

Manhole cover monitoring

Introduction

Manholes leading to underground supply systems are essential for their maintenance, for example, it concerns telecom networks, water supply networks, gas supply networks and electricity networks, and so on. Although it is very crucial to a city's operations, the manhole can be one of the least protected and most vulnerable assets.

Nowadays manhole cover failure such as metal theft (for manhole cover or copper cable underneath it) is on the rise and generally becomes a society issue. An unauthorized opening of manhole is very dangerous, it can cause deadly fall-in accidents to people and also inflict a huge amount of damage to public property.

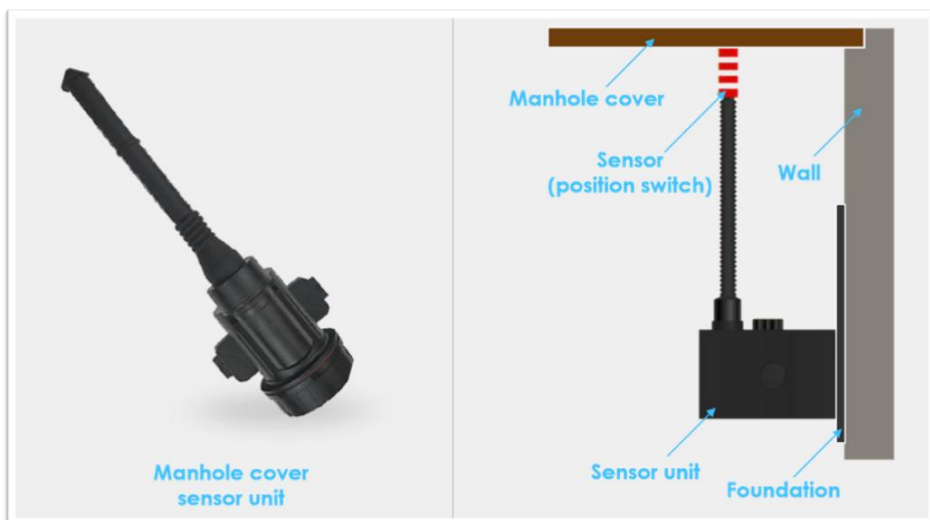


Manhole cover loses & accidents

Since it directly affects the safety, security and even economy of the society, this is why the need for a fully automated monitoring system has become very urgent. Automated monitoring of manhole cover is part of the development of smart cities and Internet of Things (IoT) which are the targets for modern governments to control and monitor the resources in cities.

Manhole cover monitoring solution

Deploy real-time protection against metal theft, vandalism, and unauthorized access of manholes with WiiHey's Manhole cover monitoring solution. The solution utilizes a range of commercially available, off-the-shelf sensors to detect and prevent manhole related incidents. Signals are transmitted from the embedded device to a cloud dashboard platform via IoT wireless network. The sensors in combination with the GIS dashboard will allow you to monitor and well plan the maintenance of manholes.



WiiHey manhole cover sensor

Tech specs

- Minimum time required to trigger alerts – 0.7 seconds;
- Compatible wireless connectivity with GSM/GPRS/NB-IoT/Sigfox;
- Battery life for typical operations: over 5 years;
- Fully sealed with IP69 level protection;
- -32°C to 85°C operating temperature range;

Key features

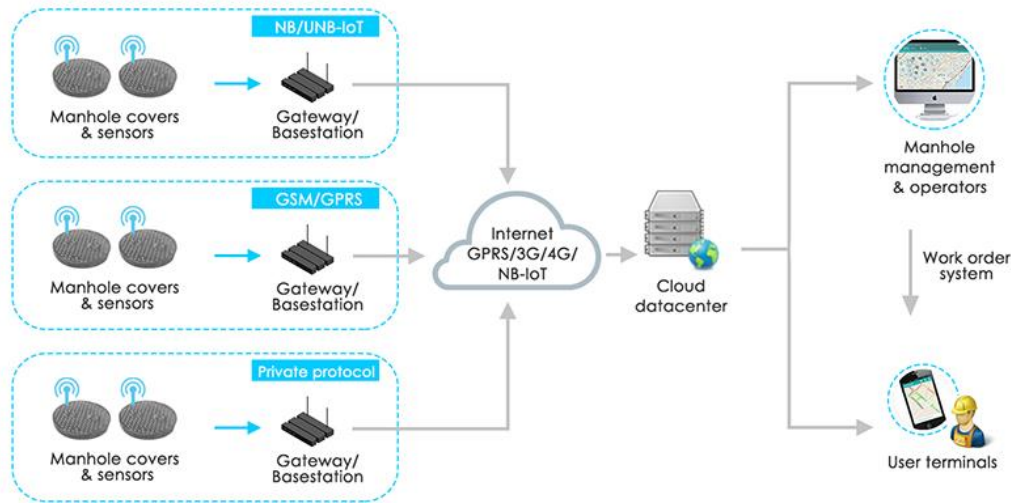
- For Use in manholes, handholes, enclosures, or doors;
- Detects open/closed status of a manhole cover;
- Easy to install, wireless communication and free maintenance;
- Cloud based dashboard with GIS (Geographic information system) support;
- Automatic alarm and message notification support;

Benefits

- Monitor, report, predict and optimize all your manholes;
- Pick up on unauthorized activity and manage maintenance schedules;
- 24/7 monitoring with multiple information updated a day and instant alarm notification;
- Total flexibility and reliability, can be deployed in urban or rural environments;

Architecture

The manhole cover sensor supports narrow band (NB) IoT communications technology, which combines high transmission ranges of up to several kilometres in urban environments, with low power consumption. Data are transmitted to cloud datacenter across the IoT network for processing and fusion. Eventually, operators could view every manhole status from a cloud-based GIS dashboard.



System architecture

Hardware installation

Detailed information of manhole cover sensor could be found here - [WiiLSW Sensor](#).



Manholes and WiiLSW sensors

Software



GIS dashboard

It contains status monitoring, location information, statistical results & querying.

Extension & customization

WiiHey manhole monitoring solution is a framework. The hardware devices and the dashboard application is a perfect example of customisation. Depending on your application we have range of sensors and technologies at our disposal. Whether it is for gas detection, heat detection or flooding detection through manhole monitoring, we can customize the solution and tailor them to fit your needs.

Summery

With WiiHey manhole monitoring solution, thousands of covers are monitored simultaneously, and every cover is individually identified and mapped. It allows immediate positioning of unauthorized attempts on each manhole. This facilitates an immediate focused response by security or management operators via the GIS cloud based software application.