

Home Appliances Control via Wireless Remote

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Abstract— Now a day's everything is gone wireless to increase the usability of human being keeping in mind the most basic and most important function of today's era i.e. controlling the home appliance via wireless. This system is known as wireless home appliances control via wireless remote which works on RF. to increase the reliability of the system. I have made the system without microcontroller. So, no need to program it. To increase the efficiency of control I have used the touch sensors instead of push button or any other kinds of switching system. In modern days, we must use various high-tech machineries and equipments to get our jobs done and make the life tremendous. These Appliances should be controlled from any location as the homeowner might be away from home at workplace or travelling in a different place. Thus a system of remote monitoring and controlling are very important. Smart home is one of these types of system equipped with home appliances which we want to control smartly.

Keywords— RF controller, wireless home appliance control, wireless transceiver.

I. INTRODUCTION

Smart home is a home equipped with special facilities to enable us to control automated home appliances. For example, control temperature gauges, turn appliances on or off, perform various works. Smart home is that home in which we can control it from any other room. Our main aim/objective is to control the home appliances via wireless remote. This system is wireless control of home appliances via remote.

This system efficiently controls the home appliances up to 12 meters. This module consumes less power up to 3-5 V. To get rid of microcontroller programming this system doesn't use any microcontroller. The system mainly depends on encoder and decoder IC's. As this module is available in market but it's too costly so we made this module on cheap rates with maximum efficiency.

II. RELATED WORK

[1] Proposed a system that control home appliances through infra-red remote controller and power line communication by developing a home.

Based server, this system help user to check the status of their appliances form anywhere through the cellular network and internet.

[2] Proposed a solution of home appliances control using Bluetooth based remote control to access the control of home appliances within home, author developed a remote control with a Keypad which is interface to a microcontroller and this is interfaced to Bluetooth module to provide wireless interface for remote to communicate with the appliances control module. When the key is pressed the controller send the command regarding the pressed key via Bluetooth medium and on the receiver end receiver receive the command and apply the corresponding action.

[3] Proposed a GSM based system for controlling the Appliances for the people who are not at home, this is done remotely through SMS over GSM network using AT commands and on receiver the GSM modem is interfaced with the PC, the home appliances control system is developed on the PC to monitor and control. In the proposed solution they use PC parallel port which is further interfaced with the relay circuit to provide control over the appliances. This system also provides a feedback by simply SMS to user which also helps when there is any security breach in the home.

III. HARDWARE DESIGN

This circuit consists of two circuits which are receiver and transmitter circuit.

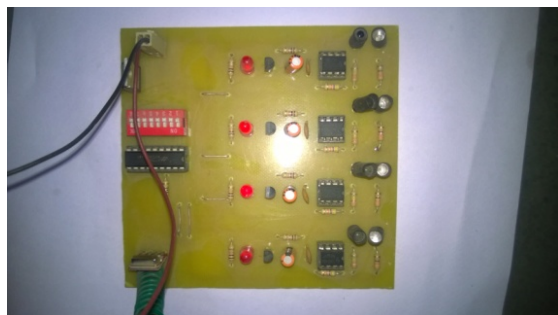


Fig.1- Transmitter circuit

Receiver circuit is connected to the main appliances switches and main power supply that is 230VAC and for the supply to the circuit 5VDC is provided through step down transformer. On the other hand on transmitter circuit 9V is required to operate it.

A. Transmitter circuit

Transmitter circuit consists of following-

- RF transmitter
- Encoder
- IR sensor
- Photodiode
- 555 timer

RF transmitter –

It works on 433.92 MHz frequency. An RF transmitter module is a small PCB sub-assembly capable of transmitting a radio wave. Transmitter modules are usually used in a micro controller circuit which transfer data digitally to the transmitter and get transmitted

Encoder –

HT12E is an encoder integrated circuit. They are paired with 2n series of encoders for use in remote control system applications. It is mainly used in wireless system and infra-red circuits. The chosen pair of encoder/decoder should have same number of addresses and data format.

IR sensor –

An infra-red (IR) sensor is used to detect obstacles in front of the robot or to differentiate between colours depending on the configuration of the sensor.

Photodiode –

A photodiode is a semiconductor device that converts light into current. The current is passed when light are absorbed in the photodiode.

555 timer –

The 555 timer IC is an integrated circuit (chip) used in a variety of timer, pulse generation, oscillator and we can also say that it's a kind of flip flop which generated a time delay in a circuit

B. Receiver circuit

Receiver circuit consist of-

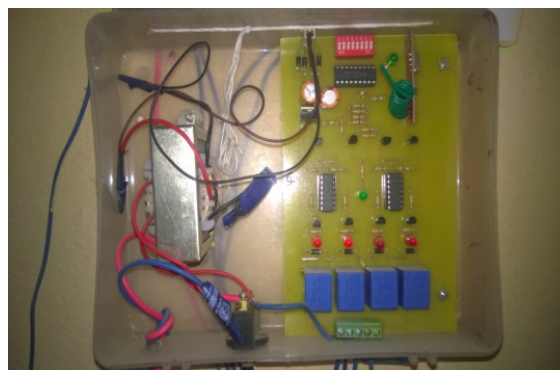


Fig.2- Receiver circuit

Receiver circuit consist of following-

1. RF receiver
2. Decoder
3. D flip-flop(4013)
4. Relay
5. Voltage regulator

RF receiver –

It also works on 433.92 MHz frequency. An RF receiver module is also a small PCB same as transmitter module sub-assembly capable of receiving a radio wave and demodulate the modulating data.

Decoder –

HT12D is a decoder integrated circuit that belongs to 2n series of decoders. This decoders are mainly used for remote control system applications, like wireless robot,

wireless car, surveillance system etc. It is mainly used to work with wireless systems and IR networks. They are paired with 212 series of encoders. The limitation is that the series which we choose of encoder or decoder should be same which let them to communicate

D flip-flop –

A D-type flip-flop, also called D-type bistable. Using appropriate input signals, you can trigger the flip-flop from one form to the other.

Relay –

It's a kind of automatic switch which works on the principle of Faraday Law of electromagnetic induction.

Voltage Regulator –

It provides a fixed regulated output voltage and current on giving a variable input voltage and current.

IV. PROPOSED METHODOLOGY

The working of this project is such that when we touch the IR led the transmitted signal gets reflected from the finger to the Photo diode. Then after the signal gets transmitted to the 555 timer so it is active. Then the signal is transmitted to the encoder and gets converted in to digital and afterwards through RF transmitter gets transmitted. Now at the receiver side the signal is receiver through RF receiver then it get decoded by decoder the signal is now active low so we use NOT gate to make it active high, then it's transmitted through flip-flop though it is converted into T-flip-flop and transmitted to relay. Then relay close the supply.

V. ADVANTAGES

- Appliances can be operated from anywhere remotely.
- Increases reliability.
- Modernisation

VI. CONCLUSION

These wireless technologies are in the trend to move the human kind to the bright and luxurious future. Many wireless communication based gadgets are invented to give us flexible usability and reliability.

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