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Wireless AC/DC Devices Appliances Control using AT89S52 Microcontroller with Remote

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ABSTRACT: It is a microcontroller based wireless equipment controller that can switch on or switch off devices at a desire time interval set by the user in transmitter. This system is a combination of software and hardware. We have used AT89S52 microcontroller kit for interfacing our system. This paper is about controlling various AC/DC devices using remote control which is working on Radio frequency. Let us take example if we can connect the bulb at the output then we can switch on or off of bulb at a desire time interval using the remote. Status of various devices is displayed on LCD. In this project we are using RF transmission because with the help of IR transmitter there is a problem of directivity and range of working, that problem is eliminated with RF transmission. RF has better directivity and frequency range.

KEYWORDS: micro controller ,RF module,LCD,Relay

I. INTRODUCTION

There is an increasing demand for smart homes or industrial appliances react automatically to changing environmental conditions and can easily controlled through one common device The device can be control from a distance of up to 100 meters from the transmitter. In the transmitter an LCD module is used to show the device number .Concepts of wireless RF communication and automation with AT89C51 microcontroller are used here. Our operating range of frequency is at UHF band. It is about 434 MHz.In today's competitive market, Industries are facing the growing demands for improving process efficiencies, comply with environmental regulations, and meet corporate financial objectives. Given the increasing age of many industrial systems and the dynamic industrial manufacturing market, intelligent and low-cost industrial automation systems are required to improve the productivity and efficiency of such systems. Traditionally, industrial automation systems are realized through wired communications.

II. PROPOSED SYSTEM

Embedded system:

An embedded system is a system which is going to do a predefined specified task is the embedded system and is even defined as combination of both software and hardware Software deals with the languages like ALP, C, and VB etc., and Hardware deals with Processors, Peripherals, and Memory.

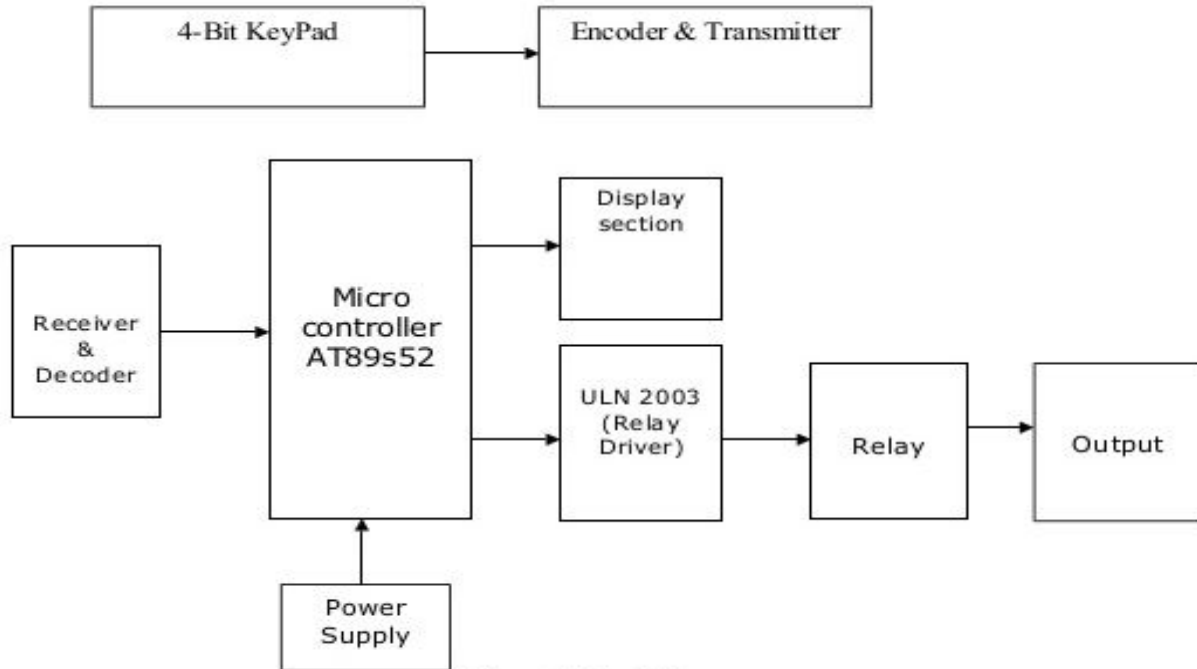
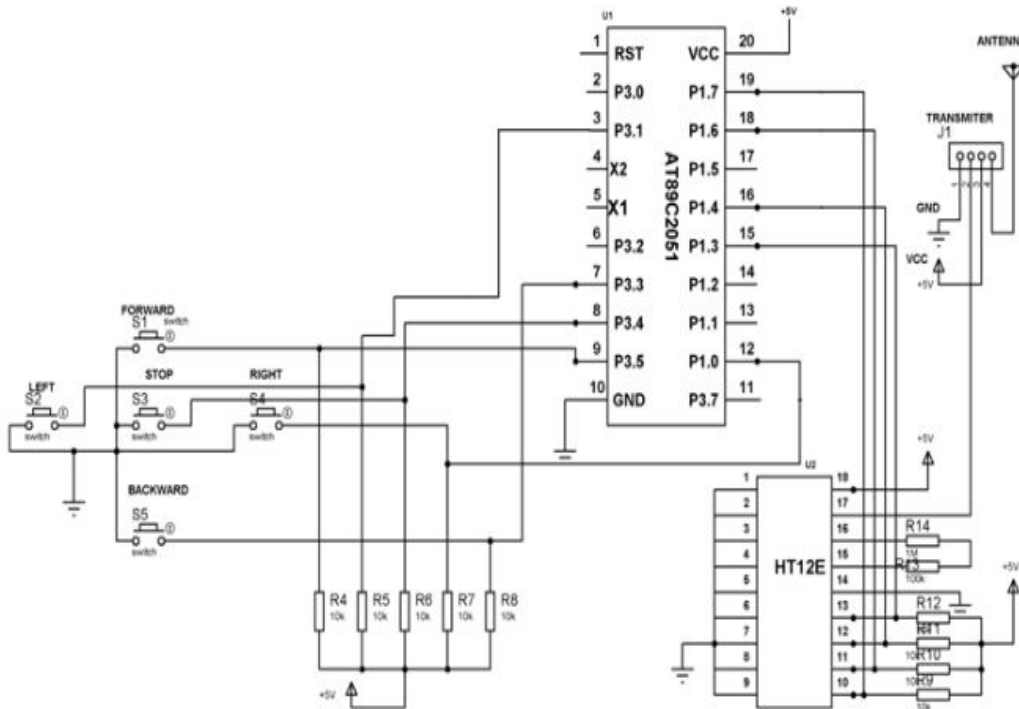
BLOCK DIAGRAM:

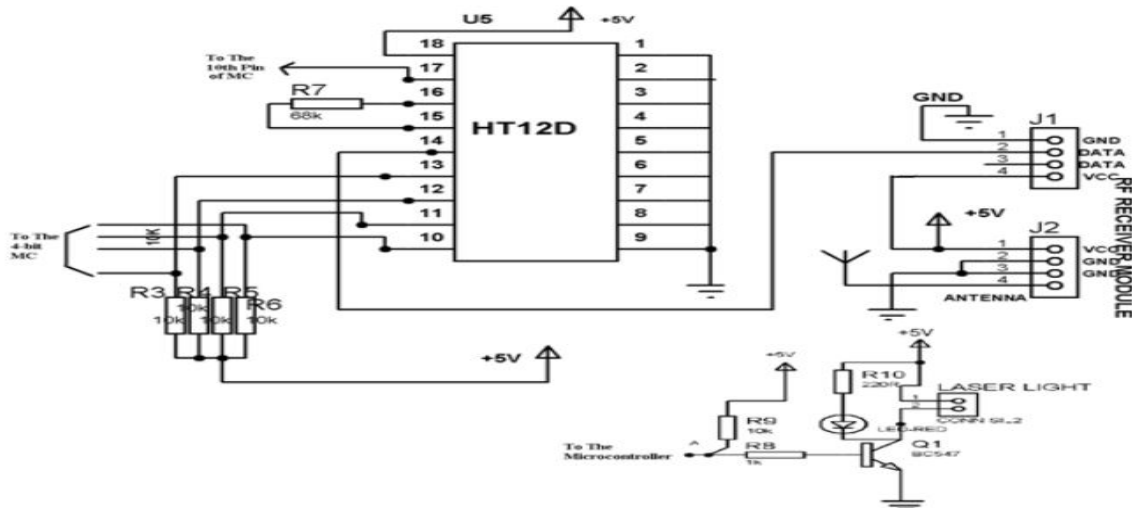
Figure 1: Block Diagram

In many projects, we use RF modules to transmitting and receive the data because it has a high volume of applications than IR. RF signals travel in the transmitter and receiver even when there is an obstruction. It operates at a specific frequency of 433MHz. RF transmitter receives serial data and transmits to the receiver through an antenna which is connected to the 4th pin of the transmitter. When logic 0 applied to transmitter then there is no power supply in the transmitter. When logic 1 is applied to transmitter then the transmitter is ON and there is a high power supply in the range of 4.5mA with 3V voltage supply. Here, we got two switches that are duly connected to the microcontroller with pulled up to 5V and these two switches form the input command to the microcontroller. We also got an LCD display for displaying the data to be transmitted. We also have an arrangement for a computer keyboard to be connected for positive and negative parts from the clock and data pin which is connected as an input to the microcontroller from the output of keyboard and that data is ultimately displayed in the LCD. We also have one RF transmitter. It has a VCC supply, GND. The data pin goes to the microcontroller. The program is so written that by appropriate operation of this working we first make the keyboard active. Once the keyboard is made active by pressing the buttons then the keyboard entry can take place which is displays in LCD. If it has to be sent against codes varying from 0 to 9 this will be displayed in LCD. Here every press is advancing as per the code from 0 to 9 and ultimately when we press one of the push-button for sending it will go to a microcontroller and then to the RF transmitter module over a 433 MHz frequency transmitted from the antenna.

RF Transmitter Circuit:



RF Receiver Circuit:

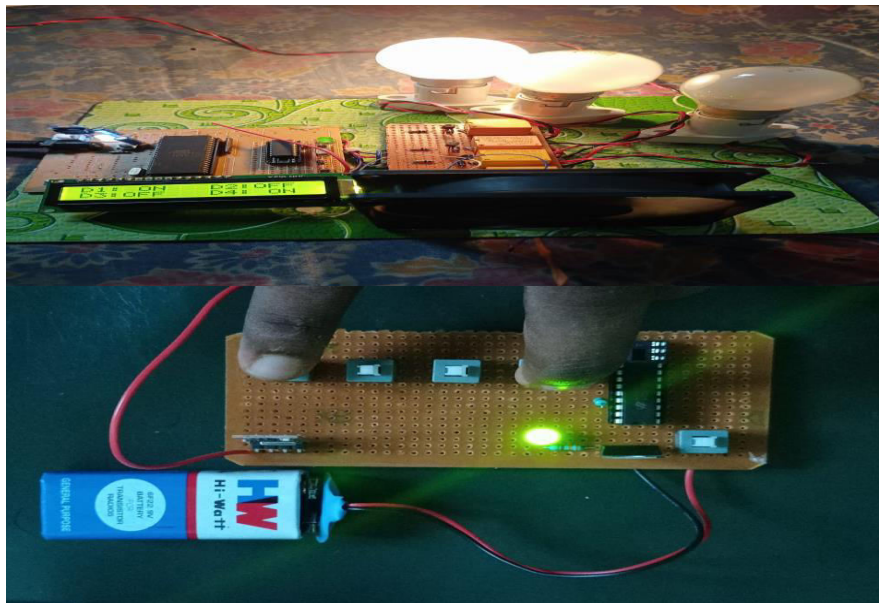


At the receiver end, we have similar connections for power supply as microcontroller needs +5V. Similarly to the transmitter, here also we are using two pushbuttons with 10k pull up resistors through 5V supply for RF Module. We are using pin 3.0 to connect the data pin of the RF module 1 and 2 pins of the RF module are used for GND and VCC. We also have two buttons for the selection of code and for receiving the data. Once the data is received by the receiver module that data is demodulated and goes to the receiver pin 10 of the microcontroller as per the program. In this, we used an HT12E encoder which converts 4-bit data to serial output. As explained above this is then fed to the RF module for transmitting the same to be received by the receiver. The RF module the output is fed to HT12D the serial decoder IC, the output of which is fed to microcontroller pin 1 to 4. The transmitting end microcontroller is connected to a set of pushbutton switches to its port 3 of 20 pin microcontroller AT89C2051. Thus while a particular

button is pressed the program is executed to deliver corresponding 4-bit data which are then transmitted serially at port 1 as explained above. The data so received at the receiver end of port 1 of the Microcontroller

III. WORKING

When we press a button on remote a device control subroutine execute and send the data to the RF module, which transmit the data through antenna status of various devices shown in LCD display. Suppose we consider D1, D2, D3, D4 as four switches for four devices that can be controlled by remote and we consider 3 bulbs for D1, D2, D3 and motor for D4 respectively



When the D1 button is pressed on remote that data is send to RF module which transmits the data through antenna and it is pass through Rf transmitter which produces output using relays. suppose take the examples as given below

Case1: After pressing only first button on remote D1=ON D2=OFF D3=OFF D4=OFF

Here the bulb 1 is turned on

Case2: after pressing only second button on remote

D1=OFF D2=ON

D3=ON D4=OFF

Here the bulb 2 and bulb 3 is turned on

IV. AKNOWLEDGMENT

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