

## **Vehicle accident messenger system**

**Dr. Cherian Paul, Nizam Mon K.S and Roshen Varghese Daniel**

*Department of Mechanical Engineering, SAINTGITS College of Engineering,  
Kottayam, Kerala- 686532- India*

### **Abstract**

The Vehicle tracking system is a total security protection and fleet management solution. By using the latest GSM & GPS technology to protect and monitor car, truck and any other moveable object virtually anywhere and then locate it within a few meters. The system provides an accident prevention using sensors which upon detection of any obstacle can reduce the speed of the vehicle and prevent the accident. The proposed design demonstrates the feasibility of real time tracking of vehicles and enhanced customizability, global accessibility and economical viability. The proposed system consists of a Microcontroller, GPS receiver and a GSM Modem. The mechanism involved in the design is least complex and the equipments required are easily available in the market. This will make the product a cost effective one with maximum expected efficiency. The communication module can be simplified with the aid of already available Google Earth. The already available Google maps application can be cited as an example in regard of the communication module. The simplicity in design and availability of technology makes the development of this system easier and thereby the idea can definitely be implement.

**Index Terms:** Microcontroller, GPS Unit, GSM Unit, LCD

### **I. INTRODUCTION**

Vehicle tracking system main aim is to give Security to all vehicles. Accident alert system main aim is to rescuing people in accidents. This is improved security systems for vehicles. The latest like GPS are highly useful nowadays, this system enables the owner to observe and track his vehicle and find out vehicle movement and its past

activities of vehicle. This new technology, popularly called vehicle Tracking Systems which created many wonders in the security of the vehicle. This hardware is fitted on to the vehicle in such a manner that it is not visible to anyone who is inside or outside of the vehicle. Thus it is used as a covert unit which continuously or by any interrupt to the system, sends the location data to the monitoring unit.

When the vehicle is stolen, the location data from tracking system can be used to find the location and can be informed to police for further action. Some Vehicle tracking System can even detect unauthorized movements of the vehicle and then alert the owner. This gives an edge over other pieces of technology for the same purpose. This accident alert system in it detects the accident and the location of the accident occurred and sends GPS coordinates to the specified mobile, computer etc.

## **II. EXPERIMENTAL DETAILS**

### *A. Equipments Used*

Short descriptions of the materials used for conducting the experiments are given below: -

#### 1. Relay Circuit

Basically relays are used as a low voltage switches in high voltages circuits to avoid damages. In a circuit both R1 and R2 are acting as a current limiting resistance. If we give the controller output directly to the base, the base may get weaker, it will leads the changes in the output. To avoid this we are using 10K (R1) before giving the output signal to the base. And there are two types of transistor in a circuit, BC547 and CL100.

Both combinely said to be as darlington pair. The purpose of this Darlington pair is to boost up the amps. Since relay coil gets energized only above 50mA, but the output of microcontroller can provide only 1 Or 2 mA . This amps not enough to make relay coil energized. For this we are going for a darlington pair. The way amps gets booster is because of base and collector, the amps in a base will be 10 times greater in collector.

For example if there is 1 mA in base, there will be 10mA in collector. In BC547 base will have 1mA, which makes collector to get 10mA, that 10mA will be an input to base of CL100, which makes collector to get 100mA, which is more than enough to make the relay coil energized. Once the relay coil gets triggered, the indication are showed by using LED, near to that there will be an diode which avoids negative voltage to get inside relay. Since relay will won't get energized, if it receive negative voltage. When relay control coil is NOT energized, the relay switch contact are closed. When control coil is energized, the relay switch contacts open, which breaks the circuit open.

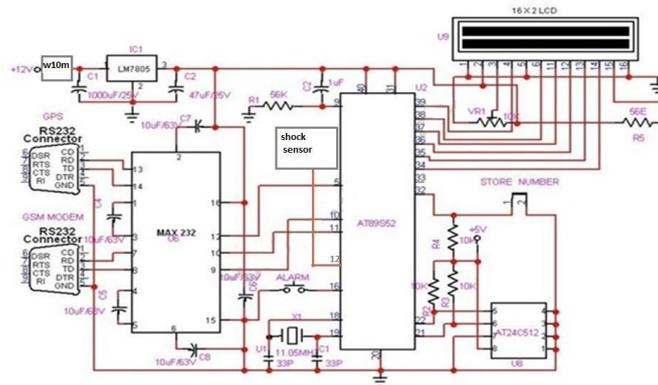


Fig.1. Relay Circuit

## 2. Microcontroller

Here in this system micro controller used is AT89S52. Mainly micro controller consists of cpu, memory and various I/O pins, and the speed of this micro controller is enough to execute the program in real time. This particular micro controller is chosen because the experiment requires minimum of 8-bit micro controller. This microcontroller contains 4Kb flash memory inbuilt in it, this memory is enough to dump our code in to the microcontroller. This micro controller contains 40 pins and circuit is designed according to fig 2.3. The 40 pins of microcontroller has different properties and usage they are shown in the following image.

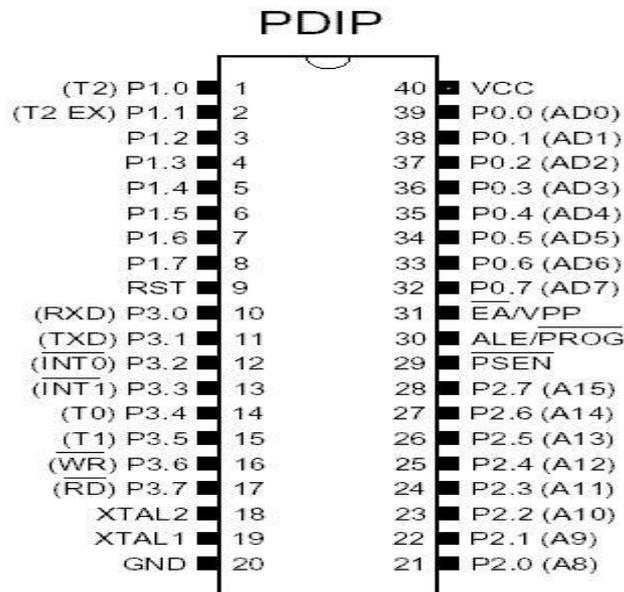


Fig. 2. Microcontroller

### 3.GPS

GPS abbreviates global positioning system and this is used to detect the latitude and longitude of the particular position and it also shows the exact time. It detects these values anywhere on the earth. In our project it plays main role and it is the main source of the latitude and longitude of the vehicle to know the accident occurred location, or even for theft tracking of the vehicle. This gadget gets the coordinates from the satellite for each and every second. This device is the main component of vehicle tracking project.



**Fig.3.** GPS

### 4.GSM

GSM abbreviates global system for mobile communication, this is a second generation (2G) mobile network. This is widely used in all over the world for mobile communication. This GSM device consists of sim slot in which a sim can be inserted which has a unique number, this unique number is used for contact. This GSM device consists a unique number called imei number and this is different for each and every hardware kit. In our project the device is used for transmitting data. The data from GPS is transmitted to given mobile through this GSM itself.



**Fig.4. GSM**

### 5. Liquid Crystal Display

LCD is the display device which is of 16x2 size and it has yellow background light. This LCD is connected to microcontroller. The following is the interfacing diagram of LCD with microcontroller AT89S52. To enable terminal latch of LCD high to low pulse is sent and RS bit is enabled. Once the latch is enabled the data is transferred through the interfacing pins parallel and the LCD shows the display on it. These LCD are easy to program and they are economical too. LCD interfacing with microcontroller is very easy. Here in our vehicle tracking project LCD displays the output i.e. latitude and longitude of the vehicle. The following figure shows the LCD display of latitude and longitude.



**Fig.5. LCD**

### B. Working of the system

This system takes input from GPS and which goes into rs232. This Rs232 sends data into max232 and it converts the data format and sends it to the Rx (receiver pin) of microcontroller and this microcontroller stores this data in USART buffer and the data stored is sent again through Tx pin into max232 this max 232 sends the data into GSM via rs232. This is how vehicle tracking works using GSM and GPS. The lcd interfaced to the microcontroller also shows the display of the coordinates. This lcd display is only used to know the working condition of the vehicle tracking system.

Accident in the sense it could be collision of two vehicles or fire accident inside the vehicle. These shock sensors are attached to the car on all sides of the vehicle and they all are connected to the OR gate .OR gate is used because to detect at least one sensor is high .the output from the or gate is connected to the interrupt pin of microcontroller and whenever this pin 12 is high the micro controller sends the message about the accident

### III. RESULT

Whenever accident of the vehicle is occurred then the device sends message to given mobile device.

Message for theft :

“Vehicle alert latitude: 2400.0090, N  
longitude: 12100.0000, E time: 12:00”

Message for accident :

“Accident alert latitude: 2400.0090, N  
longitude: 12100.0000, E time: 12:00”

This system shows the location of vehicle on the lcd connected to it also just to make sure the working condition of the microcontroller.



**Fig.6.** Output

#### **IV. CONCLUSION**

Commercial fleet operators are by far the largest users of vehicle tracking systems. These systems are used for operational functions such as routing, security, dispatch and collecting on-board information. These are also used for fire detector in large vehicles like train, bus etc. because the vehicle like train contains large number of people and the sending alert of fire accident can save many lives. The applications for this project are in military, navigation, automobiles, aircrafts, fleet management, remote monitoring, remote control, security systems, tele services, etc

#### **REFERENCES**

- [1] R.S GAONKAR “Microprocessor architecture,programming and application” WILEY EASTERN LTD,NEWDELHI 2006.
- [2] KRISHNA KANT “Microcontroller and microprocessor” EASTERN COMPANY EDITION NEW DELHI 2007.
- [3] DANIEL.W.LEWIS “Fundamental of embedded software”prentice Hall of India, 2004.
- [4] WILLIAM STALLING “Wireless communication and networks”,2<sup>nd</sup> edition,2005 prentice hall of india.
- [5] [www.atmel.com](http://www.atmel.com)

