



Controlling Ac Lamp Dimmer through Mobile

Pratik.S.Nagare¹, Avinash.S.kanse², Dhanshri.B.Bhadke³, Prof.Prakash.T.Patil⁴

UG Student, Dept of EE, S. B. Patil Engineering College, Indapur, Maharashtra, India¹⁻³

Assistance Professor, Dept of EE S. B. Patil Engineering College, Indapur, Maharashtra, India⁴

ABSTRACT: This paper represents an effective technique for the user to monitor and control the house/office appliances and other equipments via the mobile phone. The home automation improves the lifestyle of control of the home device. Our work is based on embedded system. In this project, we propose a unique System for Home automation utilizing Dual Tone Multi Frequency (DTMF) that is paired with a wireless module to provide seamless wireless control over many devices in a house. We can operate our robot from any distant or remote area. It is a wireless robot but instead of using a separate wireless module (transmitter and receiver) we are using the cell phones for this purpose. The principle used for mobile controlled robot is the decoding of DTMF tone.

KEYWORDS: DTMF Decoder, Microcontroller, Embedded system, mobile Phone etc.

I.INTRODUCTION

Home Automation system employs the integration of wireless communication, and power-line communication to provide the user with remote control of various lights and appliances within their home. As per our survey of literature various workers gained achievement in this field. “N. Srisanthan[1]” explained the model for home automation using Bluetooth via PC but that work lacks to support mobile technology.

“Muhhammad Izhar Ramli [2]” designed a prototype electrical device control system using web. They also set the server with auto restart if the server condition is currently down. “Al-Ali and Al-Rousan [3]” presented a design and java based automation system through world wide web. “Pradeep G [4]” proposed home automation system by using Bluetooth. “Hassan[5]” has developed a telephone and PIC remote control device for controlling the devices via cable network but there was a lack of wireless communication. “R. Piyare [6]” have introduced design and implementation of a low cost, flexible and wireless solution to the home automation. In the field of home automation “Das S.R. et al[7]” and “LaurI [8]” have achieved a great success about microcontroller based systems. This system uses a consolidation of a mobile phone application, handheld wireless remote, and PC based program to provide a means of user interface to the consumer. This system is designed to be low cost and expandable allowing a variety of devices to be controlled. Home automation is becoming more and more popular around the world and is becoming a common practice. Smart home automation becomes important, because it gives the user the comfortable and easy access to the home devices. The process of home automation works by making everything in the house automatically controlled, using technology to control and do the jobs that we would normally do manually. Home automation takes care of a lot of different activities in the house. In this project, we propose a unique system for Home automation utilizing Dual Tone Multi Frequency (DTMF) that is paired with a wireless module to provide seamless wireless control over many devices in a house.

Conventionally, electrical appliances in a home are controlled via switches that regulate the electricity to these devices. As the world gets more and more technologically advanced, we find new technology coming in deeper and deeper into our personal lives even at home. Home automation is becoming more and more popular around the world and is becoming a common practice. Smart home automation becomes important, because it gives the user the comfortable and easy access to the home devices. The process of home automation works by making everything in the house automatically controlled, using technology to control and do the jobs that we would normally do manually. Home automation takes care of a lot of different activities in the house. In this project, we propose a unique System for Home automation utilizing Dual Tone Multi Frequency (DTMF) that is paired with a wireless module to provide seamless wireless control over many devices in a house.

We can operate our robot from any distant or remote area. It is a wireless robot but instead of using a separate wireless module (transmitter and receiver) we are using the cell phones for this purpose. This robot has advantages over simple



International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 3, March 2016

wireless robot as it overcomes the limitations of wireless like limited range, frequency interference etc. Mobile operated robot is having a wide range (service provider range), less fear of interference as every call is having a unique frequency and moreover it has more control keys. The principle used for mobile controlled robot is the decoding of DTMF tone.

II. AIM OF THE WORK

The aim of this project is to extend a device that allows for a user to somewhat control and monitor multiple home appliances using a cellular phone. This system will be a powerful and flexible tool that will offer this service at any time, and from anywhere with the constraints of the technologies being applied. Many times a situation occurs when we have to control various devices from a long/remote location according to our choice. Consider following examples,

- 1) If, we are working in some industry and have to reach at workplace at the earliest to turn on some electrical device like boiler or conveyor belt.
- 2) In our normal day to day life we go out of home and forgot to turn off fan/light
- 3) In summer season we want to turn on Fan or AC — Air cooler before we reach home.

For all above situations, we need a device / controller which can turn on / off the devices. To implement this system the consumer should send a unique code accompanied by the required function to his home control system through GSM.

III. PRINCIPLE

In the present project a microcontroller is used as a control unit which gets inputs (instructions, commands) from a mobile connected through GSM. To make the connection more secure, consumer authentication along with a password will be provided. To switch on/off any appliance positioned at controller's part, the cellular phones are connected the appropriate tone and password are entered. The tone entered is decoded via the DTMF decoder which further translates it into binary values. Binary values are the input to the microcontroller which verifies each tone individually and corresponding output is given at the output terminal³. Thus, when the relay drive is activated by the microcontroller, the device either gets ON or is switched OFF as per the requirement. Our project makes use of auto answer facility and hence eliminates the need of a ring detector circuit.

IV. BLOCK DIAGRAM

The block diagram is shown in “Fig. 4.” This user console has many keys, each corresponding to the device that needs to be activated. The encoder encodes the user choice and sends via a transmitter. The receiver receives the modulated signal and demodulates it and the user choice is determined by the DTMF decoder.

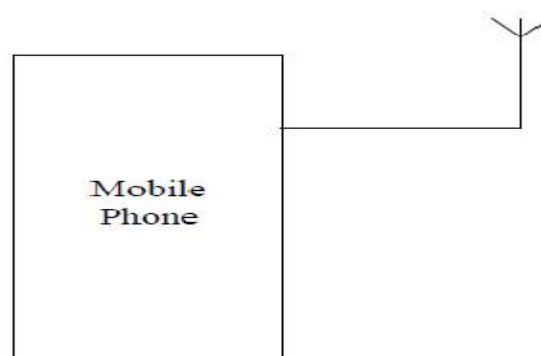


Fig.4.1.Block diagram of controlling of ac lamp dimmer through mobile phone transmitting end (controlling block)

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 3, March 2016

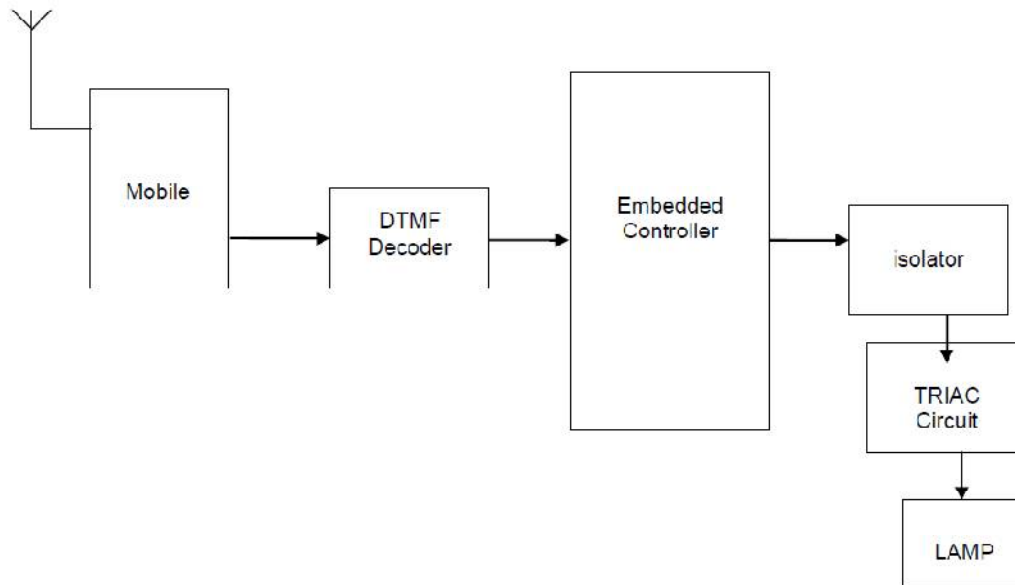


Fig.4.2. Block diagram of controlling of ac lamp dimmer through mobile phone receiving end (controlled block)

4.1 Dual Tone Multiple Frequency Decoder

MT8870 is a decoder IC which decodes the DTMF tone and fed the decoded signal to the microcontroller i.e. on board processor. According to the program in the microcontroller the robot starts working. In DTMF the tones and assignments are given in the “Table 4.1”:

Table 4.1 DTMF Tone Assignments

FREQUENCY	1209Hz	1336Hz	1477Hz	1633Hz
697	1	2	3	A
770	4	5	6	B
852	7	8	9	C
941	*	0	#	D

4.2 INTRODUCTION TO MICROCONTROLLER (PIC18F45K22)

The PIC18F45K22 is a low-power, high-performance microcontroller. The device is manufactured by microchip’s high-density non-volatile memory technology. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. the microchip PIC18F45K22 is a

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 3, March 2016

powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control application.

PIN DIAGRAM:

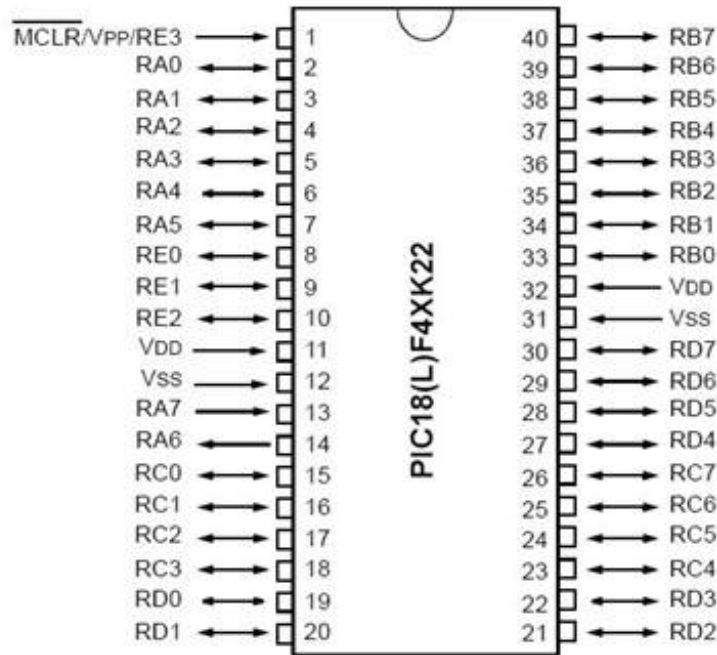


Fig. pin diagram of PIC18F45K22

4.2.2 Features

1. High-Performance RISC CPU
2. C Compiler Optimized Architecture
3. Up to 1024 Bytes Data EEPROM
5. Up to 16 MIPS Operation
4. Up to 64 Kbytes Linear Program Memory Addressing
5. 8-channel, 10-bit ADC
6. 16-bit Wide Instructions, 8-bit Wide Data Path
7. Up to 3896 Bytes Linear Data Memory Addressing

V. APPLICATIONS

1. This project can be used in Industries to control various devices from a remote distance.
2. This project can be use in home for domestic use.

VI. ADVANTAGES

1. This project is simple and easy to access.
2. It can be accessed from remote areas.
3. There is low power consumption.
4. It can be operated from a long range.

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 3, March 2016

VII. FUTURE SCOPE

1. It can be used as controlling speed of fan.
2. It can be used to control room temperature.
3. It can be also used for security purposes burglary, gas detection, smoke detection.

VIII. RESULT AND DISCUSSION

In the fig 5.1, it shows the how we control the lamp through mobile phone and we successfully implemented this topic shows the below figures.



Fig.1. Initial condition Fig.1 This figure indicates the initial condition of controlling of ac lamp through mobile phone. when we call from another mobile phone ,the mobile phone at receiving side should be put on auto answer mode at that time initial condition of our project

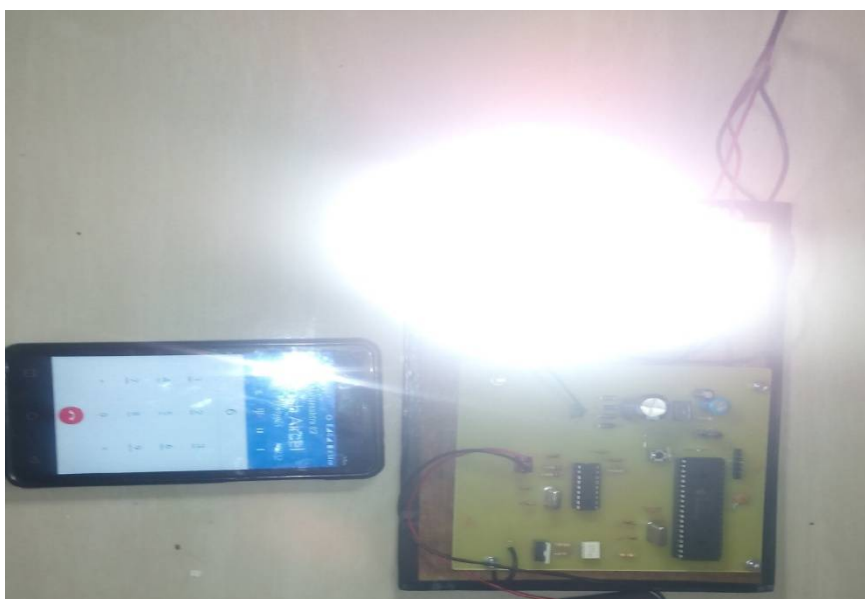


Fig. 2.Initial condition when we press the button 6

Fig.2. The project” CONTROLLING OF AC LAMP DIMMER THROUGH MOBILE PHONE ” has been successfully designed and tested. In this project we have developed a circuit, that controls the devices connected to mobile phone.



ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 3, March 2016

When ever a call comes it detects it and starts counting the number of pulses. After a few number of rings it automatically lifts the call. Now when we key pressed the 6 number on keypad, the respective lamp goes ON.

VI.CONCLUSION

The DTMF control AC dimmer system is not limited for any particular application, it can be used any where in a process industries with little modifications in software coding according to the requirements. This concept not only ensures that our work will be usable in the future but also provides the flexibility to adapt and extend, as needs change. The project “DTMF control AC dimmer” has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC’s and with the help of growing technology the project has been successfully implemented.

REFERENCES

- [1] N. Sriskanthan and T. Karand, Bluetooth Based Home Automation System, Journal of Microprocessors and Microsystems, 26, 2002, 281-289.
- [2] M. I. Ramli, M. H. AbdWahab and N. Ahmad, Towards Smart Home: Control Electrical Devices Online, International Conference on Science and Technology: Application in Industry and Education 2006.
- [3] Al-Ali, (Member, IEEE)& M. AL-Rousan,,Java-Based Home Automation System R. IEEE Transactions on Consumer lectronics, 50(2), may 2004.
- [4] G.B.Pradeep, B.SanthiChandra, M.Venkates-warao, Ad-Hoc Low Powered 802.15.1 Protocol Based Automation System for Residence using Mobile Devices, Dept.of ECE, K L University, Vijayawada, Andhra Pradesh, India, IJCST, 2, SP 1, December 2011.
- [5] E. Yavuz, B. Hasan, I. Serkan and K. Duygu. Safe and Secure PIC Based Remote Control Application for Intelligent Home. International Journal of Computer Science and Network Security, 7(5), May 2007.