

# WiiLSW - The Manhole Cover Sensor

Deploy real-time monitoring and protection against metal theft, vandalism, and unauthorized access of manholes with WiiHey's manhole cover sensor unit.



## Features

- Detect open/close status of manhole cover;
- Easy to install, wireless connected and free maintenance;
- Automatic alarm and message notification;
- Low false alarm rates;

## Applications

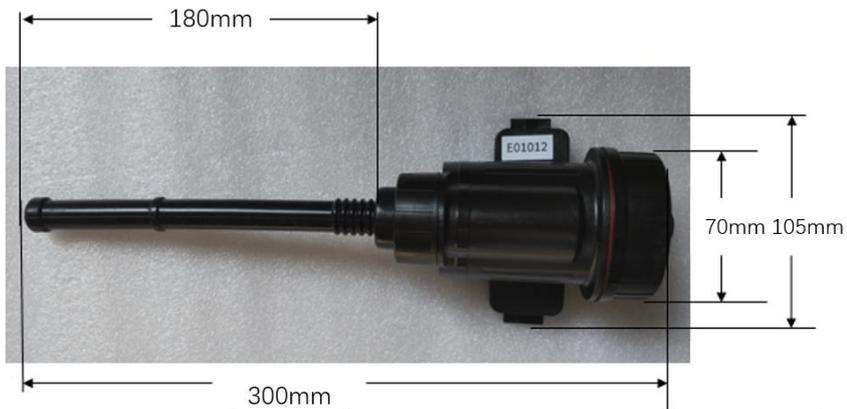
- For use in monitoring manholes, handholes, enclosures, or doors;
- Pick up on unauthorized activities where requires movement of a barrier to gain access to an asset;

## Tech Specifications

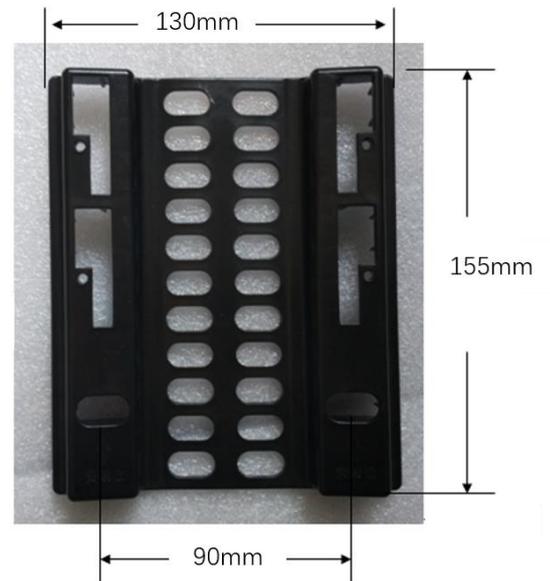
Opened/Closed Status Measurement	
Sensor type	Reed switch
Wireless Connectivity	
Radio	850/900/1800/1900MHz GSM/GPRS Cellular Network
SIM Card	Micro SIM Card
Power	
Power source	Built-in battery
Battery life	<ul style="list-style-type: none"><li>- 8500mAH battery version for 3~5 year battery life;</li><li>- 19000mAH battery version for 6~8 year battery life;</li></ul>
Mechanical	
Dimensions	See the figure below
Environmental	
Operating temperature	-25°C to 65°C
IP Rating	IP69

## Dimensions

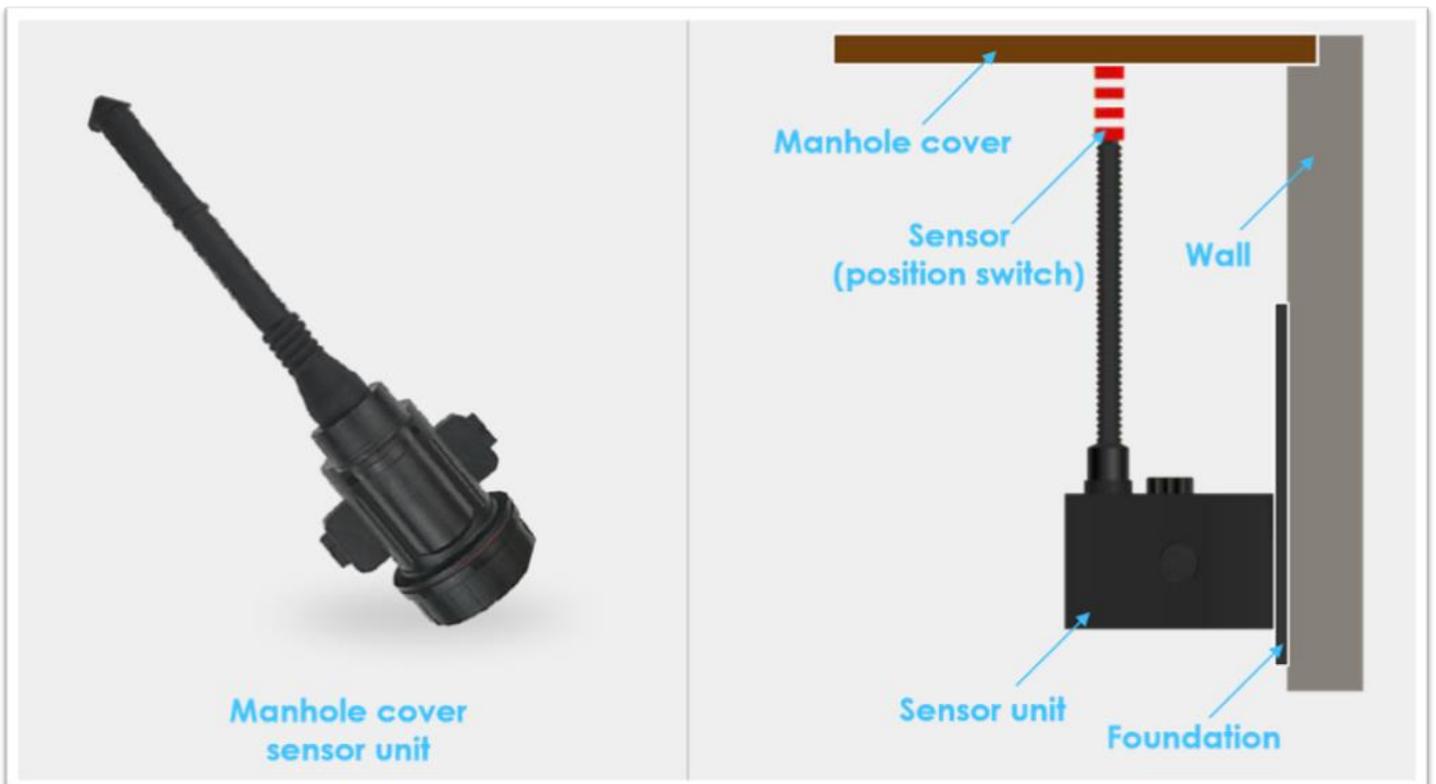
### ➤ Main body



### ➤ Foundation



## Installation



## Gallery



## Message transmission

There are several primary message types:

- Manhole cover status message, showing whether it is opened or closed.
- Battery level message.
- Heart beat message.
- Other extended messages.

By default, the device transmits these messages to our cloud platform with TCP protocol. For large quantity purchasing, the device could be programmed to transmit messages directly to the customer's cloud platform, bypassing our cloud platform.

The message model with our cloud platform involved is like this:

- (1) The device collects the status and sends message to our cloud platform.
- (2) Our cloud platform transmits the message to the customer's cloud platform via MQTT/HTTP APIs.
- (3) The customer's cloud platform gets the message, manipulates the data, based on which to do the O&M job.

Below is an example of MQTT API to transmit a message to the customer's cloud platform:

MQTT topic is "/events/{customerId}"

MQTT message content:

```
{
  deviceId: "xxxxxxx", // the sensor's ID
  state: "opened/closed", // the manhole cover status
  timestamp: " xxxxxxxx ", // the epoch time
}
```

Our cloud platform supports NodeRED (<http://www.nodered.org>, a flow-based programming tool) as a way to parse and process message. We could provide the NodeRED demo as an application image of the Docker, so that our customer could run the demo on their cloud platform easily and based on which to build their own application very quickly.

## Q&A

**Q: Can the device support send SMS to mobile phone alert?**

A: No.

**Q: Does the device support GPS location?**

A: No, it doesn't support GPS. But it can show the cellular network BS-based location.

**Q: Is the SIM card replaceable?**

A: Yes, although we do not recommend to change the SIM card, because the changing process is not easy after the device having been completely assembled.

**Q: Is the battery replaceable?**

A: Yes, although we do not recommend to change the battery, because the changing process is not easy after the device having been completely assembled. That is why we have a bigger battery version - 19000mAH battery for 6~8 year battery life.

**Q: Can we configure the device remotely?**

A: Yes.

**Q: In the manhole, telecom signal is very weak, is the device able to send data to server?**

A: The CSQ AT command can reflect the signal strength of the device. Usually, if the CSQ value is below 10, then the device has trouble to be connected to network.

The link shows more information: <http://m2msupport.net/m2msupport/atcsq-signal-quality/>

**Q: What is the guarantee of uptime on our API server, if the internet down or server having issue, will the message transmission be affected?**

A: To ensure the reliability and availability, we could build an exclusive application of message transmission service on AWS for our customer. We will charge for this service.

**Q: Is there any additional charges if using our API?**

A: If customer wants the above exclusive cloud service, we will charge for it.