of ultrasonic and magnetic;
- 99% accuracy, overwhelm lonely magnetic products;
- IP68, water proof;

## 3 Application

- Roadside parking space;
- Outdoor parking space for commercial buildings;
- Indoor parking space for commercial buildings;



## 4 Specification

<b>Overview</b>	Dimension	115*115*50mm
	Net Weight	150g
	Color	Black/White
	Shell Material	ABS
<b>Detector</b>	Principle	Ultrasonic + Magnetic
	Accuracy of Report	99%
<b>Controller</b>	MCU	STM32, 32bit ARM® core controller
<b>Radio</b>	Frequency	NB-IoT B2, B3, B4, B5, B8, B12, B20, B28
	Sim Card Socket Size	Micro
<b>Battery</b>	Internal Battery	Non-recharged Lithium battery ER18505M 7000mah@3.6VDC.
	Lifetime	5 years at 4 times report per day
	Current	<150mA@3.6V(uploading), <40ma@3.6V(working normal), <60ua @3.6V (sleep normal) <240ua @3.6V (sleep transit detection)
<b>Environment</b>	Operating Temperature	-20 ~ +70°C
	Storage Temperature	-40 ~ +85°C
	Protection Level	IP68

**Note:**

**Battery is non-recharged. Please do not recharge it.**

**If out of power, please replace with new battery.**

**The battery can not work for more than +85°C!**

## 5 Mechanical Size

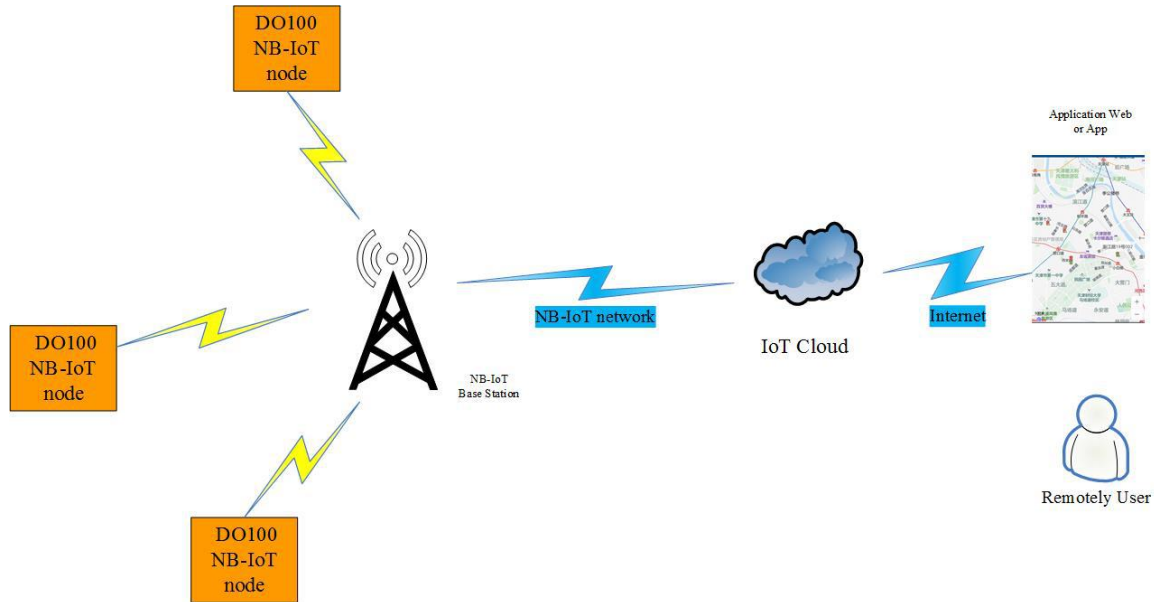


115mm\*115mm\*50mm

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

## 7 Software Platform

### 7.1 Network Diagram



### 7.2 Application Software

User can use Dingtek platform or use their own platform.

If User want to user their own platform, the protocol or API is required. As it is necessary to sign NDA before protocol/API disclosed, so please refer to part 8 to evaluate NDA before order placed.

- Status & booking;
- Online payment & income protection;
- Guidance and balance;
- Traffic report, analysis;
- Big data;

## 8 Protocol and API

The protocol and API is disclosed only after NDA agreement is signed.

Please contact with our sales team if you want to get the protocol.

If you do not want to sign any NDA, please do not place order for this product.



## 9 Installation & Test

### 9.1 Connection

Open screw of the covers.  
Insert NB-IoT sim card, take care the correct orientation.  
Connect battery with the pcb board.

### 9.2 Installation

There are two options to install on ground.  
One is dig hole and embedded the sensor.

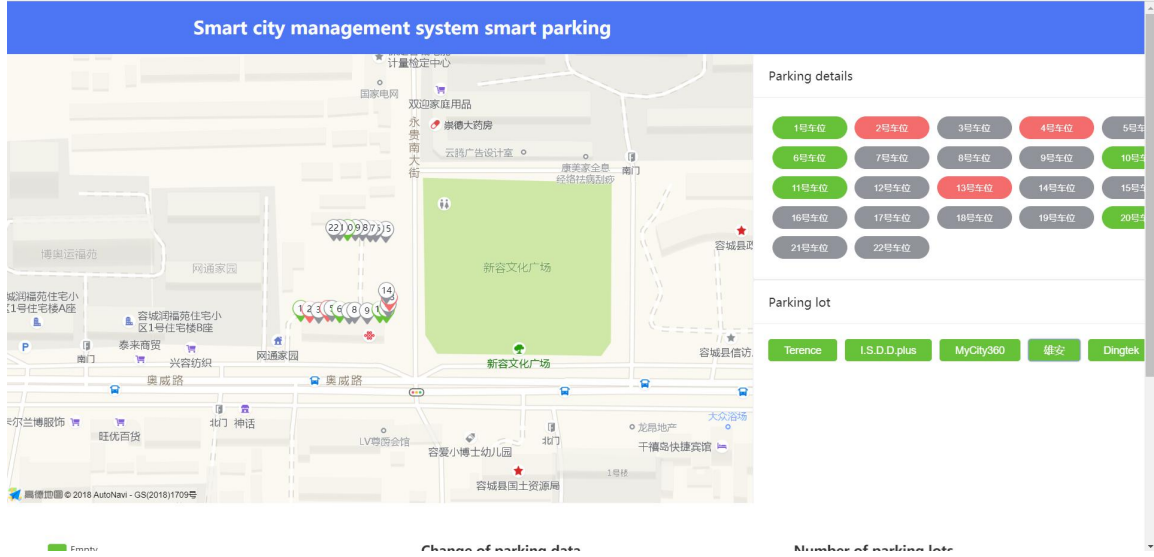


The other is install on ground.



### 9.3 Monitor by Platform

After installation, the sensor status will be displayed on the system while occupation status changed.



### 10 Package

Part List			
NO.	Item	Quantity	Remark
1	Parking occupation sensor	1	
2	Screw	3	Fasten on ground
3	Manual	1	



25\*21\*8cm, weight 1kg, 5units in one box.

## 11 Problem Solving

Problem	Reason	Resolving
No data received	Check battery power connected or not	Considering shipping rules, some is not connected for battery. So user should open cover and connect battery with the pcb board. For some version with magnetic part outside, please remove the magnetic part, then the battery will power on the sensor.
	NB-IoT frequency or APN is not correct	Different country is with different NB-IoT network, 800/850/900/700Mhz and etc. Please confirm the frequency or APN is correct.
	NB-IoT server is not in the white list of the network supplier	Some supplier limit the server ip. Please make sure your own server is in the white list or user the supplier server directly.
With data, but it is messed data		
	not updated protocol	please contact with cndingtek to get the updated protocol which is disclosed after NDA signed.
After status changed, not update instantly	software/transmission delay	while status changed, the software algorithm check it and will upload with some delay. usually it is less than 15 seconds
While quick entry and leave, device not update instantly	software/transmission delay	As the software/transmission delay, the device maybe update the status subsequently with delay of less than 15 seconds. Firstly from not occupied to occupied, secondly from occupied to not occupied.

## 12 Exception

As it is ultrasonic and magnetic combination, for extreme conditions, like flood make ultrasonic failed and thunder make magnetic failed.