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GSM based detection system for home security

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ABSTRACT

The research paper explores the perception of safety and security. The aim of this project development is to reduce incident at home. In this model, we present the design and implementation of home security system by using global system for mobile communication modem (GSM). As the system senses/detects any parameter such as gas leakage, high temperature at home. It will respond and do alert to home owner. It also detects the intrusion by using of IR sensor placed at the entry point. All these sensors are associated with microcontroller ATmega328 which will produced output in case of tragedies. The GSM and microcontroller communicate through USART protocol with the desired baud rate of 9600bps. In case of emergency, the system generates an alert message can be transmitted to home owners service number which we have fed into the system. The idea behind this project is to provide simple, affordable, fast, effective and reliable way to get help in case of emergency situations.

Keywords— GSM, SMS, Sensors, LCD display, Microcontroller

1. INTRODUCTION

Home security system are important in our society. Security is a big challenge everywhere because crimes and accidents are increasing day by day. several conventional technologies are available to keep home properties safe such systems protects us from natural, incidental, intended and human made problems this system continuously monitoring homes to alert home owner from above mentioned tragedies. This project deals with the design and implementation to reduce and do alert from intended and unintended accidents occurs in our homes the

developed system makes use of an embedded system based on global system for mobile communication (GSM) technology. GSM is digitizing and compresses data, then sends it down a channel with two other streams of user data, the interfacing GSM module with at mega328. Microcontroller program is very simple. There are several software to program a microcontroller here we use Keil micro vision software to program Atmega328 microcontroller. This project can also be used in industries as an industrial initiative by making use of such sensors mQ6, mQ5 and mQ7 will reduced such accidents which occurred in Bhopal gas tragedy caused by excess of flammable gas in the atmosphere. In case of any accidents at home, the system can notify user through an SMS by which user will alert and he will take action.

2. SYSTEM DIAGRAM

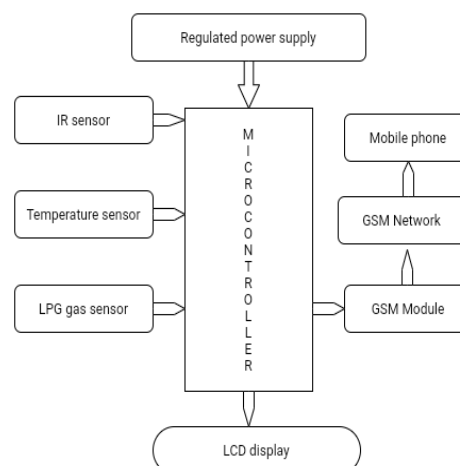


Fig. 1: Block Diagram

In this project, the used components are LPG gas sensor, IR sensor, temperature sensor, GSM modem, LCD display and cell phone. This system prevents a house from firing, robbery and gas cylinder blast. The system is very simple and self-explainable. When we apply input voltage to the system, the system goes into standby mode, whenever the sensors sense parameters above the threshold value it will give inputs to the microcontroller. The microcontroller sends data through protocol to the GSM. The programmed warning message is automatically transmitted to the concerned mobile number.

3. MICROCONTROLLER

The ATmega328 is a single chip microcontroller created by Atmel in the mega AVR family. It has a modified Harvard architecture 8bit RISC processor core.

Feature:

1. Atmega328 has high performance.
2. It has low power consumption.
3. It supports fully static operation.
4. It has on chip analog comparator.
5. It has 32KB flash memory and 2KB SRAM
6. It also supports SPI protocol.

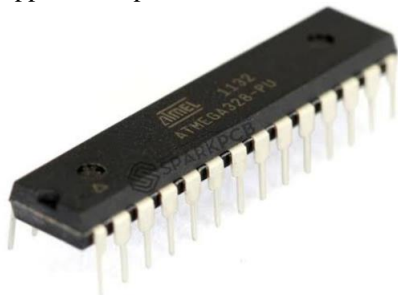


Fig. 2: Microcontroller

ATmega328 microcontroller combines 23 general purpose input output lines, 32 general purpose working registers, three flexible timer/counter with compare modes, internal and external interrupts serial programmable USART, SPI serial port, 6 channels 10-bit converter, programmable watch dog timer with internal oscillator. It operates at 1.8V-5.5V. the device achieves throughput approaching 1MIPS per MHz.

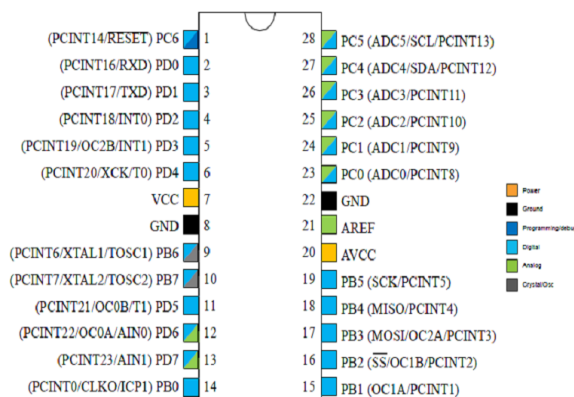


Fig. 3: Pin Diagram of Microcontroller

4. GSM MODEM

A GSM module is a chip or circuit that will be used to establish communication between a computing machine or mobile device and a GSM/GPRS system. In this project we use SIM900A dual-band GSM/GPRS which works on frequencies EGSM900 MHz and DCS1800 MHz. It operates on single supply voltage 3.4V- 4.5V. The SIM900A provides voice, SMS, Data, Fax in a small form factor and with low power consumption. The GSM module has 6pins in which two pins

for VCC and ground and the rest are 3VR and 5VT. It allows sending SMS, MMS, GPRS and Audio through UART using AT commands.

SIM900A GSM Module Features:

- GPRS Connectivity: GPRS multi-slot class 10, GPRS multi-slot class 8.
- Transmitting Power: Class 4 (2W) at EGSM 900, Class 1 (1W) at DCS 1800.
- Operating Temperature: -30°C to +80°C.
- DATA GPRS: Download transfer max is 85.6 KBps, Upload transfer max 42.8 KBps.
- Supports CSD, USSD, SMS, FAX
- Supports MIC and Audio input.

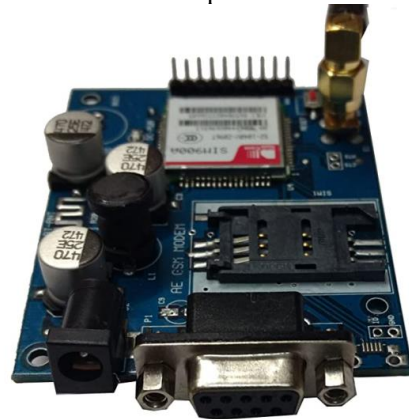


Fig. 4: GSM

5. SENSORY SYSTEM

In the sensory system or used sensors of this project are as follows:

5.1 LPG gas sensor

For LPG gas detection we have used MQ5 Gas sensors.

- MQ5 is highly sensitive to LPG natural Gas, town Gas.
- Small sensitive to alcohol and smoke.
- Fast response, long life and stable.



Fig. 5: LPG Gas Sensor

5.2 Temperature sensor

We have used LM35 temperature sensor to detect temperature in particular area. LM35 sensor is a precision integrated circuit, whose output voltage varies based on the temperature around it. There will be rise of 0.01v (10MV) for every degree Celsius rise in temperature. The output voltage is directly proportional to temperature. LM35 can measure from -55°C to +150°C. The accuracy level is very high if operated at optimal temperature and humidity level. In this system the temperature goes above 45°C it will alert user through SMS.

LM35 Pinout



Fig. 6: Temperature Sensor

5.3 IR sensor

For intrusion detection we have used infra-red sensor. An IR sensor can measure the heat of an object as well as detects the motion. The IR sensor uses infrared radiation of wavelength between 0.75 to 1000 micrometre.

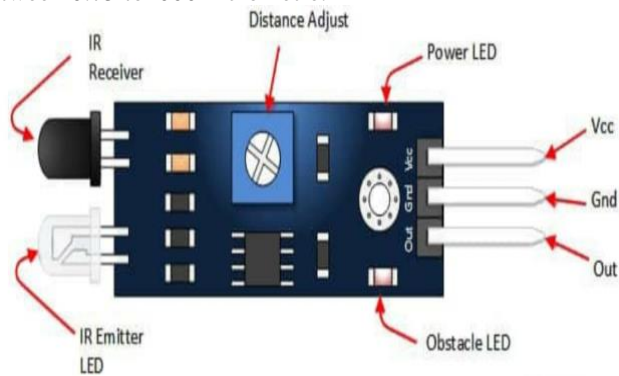


Fig. 7: IR Sensor

6. FLOW CHART

The figure shows flow diagram of the whole working process of these project

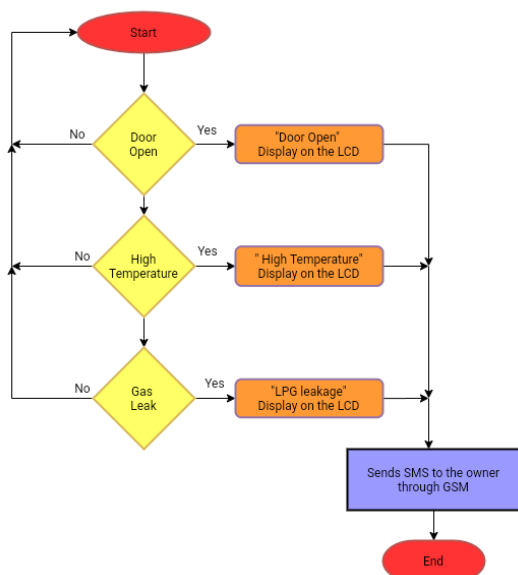


Fig. 8: Flow Chart

7. OVERVIEW

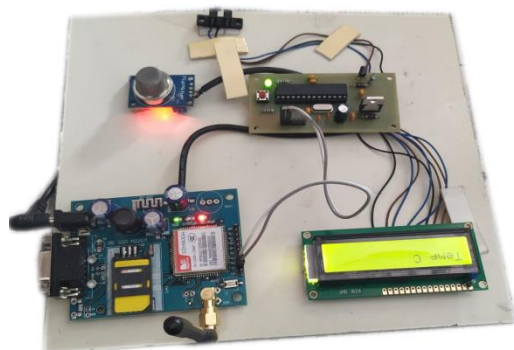


Fig. 9: Final Model of Entire System

8. FUTURE DEVELOPMENT

- GSM is one of the latest mobile technologies using smart modem which can easily be interfaced to microcontrollers.
- Fingerprint sensor instead of keypad can be used, so that only authorized persons will be able to access the main directory.
- We can use this type of access control system in many areas such as bank locker, punch card system and government office etc.

9. CONCLUSION

The implemented and developed system was successfully run and tested with the mobile network. The home owner or user can get alert by the short message service (SMS) through GSM. The infrared sensor, Gas sensor and temperature sensor are properly responding. After the analysis of designed system, we got a positive response.

10. ACKNOWLEDGEMENT

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11. REFERENCES

- Syed Ali Kazmi, Sumit Jani, Aniket Bhelekar, Nidhi Sanghavi "GSM Based Home Security System" International Research Journal of Engineering and Technology (IRJET), vol. 4 Issue 4, Apr-2017.
- Diptanil Chaudhuri, "GSM Based Home Security System", International Journal of Engineering and Technical Research (IJETR), vol. 3 issue 2, Feb-2015.
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