

## Access Control System using RF Module

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**Abstract**— There has been rising demand for security system that must be dependable and quick respond for offices and companies also. RF (Radio Frequency) module is one of the consistent and cheap device that is used all over the world for moderate distance communication. RF module is easily available in market and its easy to use too. Science has made lot of changes not only in communication system but also in control systems which makes its programming simple. The paper is about access control system using RF module. The circuit is built over RF transmitter and RF receiver which are operating on 434MHz with encoder IC HT12E and decoder IC HT12D. The main objective of this project is to make system totally automated which will be cheap, easy to handle, and mostly important secured which will be useful for calling employee or staff from another cabin or we can say cabin to cabin calling system with minimum cost required.

**Key words:** RF transmitter, RF receiver, IC HT12E, IC HT12D

### I. INTRODUCTION

With the advanced technology, number of equipments and modern appliances makes life easier and increases comfort. Now a days Authentication and Authorization are distinct functions of access control system. The method of establishing the subject's (user) identity is identification. The method of proving the identity is called as authentication. To be properly authenticated, the subject is usually required to provide a second piece to the credential set (i.e., password, keys, PIN, token). The identification and authentication pieces (credential items) are compared to information that has been stored previously for the subject. If the credentials match, then the subject is authenticated. [1]

When authority sitting inside the cabin wants to call an employee or staff then for now there are peons who convey their message to respected staff or employee or sometimes when any employee or teacher wants the access of authority's cabin, then there are peons to as for it that is if someone wants to enter the room then that person is required to ask peon for the access. If all this manual work or method or traditional way is replaced by couple of switches then lot of time will be saved. So many access control systems can be controlled developed and easily used with the help of microcontrollers as the main part of circuit. Main aim of the project is to make a effortless and economically good system which will reduce the man power and time required in whole process of calling. One of the other aim of this project is to automate the manual entry of people in the room. By this project the person sitting inside the room will come to know who is outside the room and who wants the access of the room. We can allow only authorized people and can restrict the unauthorized people to have the access of room.

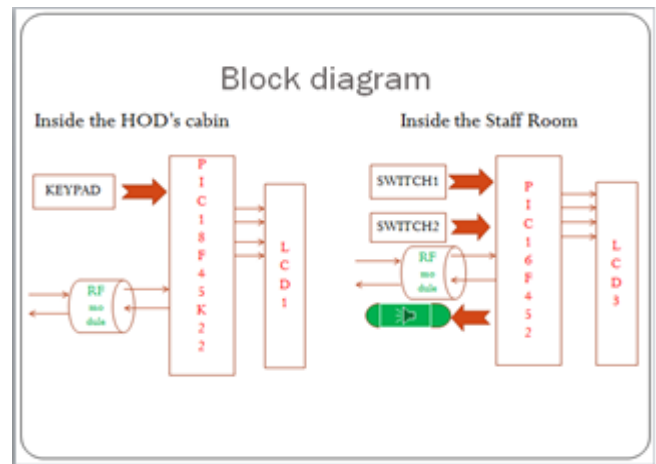


Fig. 1:

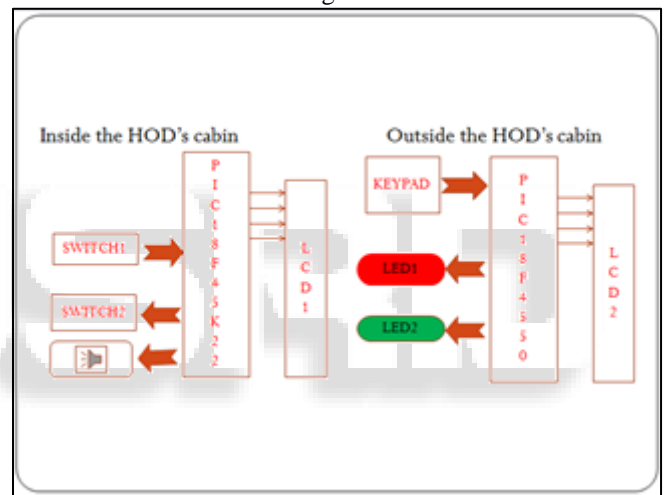


Fig. 2:

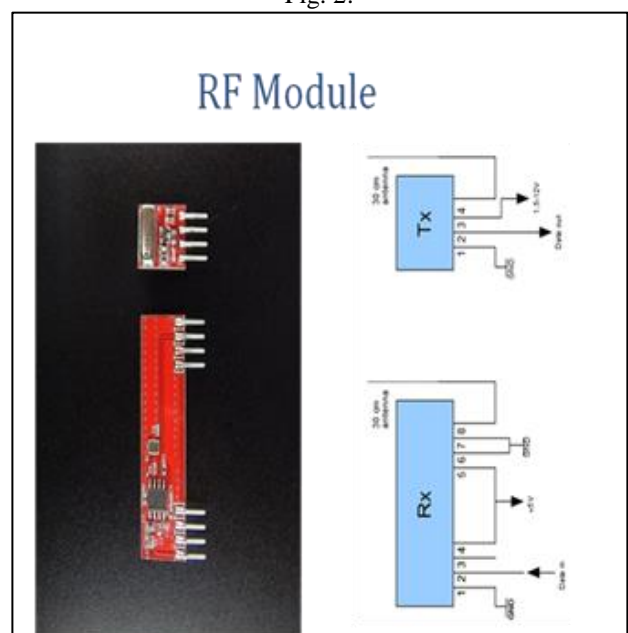


Fig. 3:

A. RF module:

Pin description of RF module:-

Pins	Name	Details
1	GND	Ground
2	DATA	Data
3	NC	No connection
4	Vcc	Power supply
5	Vcc	Power supply
6	GND	Ground
7	GND	Ground
8	ANT	Antenna
1	GND	Ground
2	DATA	Data
3	Vcc	Power supply
4	ANT	Antenna

Table 1:

B. Features:

- Easy to use.
- TX:--Power supply and/or modulation input voltage: 2.2 to 5.5v.
- Operating temperature: -40 to +80C.
- RX:--Power supply and/or modulation input voltage: .5v.
- Operating temperature: - 20 to +80C.

It operates at radio frequency. The corresponding frequency range varies between 30 kHz & 300 GHz. In this RF system, the digital data is represented as variations in the amplitude of carrier wave. This kind of modulation is known as Amplitude Shift Keying (ASK). Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. This RF module comprises of an RF transmitter and an RF receiver. An RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin4. The transmission occurs at the rate of 1Kbps - 10Kbps. The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter. The RF module is often used along with a pair of encoder/decoder. The encoder is used for encoding parallel data for transmission while reception is decoded by a decoder.

In this project, we are going to make the system which will be able to set password for teachers and will help to set priorities for outsiders by authority and also will be able to make a call request to the employee sitting at some distance. The project is built for security assurance with the help of passwords assigned to all the members.

II. CONCLUSION

RF module based access control system is secured and cheap type of system as compared to other systems like biometric access control system, palm detection etc. The advantage of RF module is that it is wireless and signal can travel even if obstacles are found in path and also RF transmission is strong enough. Hence the project can be easily implemented at college level as well as at office level.

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