

RFID and RF Based Smart Cross Road Counter System for Emergency Vehicle

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Abstract: Traffic management is the critical issue of the road. Traffic lights play an important role in the traffic the existing traffic lights follow the predetermined sequence. So these lights are called static traffic lights. These traffic lights are not capable to count the number of vehicles and the priority of the vehicles on intersection point. As a result some vehicles have to wait even there is no traffic on the other side. The vehicles like Ambulance and Fire Brigade are also stuck in traffic and waste their valuable time. The proposed system provides quality of service to Emergency vehicles and improves the accuracy of Automatic Traffic Light Violation Detection system.

Keywords: RFID Reader, RF transmitter RF receiver, Micro controller (AT 89s52).

1. INTRODUCTION

Traffic congestion is a big problem in many major cities across the world and it has become a problems for the peoples in these cities.

The traffic congestion can also be caused by large red light delays. The delay of respective light is hard coded in the traffic light and it is not dependent on traffic.

One of the major problems is heavy traffic faced by ambulances. As we all know that ambulances are the most important medical means of transport in any country as they carry patients to the nearby hospitals, But due to heavy traffic, one can often see the ambulances stuck in traffic for long durations thus causing danger to patient's life. So, our project aims to solve this problem of ambulances and other emergency vehicle.

When an ambulance arrives, its corresponding lane traffic light becomes green and all the others become red, thus traffic is less on way where the ambulance passes on the road and thus helping it to reach the hospital without any traffic problem. This is possible by the use of RF transmitters and receivers.

In this the system contains RF transmitter and RF receiver, RF transmitter and RF receiver placed on either side of road and vehicles. Avoiding traffic jams is beneficial to both environment and economy. There are several models for traffic simulation. In our project we focus on optimization of traffic light controller in a city using RF sensor and developed visual monitoring using microcontroller. Another complication is the fact that flow of traffic constantly changes, depending On the time of day, the day of the week, and the time of year.

Roadwork and accidents further influence complexity and performance. In this we propose two approaches,

1. To give authority to ambulances to pass the respective lane without delay.
2. Allow smooth passage of vehicles with maximum priority (VIP cars, police cars).

II. COMPONENTS

A. RF TRANSMITTER:

The RF transmitter is a 4 pin IC As shown in figure. It receives serial data and transmits it wirelessly through RF through its antenna connected at 4 pin. It uses ask (amplitude shift keying) RF transmitter operates at frequency of 434 MHz.

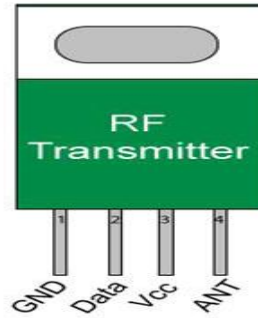


fig. RF TRANSMITTER

B. RF RECEIVER:

RF receiver is a 8 pin IC as shown in this figure. It operates at the same frequency as that of the transmitter and there by receives the transmitted data. RF receiver operates at frequency of 434 MHz.

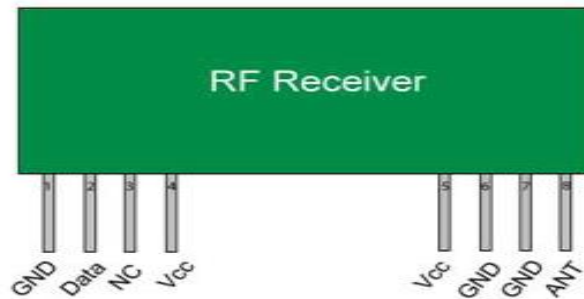


fig. RF RECEIVER

C. MICROCONTROLLER:

Microcontroller is main part of Tx & Rx section. AT- Atmel, 89- manufacture series, S – silicon CMOS , 52 – is the family of 8051. 8K bytes ROM. 4.0V to 5.5V operating range. Fully static operation: 0 Hz to 33 MHz. 256 x 8-bit internal RAM. 32 programmable I/O lines. Three 16-bit timer/counters. Eight interrupt sources.

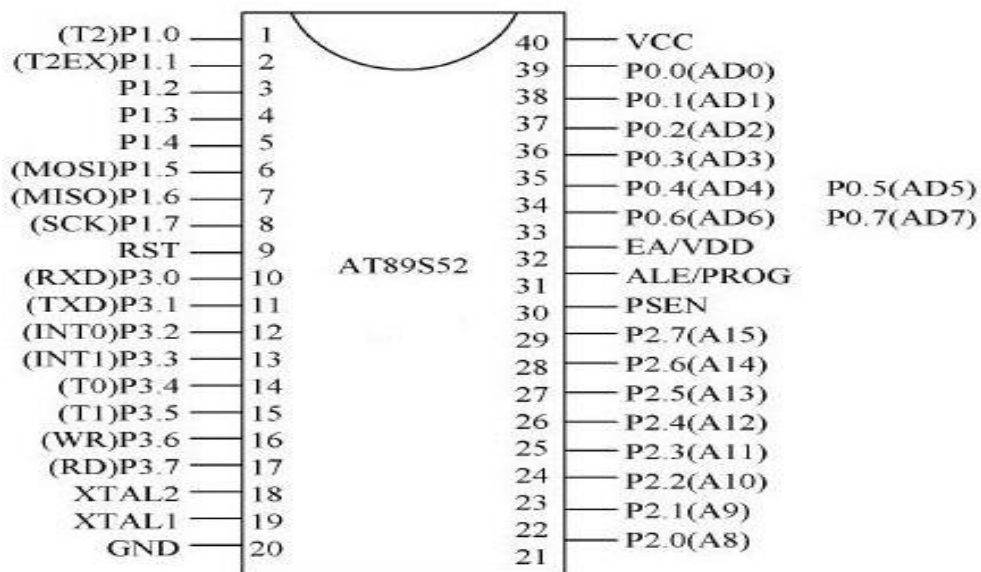


fig. of microcontroller

D. RF MODULE:

The RF module is often used along with a pair of encoder/decoder. Here we use ht 12e & ht 12d as encoder and decoder respectively. The transmission occurs at the rate of 1kbps-10kbps. RF module operates at radio frequency. RF range includes 3 kHz to 300Ghz.

III. CONCLUSION

Hence we came out with a project which solves the traffic problem mostly faced by emergency vehicles (ambulances and fire extinguisher truck) and it is very useful in developing countries where traffic rules are not effectively followed, therefore by implementing this project we can save more and more life's in this fast growing world by using RFID technology.

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