

REVIEW ARTICLE



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## A REVIEW PAPER ON: GSM BASED INTELLIGENT HOME MONITORING SYSTEM

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### ABSTRACT

Everyone wants a secure life, and wants to secure their house from the accidents like house fire or robbery at house. News like house robbery or theft in some houses, bungalows, flats. , accidents is caused or blast happens because of LPG gas cylinder leakage however due to some reasons, these is what we here every day in newspaper. In our project we want to design protection system from fire and theft. We will use some sensors to detect fire and theft, and when detect the risk by sensors. Then display the status of each sensor and send a message to the owner and a warning to the police station. When any intruder present at the front of the door, IR (Infrared ) sensor sense it and activate the Microcontroller. And if it happens that the thief move in house through the window PIR will sense it. And on the safe inside the house we are using keyboard for safety purpose. The communication between the user and security system is done by the user mobile and module **SIM** which is located at the house.

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### 1. INTRODUCTION

In Busy Schedule it's not possible for everyone to be at home just for keeping hone safe. And at the work also we can't be stop thinking about our home security. This means we can't be on vigilant duty 24X7 at or home. So here we are implementing a system which will be continuously watching your house for damage like fir and keep your house safe

from the thieves along with that it will immediately report you via GSM.

Here in the system for detecting the thief we are using 3 method via two sensor and a keypad. The tow sensors we are using are the IR and the PIR sensor while along with that we are using a keypad. And for fire detection we are using sensor LM35. In our system when you are not at home u just need to

lock your system before leaving the house. And it happens any thief tries to come into your house through the door the IR sensor will sense it and immediately alert the master via GSM. Unfortunately not through the door but person tries to enter your house without your knowing through the window the PIR sensor in room will detect the person body around it in 360 degree and will immediately report the master. still t happens the thief goes directly the safe room there we provide a keyboard on a cupboard or on a safe provided with 3 attempts to master and if not in three attempt anyone put right answer the master will know through SMS that someone trying to attempt the password on safe.

The GSM we are using is a SIM300. Here I our system we provide 3 master if it happens one master is not in range or his/her mobile is switch of the remaining two master will receive the message. The power supply provide the 12 Volt, 5 volt and 3.3 volt constant power to the all circuitry, LCD display shows the general information.

**2. BLOCK DIAGRAM:**

The block diagram of system prototype is shown in figure (1). The bridge rectifier is used to convert the 9V supply output of transformer into DC voltage. A voltage regulator IC 7805 is used to obtain fixed output voltage of +5V. Separate supply of same specification requirement is used for microcontroller and GSM module. The microcontroller used is ATMEGA-16 and GSM modem is SIM-300. The TXD pin of microcontroller is connected to the RXD pin of GSM model and vice-versa. .

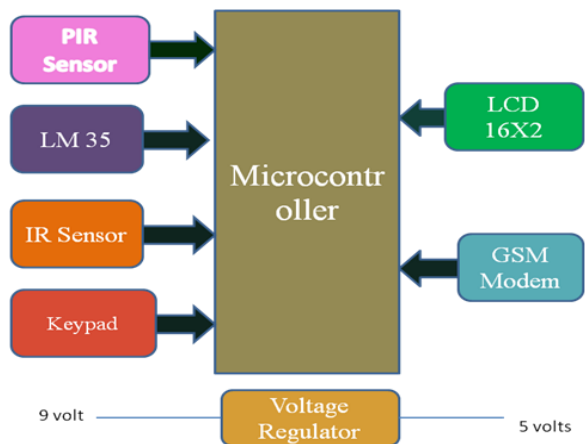


Fig.1. Block diagram of prototype

**Implementation:** The below figure (2) shows the circuit diagram from which overall architecture of system can be explained.

**3. CIRCUIT DIAGRAM:**

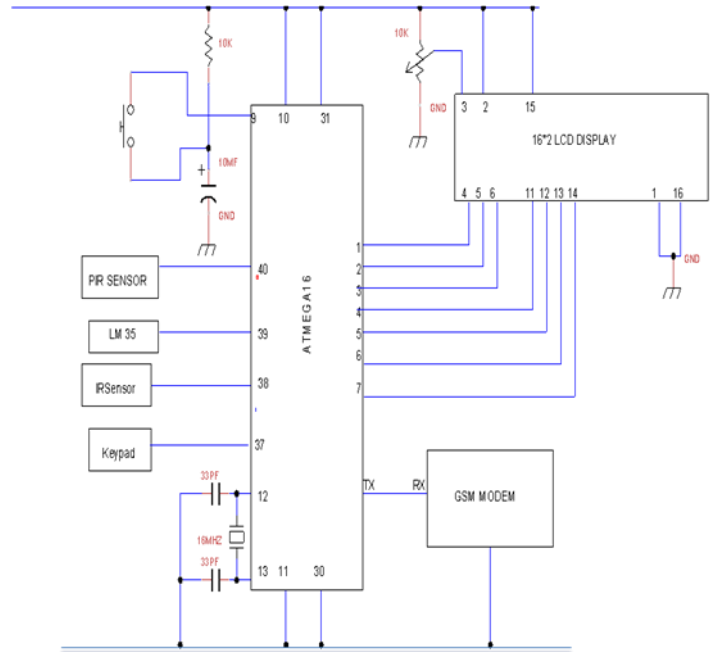


Fig.2 Circuit diagram.

It consist of Atmega16 Microcontroller, GSM modem, 16\*2 LCD Display for displaying the output. Interfacing between GSM modem and Atmega16 can be done by Tx and RX pin. Tx of GSM modem is connected to Rx of Microcontroller Atmega16 and Rx of GSM modem is connected to Tx of Microcontroller Atmega16.

The power supply used in this project is shown in figure (3). The step down transformer is used which convert 9-0-9 V. We used bridge rectifier to convert the 9V supply output of transformer into DC voltage. A voltage regulator IC is used to have the fixed output voltage of +5V. For microcontroller and GSM module separate supplier are used of same specification requirement.

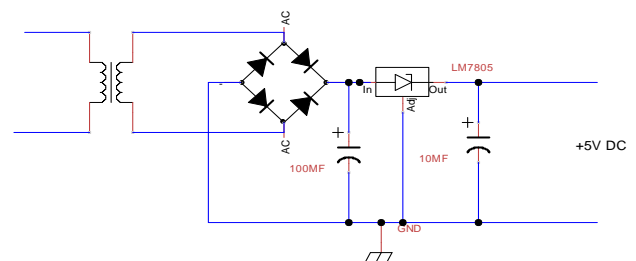


Fig.3: Power supply

#### 4. SENSORS

##### 4.1 PIR Sensor:

PIR is a passive infrared sensor. It senses the motion or can detect the human moved in or out of the sensors range. This PIR sensor inexpensive, small, low power and easy to use sensor. The main function of this sensor is to sense motion of human in sensor area and having a detection range up to 20 feet. The output of a PIR sensor is single bit. This sensor is of piezoelectric sensor, detecting levels of infrared radiation. PIR is a sensor compatible with most of the microcontroller.

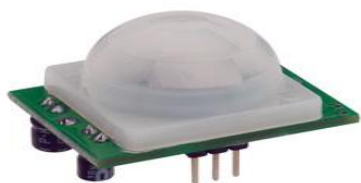


Fig 4. PIR Sensor

##### 4.2 LM 35 Sensor:

The LM35 sensors are precision integrated-circuit temperature sensors, whose output voltage is in the Celsius (Centigrade) temperature. The linear scale factor of this sensor is + 10.0 mV/°C and with 0.5°C guaranteeable accuracy and is also rated for -55° to +150°C full range. Due to the water level trimming this sensor is having low cost and operates from 4 to 30 volts, Less than 60 µA current drain. This sensor will sense the temperature continuously and if it goes above the programmed temperature will immediately inform the home owner.

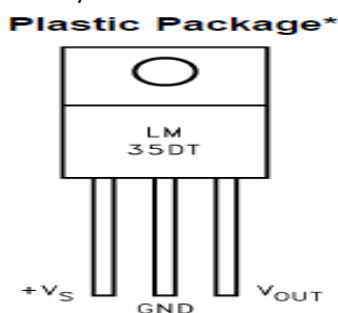


Fig5. LM 35 sensor

##### 4.3 IR Sensor:

An infrared sensor is used to sense certain characteristics of its surroundings by either emitting and/or detecting infrared radiation. Infrared sensors are electronic devices which are also capable of measuring the heat being emitted by an object and detecting motion. Infrared waves are not visible to the human naked eye. Infrared radiation can be found between the visible and microwave regions,

in the electromagnetic spectrum. These waves typically have wavelengths between 0.75 and 1000µm. An infrared detector to interpret the signals sent from a remote control, in television use. These sensors are easy to calibrate and easy to use with a detection range of 35cm and don't provide any ambient light immunity.



Fig.5. IR Sensor

##### 4.4 Key Pad:

Numeric touch pad is interfaced with port of the microcontroller. User has to enter the security code using numeric touch pad. Access will be given three times for individual user. If any unknown person tries to access the code after three times immediately a message will be sent to the authorized person regarding illegal access.



Fig. 6. key pad

#### 5. GSM System:

The GSM is a Global System for Mobile Communications which is the most popular standard for mobile phones in the world. For sending a message, a GSM module named SIMCOM 300 with RS232, power supply, buzzer and audio interface is used to implement this system. The SIMCOM 300 is used to send the message. The GSM interface with the microcontroller which is connected to other sensors and status will be updated to the microcontroller and if needed it will concern with the GSM and GSM will immediately inform the owner of the house via message.



Fig 7. GSM module

## 7. CONCLUSION:

Microcontroller based Home security system using Wireless alerts using GSM Modem as communication standards. Implementation of this project in present day will effectively provide a peace of mind to the residents. This project can be implemented in home, collage, General stores, bus, banks etc. Thus the sensors used in this project will continuously check the status of home and if the sensor sense any presence of human or theft or fire the system will remotely alert the owner.

## 8.FUTURE SCOPE:

The GSM Modem which we use to implement this system is SIM300 which can only send the message .But in future we can replace this SIM300 With SIM900 which can send message as well as the picture. But to implement this we will need a rotating camera which can sense the human body ,turn itself toward the body and take the picture.

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