

## **Adaptive Cruise Controlled Collision Warning With Brake Support**

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### **Abstract**

*In this project we focus on preventing accident due to collision using IR sensor, receiver and transmitter circuit. If there is any obstacle in the path, the IR sensor senses the obstacle and giving the control signal to the breaking system. This system can be equipped in any modern vehicle. This system is useful mainly on highways to prevent accidental collision and protect the occupants.*

## **Introduction**

The idea of the project is to design and develop a control system based on an intelligent electronically controlled system which prevents accident by collision. .

### **Project:**

“ADAPTIVE CRUISE  
CONTROLLED COLLISION  
WARNING WITH BRAKE  
SUPPORT”

### **List of Equipment**

- Ultrasonic sensor(Receiver & Transmitter)
- Microcontroller
- LCD
- Battery
- Crystal Frequency
- Transformer
- Diodes
- Buzzer
- Switch
- Transistor

### **Project Cost**

- Project cost up to Rs- 15,000/-

### **Working**

This project consists of a handheld range finding device using ultrasonic transducer and an 8052 microcontroller. A two-line LCD display is used to display the measurements. There is a 40 kHz transmitter and receiver. The 40 kHz-transmission signal is generated via a square wave outputted from the AT89S52. The 8052 is then used to calculate the time of flight (TOF) for the sound wave that is bounced off of distant objects. The return signal is amplified using two opamp amplifiers. There are three potentiometers that need to be calibrated for correct operation. One controls the contrast of the LCD display. Another controls the amplification of the third stage of the amplifier system. The third controls the voltage offset that connects to the base of a NPN switching transistor. The measurement range of the

device is one to ten feet. Further distances can be measured, but due to circuit noise erroneous measurements can be obtained for longer distances. The absolute maximum range that can be measured is about twenty feet.

### ***Advantages***

- Brake cost will be less.
- Free from wear adjustment.
- Less power consumption
- Less skill technicians is sufficient to operate.
- It gives simplified very operation.
- Installation is simplified very much.
- To avoid other burnable interactions viz.... (Diaphragm) is not used.

### ***Disadvantages***

- Additional cost is required for automation.

### ***Future Scope***

- For Automobile application
- For Industrial application
- For Marine application.

### ***References***

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