International Journal of Scientific Research in Science, Engineering and Technology
Print ISSN: 2395-1990 | Online ISSN : 2394-4099 (www.ijsrset.com)
doi : https://doi.org/10.32628/IJSRSET

Smart Home Security

Dr. Patil V.N.[1], Poonam Khandagale[2], Snehal Gawali[2], Bhagyashri Holkar[2]
[1]Assistant Professor, [2]Students
Parikrama College of Engineering, Kashti, Maharastra, India

ARTICLEINFO

Article History:

Accepted: 10 May 2023
Published: 29 May 2023

Publication Issue
Volume 10, Issue 3
May-June-2023

Page Number
286-291

ABSTRACT

Smart Home Security" is the term normally used to express a dwelling that has application, heating, computers, air condition, TVs, entertainment audio, video and camera systems, security systems that are capable of connecting with one another and can be measured remotely by a time schedule, from any apartment in the household, as well as distantly from any locality in the world by phone or internet.

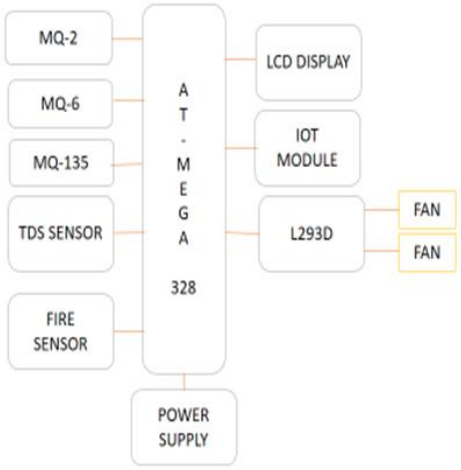
Water is an essential resource. Quality of water is more important, find whether the water is contaminated or pure. The accidents due to gas leakage has become a serious problem in our country's daily activities. This project is aimed to Design a Gas, TDS, CO2, fire and motion detector with alarm for house, office, and shop security. The importance of this project is to give an alert when there is leakage of Gas, detection of CO2, fire and TDS and fan.

I. INTRODUCTION

We are trying to develop the city smart, by doing smart home in which we include the features, Different kind of gases like CO2, LPG gas leakage, TDS in water and fire detection. A growing imperative feature of a smart home is maintenance of earth's limited properties. An ever increasing number of individuals are getting to be alarm of the capacity to make their homes honestly cunning and green by misusing home controllers joined with all home sub-frameworks to expand reserve funds by controlling lighting, window covers, HVAC, water system and by watching utilization .Water is essential for life on earth. Yet, numerous countries are facing shortages of freshwater. This alarming issue strongly motivated them to utilize other available resources instead. For example, Gulf countries are acquiring freshwater from the sea through a tedious desalination process. Increased costal industrialization and resulting water pollution, however, is making this process even more challenging. Other countries are processing rainwater to obtain freshwater. However, lately climate change is affecting rainfalls, which is putting into jeopardy this option. Advancement in automation technology incorporated with Internet of things resulted in development of smart systems. These systems are capable to adapt automatically and observe the changes in environment through sensors, thus providing data for analysis and suitable action. Internet of Things (IOT) is a concept and a paradigm that considers pervasive presence in the environment

of a variety of things that through wireless and wired connection are able to interact with each other and cooperate with other thing to create new applications/services and reach to common goals. Now–a-days, security systems for distribution and retailing of petroleum products LPG, through pipelines are extremely required in smart cities. The pipeline is the efficient mode of transportations of fuels and LPG from processing plants to domestic uses over long distances.

Block Diagram



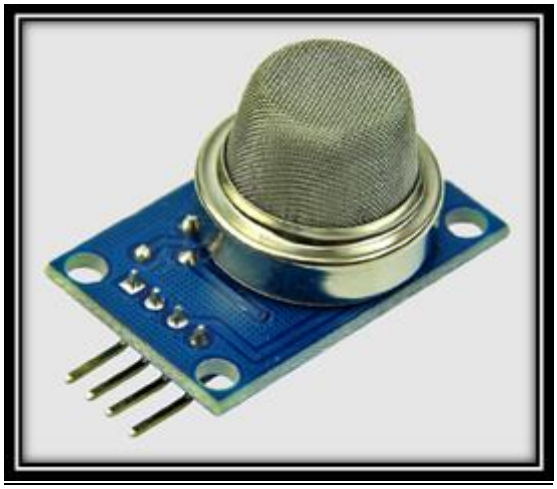
II. BLOCK DIAGRAM EXPLANATION

MQ2 :-

The MQ2 has an electrochemical sensor, which changes its resistance for different concentration of varied gasses. The sensor is connected in series with a variable resistor to from a voltage divider circuit and the variable resistor is used to change sensitivity. When one of the above gaseous elements comes in contact with the sensor after heating, the sensor's resistance change. The change in the resistance changes the voltage across the sensor, and this voltages can be read by a microcontroller.

The voltage value can be used to find the resistance of the sensor by knowing the reference voltages and the other resistor's resistance. The sensor has different sensitivity for different types of gasses. The MQ2 Gas Sensor module detects gas leakage in home and industry. The MQ series of gas sensors use a small heater inside with an electrochemical sensor. The are sensitive to a range of gasses and are used indoors at room temperature. The output is an analog input of the Arduino Uno.

MQ-6 :-



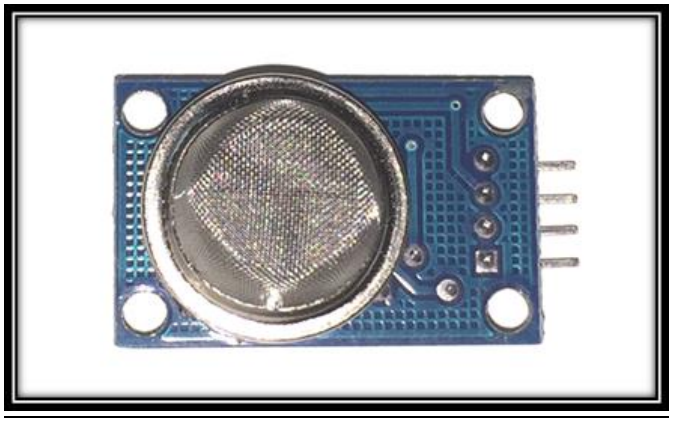
A gas detector is a device that detects the presence of gases in an area, often as part of a safety system. A gas detector can sound an alarm to operators in the area where the leak is occurring, giving them the opportunity to leave. This type of device is important because there are many gases that can be harmful to organic life, such as humans or animals.

Gas detectors can be used to detect combustible, flammable and toxic gases, and oxygen depletion. This type of device is used widely in industry and can be found in locations, such as on oil rigs, to monitor manufacturing processes and emerging technologies such as photovoltaic. They may be used in fire fighting.

Gas leak detection is the process of identifying potentially hazardous gas leaks by sensors. Additionally a visual identification can be done using a thermal camera these sensors usually employ an audible alarm to alert people when a dangerous gas has been detected. Exposure to toxic gases can also occur in operations such as painting, fumigation, fuel filling, construction, excavation of contaminated soils, landfill operations, entering confined spaces, etc. Common

sensors include combustible gas sensors, photoionization detectors, infrared point sensors, ultrasonic sensors, electrochemical gas sensors, and metal–oxide–semiconductor (MOS) sensors. More recently, infrared imaging sensors have come into use. All of these sensors are used for a wide range of applications and can be found in industrial plants, refineries, pharmaceutical manufacturing, fumigation facilities, paper pulp mills, aircraft and shipbuilding facilities, hazmat operations, waste-water treatment facilities, vehicles, indoor air quality testing and homes.

MQ - 135 :-



The gas sensor module consists of a steel exoskeleton under which a sensing element is housed. This sensing element is subjected to current through connecting leads. This current is known as heating current through it, the gases coming close to the sensing element get ionized and are absorbed by the sensing element. This changes the resistance of the sensing element which alters the value of the current going out of it.

The gas sensing material used in the MQ135 gas sensor is tin dioxide (SnO2), which has low conductivity in clean air. When there is polluted gas in the environment where the sensor is located, the conductivity of the sensor increases with the increase of the concentration of polluted gas in the air. The MQ135 gas sensor has a high sensitivity to ammonia, sulphide, and benzene-based vapours, and is ideal for monitoring smoke and other harmful gases. This sensor can detect a variety of harmful gases and is a low-cost sensor suitable for a variety of applications.

AT - MEGA 328 :-

The **ATmega328** is a single-chip microcontroller created by Atmel in the megaAVR family (later Microchip Technology acquired Atmel in 2016). It has a modified Harvard architecture 8-bit RISC processor core. ATmega328 is commonly used in many projects and autonomous systems where a simple, low-powered, low-cost micro-controller is needed. Perhaps the most common implementation of this chip is on the popular Arduino development platform, namely the Arduino Uno, Arduino Pro Mini and Arduino Nano models.

The Atmel 8-bit AVR RISC-based microcontroller combines 32 KB ISP flash memory with read-while-write capabilities, 1 KB EEPROM, 2 KB SRAM, 23 general-purpose I/O lines, 32 general-purpose working registers, 3 flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 6-channel 10-bit A/D converter (8 channels in TQFP and QFN/MLF packages), programmable watchdog timer with internal oscillator, and 5 software-selectable power-saving modes. The device operates between 1.8 and 5.5 volts. The device achieves throughput approaching 1 MIPS/MHz.

L293D :-

The L293D is quadruple high-current half-H drivers. It is designed to provide bidirectional drive currents of up to 600-mA at voltages from 4.5 V to 36 V. Both devices are designed to drive inductive loads such as relays, solenoids, dc and bipolar stepping motors, as well as other high-current/high-voltage loads in positive-supply applications. All inputs are TTL compatible. Each output is a complete totem-pole drive circuit, with a Darlington transistor sink and a

pseudo- Darlington source. Drivers are enabled in pairs, with drivers 1 and 2 enabled by 1,2EN and drivers 3 and 4 enabled by 3,4EN. When an enable input is high, the associated drivers are enabled, and their outputs are active and in phase with their inputs. When the enable input is low, those drivers are disabled, and their outputs are off and in the high-impedance state. With the proper data inputs, each pair of drivers forms a full-H (or bridge) reversible drive suitable for solenoid or motor applications.

III. ADVANTAGES

- Proactive, Real-Time Security Alerts.
- Remote Monitoring & Video Surveillance Solutions.
- Control Household Functions From Anywhere.
- Save Money on Utility Bills.
- Increased Property Values & Possible Insurance Discounts.
- Smart Systems Can Be Fun and Entertaining.
- Ease of access.
- Customisation for user comfort.
- Convenience for the elderly and differently-abled.

IV. APPLICATION

- Lighting control.
- HVAC.
- Lawn/Gardening management.
- Smart Home Appliances.
- Improved Home safety and security.
- Home air quality and water quality monitoring.
- Natural Language-based voice assistants.
- Better Infotainment delivery.

V. RESULT

VI. CONCLUSION

Main purpose of home automation system is to provide ease to people to control different home appliances with the help of the android application present in their mobile phones and to save electricity, time and money.

VII. REFERENCES

[1]. Abdul Razaque, Peter Oddo , Fathi H. Amsaad , Mohit Sangavikar, Sushil Manchikatla, (2016). Power Reduction for Smart Homes in an Internet of Things Framework, 2016 IEEE International Conference on Electro Information Technology (EIT). 10.1109/EIT.2016.7535225

[2]. Andrea C, Alessandra Papetti, Margherita Peruzzini, Michele Germani (2015). A smart home information management model for device interoperability simulation, a Department of Industrial Engineering and Mathematical Sciences, Universita Politecnica delle Marche, Via Brecce Bianche 12, Ancona 60131, Italy.