

# IOT Based Drainage Monitoring System

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**Abstract-**The Internet of Things (IOT) comprises of genuine items, specialized gadgets joined to sensor arranges with a specific end goal to give correspondence and mechanized activities between certifiable and data world. IOT appeared on the grounds that, without human cooperation PCs could get to information from articles and gadgets, however it was gone for, to beat the constraining components of human entered information, and to accomplish cost, precision and simplification elements. Wireless Sensor Network (WSN) is a key empowering influence for IOT worldview. This paper speaks to the usage and configuration capacity of an underground drainage and monitoring system (UDMS) for IOT applications. The indispensable contemplations of this plan are ease, low upkeep, quick sending, and high number of sensors, long life-time and high caliber of administration. The proposed demonstrate gives an arrangement of observing the water level and temperature inside a sewer vent and to check whether a sewer vent top is open. It likewise screens underground introduced electric electrical cables. Continuously, UDMS can remotely screen current conditions of the sewer vents.

**Keywords-**Drainage, Manhole, WI-FI Module, The Internet of Things, wireless sensor networks (WSN)

## I. INTRODUCTION

Each city having it's drainage system and it may be in good way to keep the cities clean. drainage system is not better the good water is mixed with drainage water and infective viruses might develop. The drainage gets blocked in the rainy season, it will create problem for human life. The traffic flow can come to be jammed, the surrounding area converts muddy, entirely it defeats the civic. Hence it is the responsibility of government to look after of sanitation of the town. They would look out about drainage system. It is very common problem that drainage will get blocked due to some causes. But the corporation official responds to this problem very late. After getting blocked the public will notice this, but some-times the public also careless and they don't inform the officials.

## II. PROPOSED METHODOLOGY

This is a design of monitoring manholes through internet. Previous system fails to provide less cost, less maintenance, fast growth, and huge amount of sensors, long life-time and high excellence of facility. This design provides three way alert systems, which include Route map, liquid crystal display and Speaker. After making of some serious problem through public or some other Medias the news will go to officials and they react to it thereafter. Up until then the entire community of that analogous area has to hurt. Suppose if there is any facility is available which would be there in Civic government that the representatives come to know quickly after blocking of drainage system in which area and that proper place where it is blocked and it also informs if the manhole top is exposed. The time will be saved. The action can be taken immediately and man power will be saved. So our main focus is controlling manholes using sensors. If drainage gets jammed and it excesses, it identified by the instrument, then that sensor sends information via transmitter and that signal is acknowledged by a particular receiver which is near to corporation or corresponding offices. The open drainage system have some problems to reduce that, most of the towns were accepted the underground drainage system to have the city, maintenance and well.

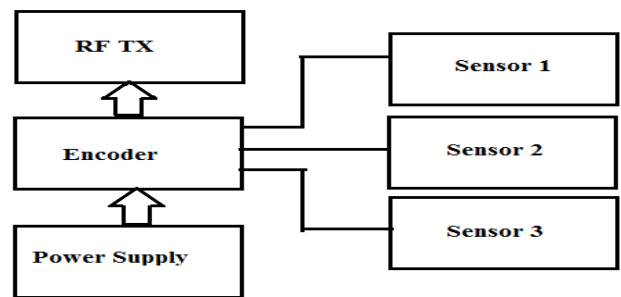


Figure1. Block Diagram Of Drainage Monitoring System Tx Unit.

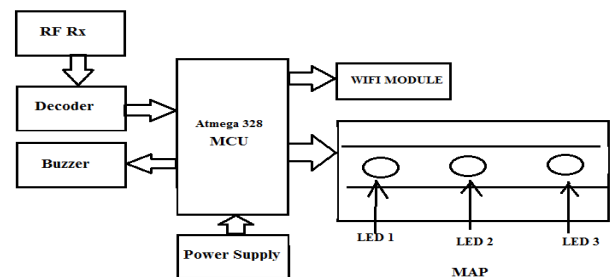


Figure2. Block Diagram Of Drainage Monitoring System Rx Unit.

### III. HARDWARE DESCRIPTION

ATmega328/P :

For the purpose of processing on Input Sensors or Output Relays we use the Microcontroller and for simplicity to understand to user we use Touch Screen TFT Display to show the usage Microcontroller we used. The Atmel AVR core consolidates a rich instruction set with 32 universally useful working registers. All the 32 registers are specifically associated with the Arithmetic Logic Unit (ALU), enabling two autonomous registers to be gotten to in a solitary direction executed in one clock cycle. The subsequent design is more code productive while accomplishing throughputs up to ten times quicker than traditional CISC microcontrollers. The ATmega328/P is bolstered with a full suite of program and framework advancement instruments including: C Compilers, Macro Assemblers, Program Debugger/Simulators, In-Circuit Emulators, and Evaluation units.

**IR SENSORS:** The sensor used is the TSOP1738. It only senses the signal of frequency 38 kHz. This sensor is utilized to eschew the response of signals from other sources. The 38 kHz signal is only utilized by TSOP1738, it can be horizontally mounted. It senses the reflected IR rays from 38 kHz IR source to detect any impediment proceeding.

**WI-FI Module:** To Connect the our system to the internet via the Gateway that is Router. WI-FI Module used for this system is ESP8266EX. It delivers unsurpassed ability to implant Wi-Fi competencies indoors additional arrangements, or to gathering as a separate solicitation, with the bottommost charge, and negligible space requirement. ESP8266EX correspondingly assimilates an improved variety of Tensilica's L106 Rhombus successions 32-bit CPU, with on-chip Static RAM, moreover the Wi-Fi functionalities. ESP8266EX is habitually unified with outward measuring device and supplementary solicitation explicit expedients over its GPIOs; codes for such solicitations are delivered in examples in the SDK.

**RF MODULE:** The RF module, as the name recommends, works at Radio Frequency. The relating recurrence extend shifts between 30 kHz and 300 GHz. In this RF framework, the advanced information is spoken to as varieties in the abundancy of bearer wave. This sort of adjustment is known as Amplitude Shift Keying (ASK). Transmission through RF is superior to IR (infrared) due to many reasons. Right off the bat, motions through RF can go through bigger separations making it reasonable for long range applications. Additionally, while IR for the most part works in viewable pathway mode, RF signs can travel notwithstanding when there is an obstacle between transmitter and recipient.

**INTERFACING RELAYS:** There are 2 input channels. Each info is associated with the activating loop of the separate transfer. There are 2 yield channels that each compare to an information. At the point when the info is empowered, the transfer turns on and the "+" yield is associated with +12v. At the point when the transfer is off, the "+" yield is associated with Ground. The "-" yield is forever wired to Ground.

**BUZZER:** A buzzer is a motorized, electromechanical, charismatic, electromagnetic, electro-sound or piezoelectric audial signaling device. A piezo electrical beeper can be energetic by an oscillating microelectronic circuit or supplementary auditory signal foundation. A tick, bleep can signpost that a switch has been hard-pressed.

### IV. SOFTWARE DESCRIPTION

**THINGSPEKS CLOUD:** To access data that we have collected on the cloud we use the ThingSpeks Cloud from this cloud we can right to use our data from Anywhere. ThingSpeak is an Internet of Things (IoT) platform that lets you collect and store sensor data in the cloud and develop IoT applications. The ThingSpeak IoT platform provides apps that let you analyze and visualize your data in MATLAB, and then act on the data. Sensor data can be sent to ThingSpeak from Arduino, Raspberry P, BeagleBone Black, and other hardware

ThingSpeak is an IoT analytics platform service that allows you to aggregate, visualize, and analyze live data streams in the cloud. You can send data to ThingSpeak from your devices, create instant visualizations of live data, and send alerts using web services like Twitter and Twilio.

**PROTEUS 7.0 FOR CIRCUIT SIMULATION:** Proteus 7.0 is a virtual system modeling that cumulates circuit simulation, animation components, and microcontroller model to create the consummate microcontroller predicated designs. In this project, virtual simulation circuit is designed with avail of Proteus for testing.

### V. RESULTS

In this project, we have work on a drainage system. There are three locations on sensor. If there is a blockage at first, second or third Location then output of respective sensor and MCU is high. If there is no blockage at first, second or third location then output of respective sensor and MCU is low. You can monitor that blockage on created web server.

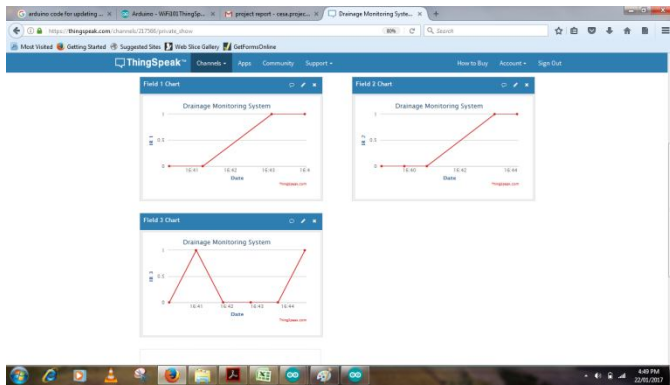


Figure. Drainage Control System

## VI.CONCLUSION

WSNs are considered as the key enablers aimed at the IOT paradigm. However, due to the widening variety of applications, it is increasingly difficult to define common requirements for the WSN nodes and platforms. This paper addresses all segments of the hands-on growth of a full custom WSN platform for underground drainage and manhole monitoring through IOT applications for cosmopolitan municipalities. This paper can be cast-off to guide the specification, optimization and development of WSN Platforms for other IOT application domains.

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