Eco Friendly Horn

Nilam Suryawanshi, Pranjali Chougule, Trupti Gawde , Shifa Patel
K.C College of Engineering & Management studies & Research,
Department ofElectronics
Kopri,Thane(E)-400 603,

***Abstract*--Noise pollution due to excessive honking on expressways is on an increase due to the impulsive and at times errant behavior of drivers. Besides it is difficult at times due to various factors to completely avoid honking in the no honking zones. These factors contribute to the noise-pollution and at a stage today it is prudent and need of the moment to keep the noise levels well under check. Taking advantage of the advances in the wireless field, the use of dual-horn aims to bring down the noise levels effectively not only on expressways and streets free of pedestrians but also in the no honking zones as well. The system uses short range RF module. For the purpose of communication between the vehicles. The major feature of this device is the low cost and relatively less hardware.**

Keywords— LCD, Microcontroller, Relay, RF Module UART,

I. INTRODUCTION

Noise pollution is the emission of noise (unpleasant sound) from various sources, which disturbs the activity or balance of human and animal life. Noise pollution can cause annoyance and aggression, hypertension, high stress levels, tinnitus, hearing loss, sleep disturbance and other harmful effects. Sources of noise pollution are various; however, one of the major sources of noise pollution is the horn present in all automobiles and transport system that we use in our day to day lives. Noise pollution is a major problem in densely populated cities like Mumbai. For the reduction of noise pollution, we introduce the eco-friendly horn the basic principal of eco friendly horn is that it transmits a signal from one vehicle to another vehicle in the form of RF signal. RF signal is a radio-frequency signal which transmits at 434 MHz using ASK modulation at the bit rate of 1200bps. The traffic congestion on roads may be classified into three basic scenarios for our understanding. The sound produced by the eco friendly horn will not exceed 60 db. And although noise pollution can't be eradicated completely by the use of eco friendly horn we have reduced noise pollution greatly.

II. OBJECTIVE

The main objective of the designing the EFH is to minimize noise pollution this can be achieved by replacing ordinary horns with EFHs in automobiles. The principle objective of the eco friendly horn is to reduce noise pollution by transmitting signals that can't be sense by human senses. In heavily populated cities such a device would effectively help in reducing noise environments. Noisy environment have numerous ill effect, like producing hypertension, tinnitus, hearing loss, sleep disturbance and many other related problems.

III. SOFTWARE'S USED

A. Keil compiler for C programming.
B. Eagle for Circuit layout.

IV. BLOCK DIAGRAM

The major building blocks of this project are:

A. Regulated Power Supply
B. Horn switch.
C. Micro Controller.
D. RF module.
   a. External loudspeaker.
   b. Internal loudspeaker.
E. Relay.

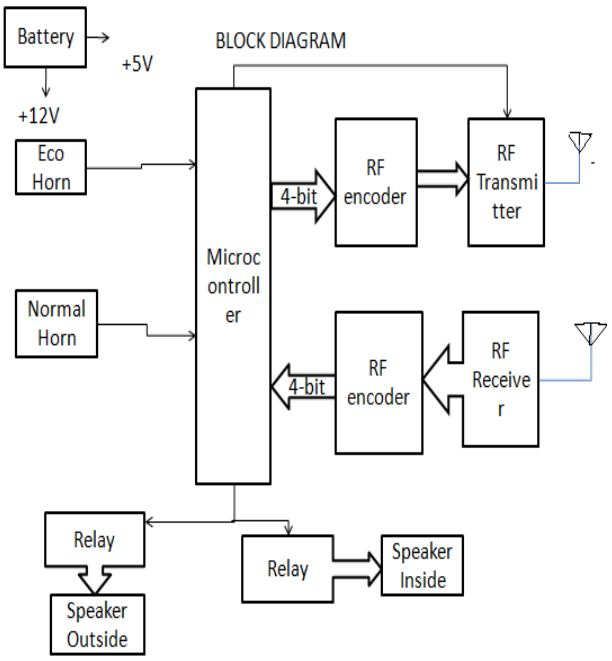

Fig. 1.Block Diagram of Eco-friendly horn.

A. Power supply:

it is one of the most vital blocks of the trans-receiver.

- It provides power to all the blocks of the system.
- It provides +5V to LCD, RF Encoder and Decoder.
- It provides +12V to relay.

B. Horn switch

It is basically a manual switch which is in front of the driver. One switch is used as a normal horn and the other switch is used as eco-friendly horn. The signal from the switch is given to the microcontroller.

C. Microcontroller IC (8051)

It is the integrated circuit which makes the circuitry simple. It is responsible for all the decisions taken and is programmed in doing so. We use 89S51 from IC 8051 series. Its features include:

- *16-bit address bus-*
  I can access 2^16 memory locations -64kB each of RAM and ROM
- 8-bit data bus- It can access 8 bits of data in one operation(hence it is an 8-bit microcontroller
- On-chip RAM-128 bytes ("data memory")
- On-chip ROM-4kB("program memory")
- Four byte bi-directional input /output port
- UART(serial port)
- Two 16-bit counter/timers
- Two-level interrupt priority

D. RF Module:

An RF Module (Radio Frequency Module) is a usually a small electronic circuit which is used to transmit and/or receive radio signals on a number of carrier frequencies. RF Modules are widely used in electronic design owing to the difficulty and complexity of designing radio circuitry. This good electronic radio design is very complex only because of the sensitivity of radio circuits and the accuracy of components and layouts that are required to achieve operation on a specific frequency. Mostly the design engineers design a circuit for an application which requires radio communication and then "drop in" a radio module rather than working on a discrete design, saving both time and money on development.It is basically a RF transmitter and a receiver which is used to transmit and receive radio frequency signal within a specific range of 434 MHz at 1200 bps. It uses ASK modulation. The transmitted signal goes to the receiver of the other trans-receiver.

a. External loudspeaker:

It is just an ordinary loudspeaker which is used for giving signal to the pedestrians and other vehicles without and inbuilt EFH.

b. Internal Loudspeaker and LED:

Both are the output devices which are driven by the driver circuit. When the trans-receiver receives the feedback the output is given by the LED and internal loudspeaker to alert the driver only

E. Relay

This unit provides actual switching of external device connected to the pin of relay. The voltage of the coil of the relay is 12V. That means it will energies at minimum 12 voltage on across it. After tenderization of the coil the mechanical key present inside the relay switches to its other position and vice versa. This gives a heavy induced e.m.f. which can cost the rest of circuit to burn out but this is prevented by using a diode in parallel with the coil in opposite direction. The BC547 transistor is used as an electronic switch to pull down the voltage of coil to the ground. This helps the closed circuit between the power supply and the ground through the coil. The switching of transistor is done by applying nearly 12V on its base through the resistor which limits the current

V. FLOWCHART

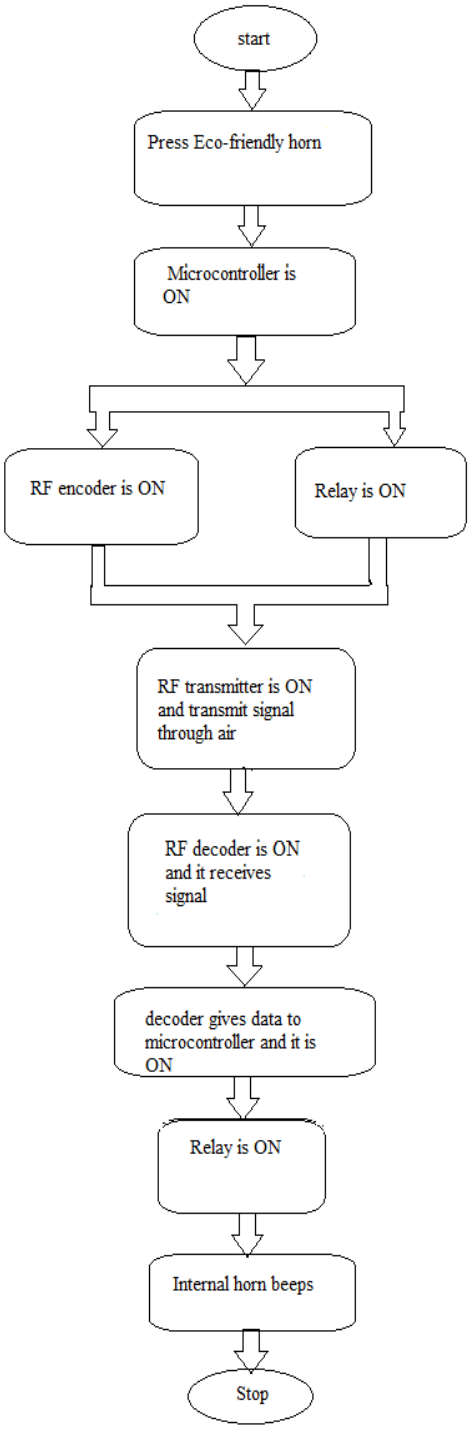

Fig.2. flow chart of Eco-friendly horn.

When we press eco-friendly horn microcontroller is ON. It gives 4 bit data to RF encoder HT12E. At the same time relay is ON and battery supplies power to RF transmitter. It transmit signal to RF transmitter and signal transmits into air at 434 Mhz. It uses ask modulation. At the receiver side it receives the signal and gives to RF decoder. Decoder gives 4 bit data to microcontroller and relay is ON. It will connect battery to internal horn and horn will beep.

When Eco-friendly horn is not used that time we use normal horn to alert the vehicle. By pressing normal horn microcontroller is ON and it will ON relay. So external horn will beep.

VI.CONCLUSION

In the future when the uses of ICs are frequent and at ease in large scale manufacturing then the EFH shall not only be used more commonly but we could be safe to say that the EFH shall very well replace the ordinary horn that we use today.

VII. FUTURE SCOPE

For future expansion we can use zigbee so that we get more advance features in EFH. The EFH has a greater scope in the future as compared to in present because the demand for such a horn increases in the future but the complexity reduces. In air travel where the use of sound signals is not preferred, EFHs can be used to signal aircrafts. When we are using it for air transportation systems we can use stronger signals that are not affected at height altitudes. The EFH has a much greater scope in the future as compared to in present times because the demand for such a horn increases in the future but the complexity reduces.

VIII. REFERENCES

1. Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. Mckinlay: information about 8051: The 8051 microcontroller and embedded systems : using assembly and C2 edition
2. By Taylor Morey : power supply : Switching power supply design 3rd ed
3. Advances in Computing, Communication, and Control
4. http://www.slideshare.net/HimaniChopra/hospital-management-system-project
5. Reinhold, L., Pavel, B.: RF Circuit Design – Theory and Applications. Prentice-Hall, New Jersey (2000)
6. Behrouz, F.: Data Communications and Networking, 4th edn. Tata McGraw-Hill, New Delhi (2006)
7. http://www.scribd.com/doc/24070840/Hospital-Management-System-Synopsis-and-Project-Report
8. http://www.scribd.com/doc/13569522/09-Project-Hospital-Management-System
9. http://en.wikipedia.org/wiki/Modulation- Signal Rate of RF module
10. Rappaport ,"Wireless Communication" ,1992 :Kluwer Academic Publishers
11. C. Bowick, "RF Circuit Design", 1982 :Prentice Hall [12]L. Besser, " Applied RF Techniques-1",1996 : Besser Associates.