

Double Tuned Multi Frequency Based Load Control System

Avadhesh kr. Sharma¹ Atul kr. Jangid² Deepak kr. Gupta³ Deepak kr. Pandey⁴

Deepak kr. Sharma⁵ Devendra kr. Saimara⁶

^{1,2,3,4,5,6}Department of Electrical Engineering

^{1,2,3,4,5,6}Swami Keshvanand Institute of Technology Management & Gramothan, Jaipur

Abstract— This paper recommends a unique System for Home automation utilizing Dual Tone Multi Frequency (DTMF) that is balancing with a wireless module to offer impeccable wireless control over many devices in a house. The block diagram is shown below. This user comfort has many keys, each equivalent to the device that needs to be activated. The encoder encodes the user preference and sends via a FM transmitter. The FM receive receives the modulated signal and demodulates it and the user preference is resolved by the DTMF decoder. Based upon this the required appliance is triggered. Traditionally electrical appliances in a home are controlled via switches that adjust the electricity to these campaign. As the world gets more and more technologically highly developed we find new technology coming in deeper and deeper into our individual lives even at home. Home automation is becoming more and more trendy around the world and is becoming a common exercise.

Key words: DTMF kit, Microcontroller, Power supply

I. INTRODUCTION

The aspire of the projected system is to enlarge a cost effective solution that will offer controlling of home appliances remotely and facilitate home sanctuary alongside intrusion in the nonattendance of homeowner. The system provides accessibility due to development of a low charge system. The home appliances control system with an reasonable cost was thought to be built that should be mobile given that distant admittance to the appliances and allowing home sanctuary. Though devices associated as home and workplace appliances devour electrical power. These devices should be prohibited as well as turn on/off if obligatory. Most of the times it was done yourself.

In this system, we are departing to enlarge a cellular phone based home/office electrical device. This system is intended for controlling random devices, it includes a cell phone (not included with the system kit, end customer client has to attach his/her cell phone to the system) which is attach to the system via head set. To vigorous the cellular phone component on the system a call is to be ended and as the describe is answered, in reply the client would enter a two/three digit open sesame to access the system to organize strategy. As the caller press the explicit password, it outcome in turning ON or OFF detailed device. The tool switching is achieved by Relays. Safety sealed because these fanatical passwords owned and known by nominated persons only. For occasion, our system contains an unease unit giving the consumer a distant on/off mechanism, which is capable of informing up to five unlike numbers over telephony network about the scenery of the affair.

II. SYSTEM DESIGN

For intend a DTMF based load organize system mainly requisite of block illustration and technology. Telephone gives the input in decimal information and it is also used as

ON/OFF switch here. Microcontroller placed at the weight side. Relay are worn before the load. In this we can observe that the supply system is associated to give supply to the microcontroller, transistor functioning as switch. 7805 is linked to the supply to supply regulated 5V supply as the devices connected similar to microcontroller work at low voltage and susceptible to voltage variations and spikes. The microcontroller, transistor and MAX232 works as control unit.

III. BLOCK DIAGRAM

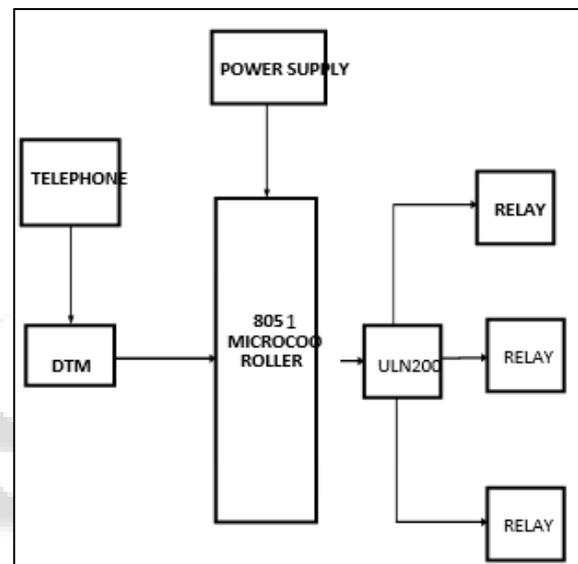


Fig. 1: Block diagram

Microcontroller pins are used to connect the crystal oscillator to supply clock frequency. When a signal is given to one of the pins of the microcontroller i.e. ground or 0V then across that LED 5V is generated and it glows. Now we can control the load by giving the input signal from the telephone keypad. When we press any decimal number related to any relay or load than it can ON/OFF.

Relay is used as sensing device here it sense any abnormal situation and give the signal to the circuit breaker to trip the circuit or connect the circuit.

IV. DTMF DECODER

Today, most telephone equipment use a DTMF receiver IC. One common DTMF receiver IC is the Motorola MT8870 that is extensively used in electronic communications circuits. The MT8870 is an 18-pin IC. It is used in telephones and a diversity of other applications. When a suitable output is not obtained in projects using this IC, engineers or technicians necessitate to test this IC one by one. A quick testing of this IC could save a lot of time in re-search labs and built-up industries relay communication instruments. Here's a small and handy tester circuit for the DTMF IC. It can be assembled on a versatile PCB with an 18-pin IC base. One can also test the IC on a undemanding breadboard.

For optimum functioning of telephone apparatus, the DTMF earpiece must be deliberate to make out a valid tone pair greater than 40ms in duration and to accept straight digit tone-pairs that are better than 40ms apart. However, for other applications like remote gearstick and radio transportation, the tone duration may differ due to clamour considerations.

Therefore, by adding an spare resistor and steering diode the tone extent can be set to different values. The circuit is configured in balanced-line mode. To discard common-mode noise signals, a balanced differential amplifier effort is used. The circuit also provides an excellent bridging interface across a appropriately terminated telephone line. \

Transient guard may be achieved by splitting the input resistors and inserting ZENER diodes (ZD1 and ZD2) to attain voltage clamping. This allows the transient power to be dissipated in the resistors and diodes, and limits the greatest voltage that may emerge at the inputs.

Whenever you press any key on your limit telephone keypad, the late navigation output of the IC goes high on response the tone-pair, causing LED5 (connected to pin 15 of IC via resistor R15) to shine. It will be high for a period depending on the values of capacitor and resistors at pins 16 and 17. The elective circuit given away within dot-ted line is used for guard time adjustment.

The LEDs connected via resistors R11 to R14 at pins 11 through 14, respectively, indicate the output of the IC. The tone-pair DTMF (dual-tone multi-frequency) generated by terrible the telephone button is transformed into bi-nary values internally in the IC. The binary values are indicated by shimmering of LEDs at the output pins of the IC. LED1 represents the least momentous bit (LSB) and LED4 represents the most important bit (MSB). So, when you dial a number, say, 5, LED1 and LED3 will shine, which is equal to 0101. Likewise, for every other number dialled on your telephone, the corresponding LEDs will shine. Thus, a non-defective IC should point out appropriate bi-nary values corresponding to the decimal number pushed on your telephone key-pad.

V. MICROCONTROLLER

The microcontroller incorporates all the features that are originate in microprocessor. The microcontroller has built in ROM, RAM, Input Output ports, Serial Port, timers, interrupts and clock circuit. A microcontroller is an whole computer contrived on a single chip. Microcontrollers are usually devoted devices surrounded within an application. For example, microcontrollers are used as engine controllers in automobiles and as exposure and hub controllers in cameras. In order to serve these applications, they have a high concentration of on-chip amenities such as sequential ports, parallel input output ports, timers, counters, disrupt control, analog-to-digital converters, random admittance memory, read only memory, etc. The I/O, memory, and on-chip peripherals of a microcontroller are chosen depending on the particulars of the aim application. Since microcontrollers are influential digital processors, the degree of control and programmability they provide considerably enhances the efficiency of the application.

Microcontroller (MC) may be called computer on chip since it has essential features of microprocessor with domestic ROM, RAM, Parallel and serial ports within single chip. Or we can say microprocessor with memory and ports

is called as microcontroller. This is widely used in washing machines, vcd player, microwave oven, and robotics or in industrial applications.

- Microcontroller can be classified on the foundation of their bits processed like 8bit MC, 16bit MC.
- 8 bit microcontroller means it can interpret, write and process 8 bit data. Ex. 8051 Microcontroller. Fundamentally 8 bit specifies the size of data bus. 8 bit microcontroller means 8 bit data can move on the data bus or we can interpret, write process 8 bits.

VI. WORKING

Working chapter consists of supply circuit functioning, hardware organized, methodology and further addition. This system is designed for controlling subjective random devices, it includes a cell phone (not integrated with the system kit, end user has to attach his/her cell phone to the system) which is attach to the system via head set. To vigorous the cellular phone unit on the system a call is to be completed and as the call is answered, in reply the user would enter a two/three digit password to admission the system to control devices.

As the caller push the exact password, it consequences in turning ON or OFF exact device. The device switching is achieved by Relays. Safety preserved because these devoted passwords owned and known by elected persons only. For instance, our system contains an alarm unit giving the user a remote on/off mechanism, which is competent of informing up to five dissimilar numbers over telephone network about the nature of the event.

VII. SUPPLY CIRCUIT

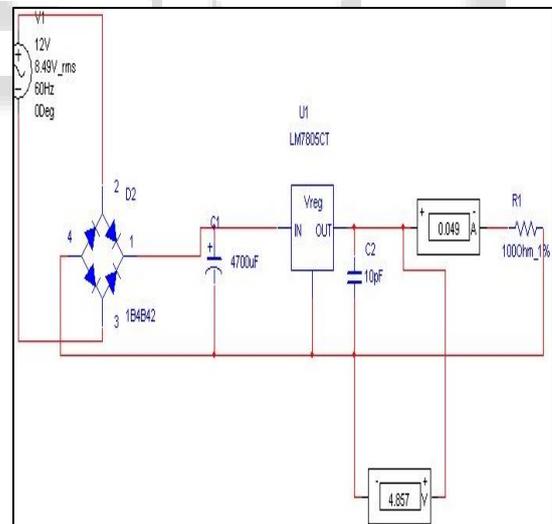


Fig. 2: Circuit diagram

VIII. BENEFITS

- Home appliances can be controlled remotely
- No need for internet link.

IX. FUTURE SCOPE

The capability of the system can be wholesale by interfacing an external memory to it. It will permit the customer to set key. More over in future caller recognition and mobile authentication can be done for improved safety enabling only a set of caller IDs to connect to the cell close to the circuit.

When it connected to the circuit than by giving commands by pressing the pre fixed keys.

By these keys electrical load can be operated from afar place. Load supply can be on or off by us if are not present at the load place.

X. CONCLUSION

This DTMF based load control system is useful to handle the electricity load. For saving of electric power this is a best way because due to our irresponsible behavior a huge amount of electricity is not used in domestic purpose and irrigation purpose. Since it is based on the mobile frequency it increases the array of device. Hence electric load can be operated from a far places. The system built is very cheap and easy to install and is very user-friendly.

User only has to remember the set key. There is no need of any password to load control.

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