SMART HELMET

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Abstract - ***In present time many cases of bike accident can be seen around us. peoples get injured or might be dead and one of the reason is not wearing helmet. Many peoples could save their life in accident cases if they weared helmet at the time of accident. Continuously road rules are violated. So as to overcome these problems, an Smart helmet is proposed having a control system built inside a helmet. Smart Helmet for Motorcyclist is a project undertaken to increase the rate of road safety among motorcyclists. The idea is obtained after knowing that the increasing number of fatal road accidents over the years is cause for concern among motorcyclists. It consist a RF transmitter and a RF receiver system. the bike will not get start without wearing helmet by the user, as user wear helmet a rf signal radiate from transmitter and once these rf signal get sensed by the receiver placed in the ignition switch of the bike, bike will get start. Security system applied in this project meet the characteristics of a perfect rider and the application should be highlighted. The project is expected to improve safety and reduce accidents, especially fatal to the motorcyclist.***

Key Words: encoder/ decoder IC, Smart system, bike authentication.

1. INTRODUCTION

In today's era, especially in the young generation, the craze of motorbikes is really remarkable. The middle class families prefer to buy motorbikes over 4-wheelers, because of their low prices, various varieties available in the market, due to cut-throat competitions between 2-wheeler companies and durability. As the bikers in our country are increasing, the road mishaps are also increasing day by day[1], due to which many deaths occur, most of them are caused due to most common negligence of not wearing the helmets, also many deaths occur due to lack of prompt medical attention needed by the injured person. This motivates us to think about making a system which ensures the safety of biker, by making it necessary to wear helmet, as per government guidelines, also to get proper and prompt medical attention, after meeting with an accident. The project aims at the security and safety of the bikers against road accidents. The circuit is so designed that the bike wont' start without wearing helmet It introduced a security system on the rider with the perfect helmet usage before riding.in this system *no advanced concepts of JAVA Programming (JavaScript, j2me) and Microcontroller 8051 based circuitry is used[2].based on RF link simple working and operation.* By using RF transmitter and RF receiver, the motorcycle can be moved if it receive signal from the helmet .Here our main object is to design the circuit that can improve the safety of motorcyclists. [3]The statics of law breaker is depicted below in table.

Law breakers	Two wheelers	Four wheelers
Signal jumping	2,20,859	1,46,945
Drunken Driving	36,727	17,237

Table -1: Statistics of Law Breaker

1.1 Objective Of Project

The objectives of this project are

I. To design the circuit that can improve the safety of motorcyclists.
II. To develop an Smart safety helmet for complete rider.
III. To study and understand the concept of RF Transmitter and RF Receiver circuit in implementing the project.

2. SYSTEM DEVELOPMENT

2.1 Block Diagram

Block diagram of this project is as given below on behalf of process going in a manner.

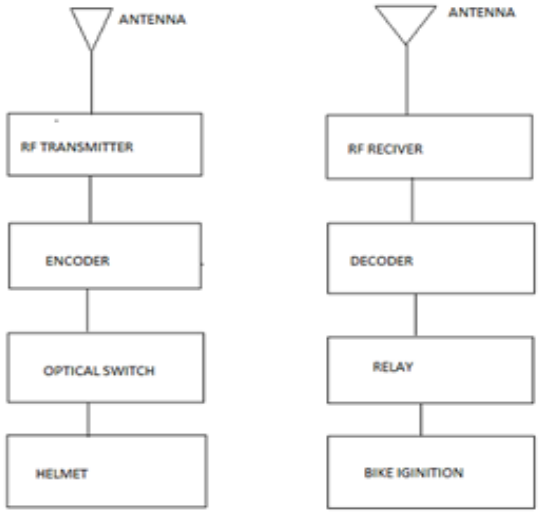

Fig -1: Block Diagram

2.2 Technical Description

This radio frequency (RF) transmission system employs Amplitude Shift Keying (ASK) with transmitter/receiver (Tx/Rx) pair operating at 434 MHz. The transmitter module takes serial input and transmits these signals through RF. The transmitted signals are received by the receiver module placed away from the source of transmission.

The system allows one way communication between two nodes, namely, transmission and reception. The RF module has been used in conjunction with a set of four channel encoder/decoder ICs. Here HT12E & HT12D have been used as encoder and decoder respectively.

3. RF TRANSMITTER SECTION

Encoder IC (HT12E) receives parallel data in the form of address bits and control bits. The control signals from remote switches along with 8 address bits constitute a set of 12 parallel signals. The encoder HT12E encodes these parallel signals into serial bits. Transmission is enabled by providing ground to pin14 which is active low. The control signals are given at pins 10-13 of HT12E. The serial data is fed to the RF transmitter through pin17 of HT12E.

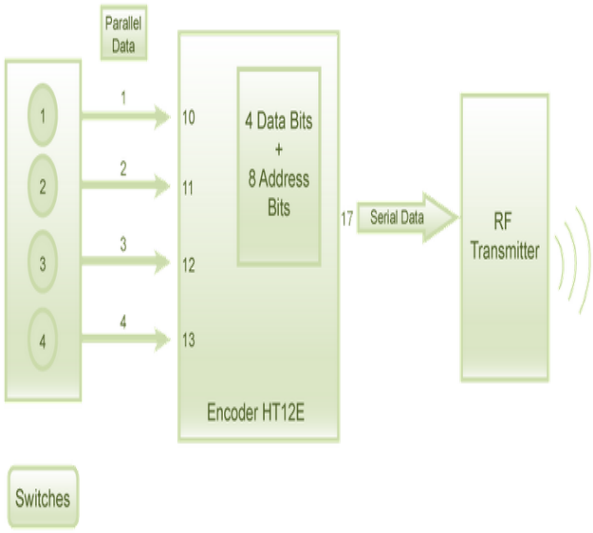

Fig -2: transmitter section

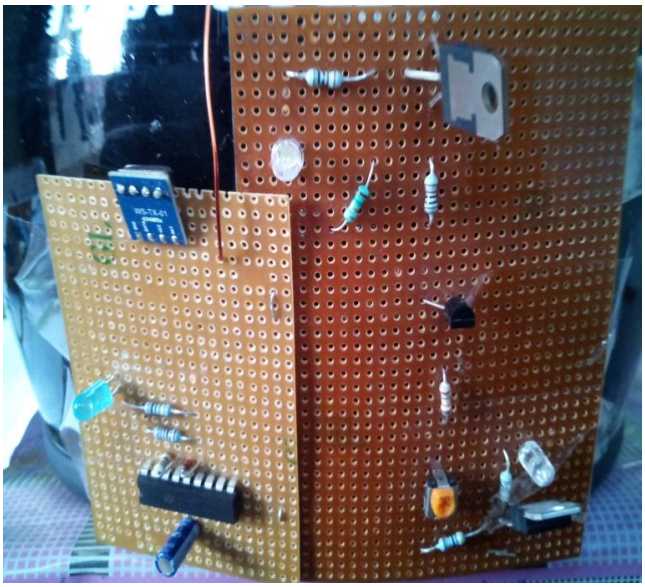

Fig -2: Transmitter Proposed Model

Fig -2: Encoder IC

4. RF RECEIVER SECTION

In simple terms, HT12D converts the serial input into parallel outputs. It decodes the serial addresses and data received by, say, an RF receiver, into parallel data and sends them to output data pins. The serial input data is compared with the local addresses three times continuously. The input data code is decoded when no error or unmatched codes are found. A valid transmission in indicated by a high signal at VT pin and then relay goes on. A string of address and data bit is used to prevent from false triggering.

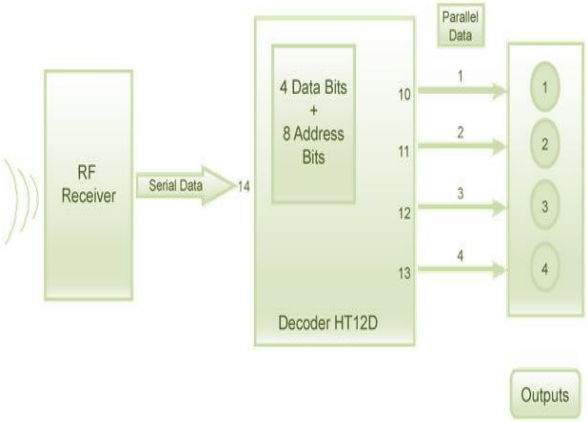

Fig -2: Receiving Section

Fig -2: Decoder IC

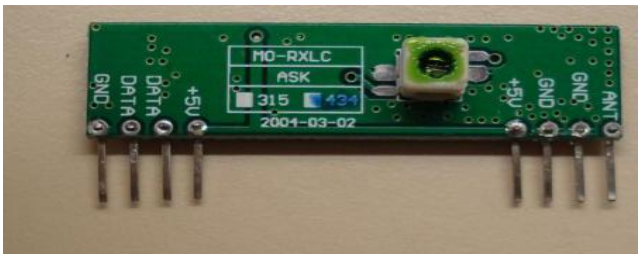

Fig -2: RF receiver module

RF receiver module is crystal lock frequency receiver which maintain at constant frequency ie. 434Mhz due to this variation problem in frequency to be sence by the receiver can be negotiate.

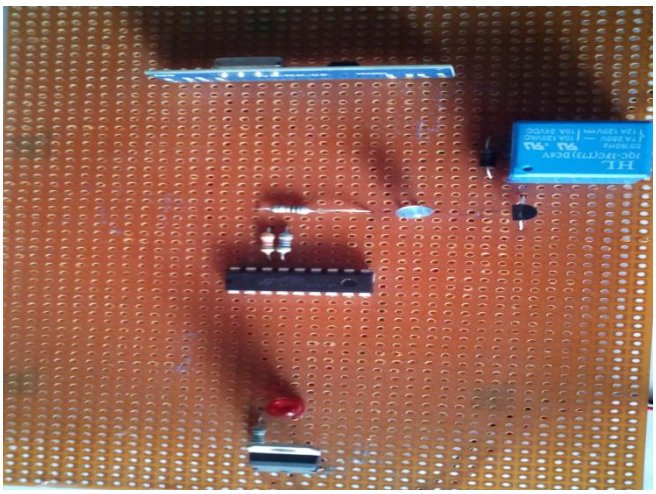

Fig -2: Receiver Proposed Model

5. APPLICATION

- Useful for school students.
- Useful for bike and scooters.
- Help to protect life in accident case.
- Number of cases of voilated traffic rules can be reduced.

6. RESULT

Smart helmet for safe rider is designed with radio frequency link. , as user wear helmet a rf signal radiate from transmitter and these RF signal get sensed and synchronized with the help of address matching by the receiver section placed in the ignition switch of the bike and bike get started and bike stopped working as helmet keep out from head. This means bike work properly till helmet keep on head.

7. CONCLUSIONS

This system is very effective for the safety purpose of the user. User has to wear helmet to ride two wheeler vehicle and hence traffic rules will follow with this. This system is under pocket control ie. Ride two wheeler vehicle having safety in hand and in budget also. Easy functioning to operate this system. It provides a better security to the biker.

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