

Alcohol Detection using Pic Microcontroller

Thakare Bhagyashri S

*Department of Electronics & Tele-communication Engineering
Sandip Foundation Nashik, India*

V. V. Joshi

*Department of Electronics & Tele-communication Engineering
Sandip Foundation Nashik, India*

Sonawane Bhagayshree U.

*Department of Electronics & Tele-communication Engineering
Sandip Foundation Nashik, India*

Rupwate Suvarna P.

*Department of Electronics & Tele-communication Engineering
Sandip Foundation Nashik, India*

Abstract

The main purpose behind this project “ALCOHOL DETECTION USING PIC MICROCONTROLLER”. Now a days, in many hostels, industry, while driving vehicles, etc. This will creates lots of accidents occurred. Here in this project we show that how we detect alcohol using MQ3 alcohol sensor. Then buzzer is ON and the same time LCD display in the percentage form and simultaneously voice signal can indicate the student drunk or not. This project should be fitted /installed inside the hostel. The main aim of this project is to develop a system that can detect the alcohol content in the air then automatically turn ON the buzzer if alcohol percentage exceeds the limit. Then simultaneously signal display on LCD. This system used PIC18f4550 micro controller as a processing center for all input and output micro controller interfacing exceeds with ADC. In this we are going to embed the program to receive data from alcohol sensor, convert it into digital form and then display on LCD. The alcohol sensor gives out analog data that can be analyzed by PIC18f4550 so we don't use analog to digital converter to convert it into digital format. Because, the PIC18f4550 has inbuilt A/D converter.

Keywords: PIC micro controller, Alcohol Sensor, Alcohol Detection

I. INTRODUCTION

Now a day's most of students drink the alcohol in the hostel. So all blames to the hostels, university, staff, rector etc. To maintain the discipline of students so we are build our project. This product can detect the presence of molecule i.e. sno₂, LPG, CO, Methane etc. in the breath sample and display the result by referring to the alcohol concentration is detected from students. This project includes the development of hardware and software as a device module. Hardware parts includes of sensor circuit, the PIC micro controller, LCD, buzzer as the alarm circuit, power supply and Software part will covers the programming of PIC micro controller using Kiel software.

II. LITERATURE SURVEY

Table – 1
Literature Survey

<i>Sr. No.</i>	<i>Title of Paper</i>	<i>Author Name</i>	<i>Published Year</i>	<i>Techniques Used</i>
1.	<i>Alcohol detection based on 8051 microcontroller</i>	<i>Harry Urkowitz</i>	2008	<i>Alcohol sensor</i>
2.	<i>Drunken Drive Protection System</i>	<i>J.Vijay, B.Saritha, B.Priyadharshini, S.Deepeka, R.Laxmi</i>	2011	<i>GSM and GPS based system</i>
3.	<i>Alcohol detection using smart helmet system</i>	<i>Sudharsana Vijayan1, Vineed T Govind2 Merin Mathew</i>	2014	<i>Alcohol sensor, RF encoder, decoder.</i>

III. HARDWARE MODULE

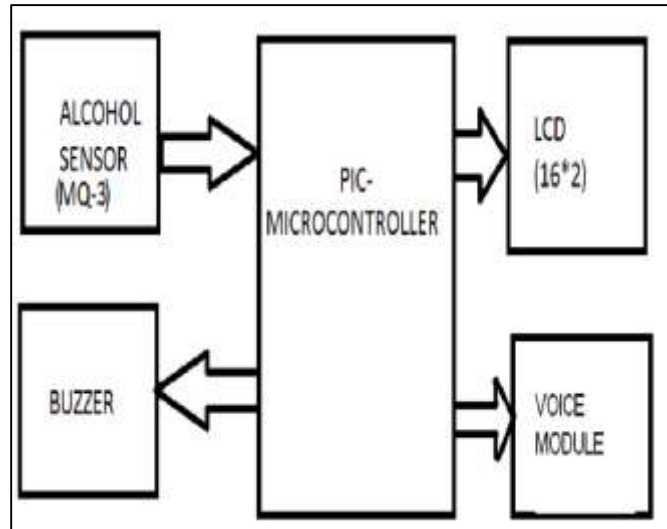


Fig. 1: Block Diagram of Hardware Module

PIC18f4550 is a 40-pin 8-bit CMOS FLASH Micro controller from microchip. The core architecture is high performance RISC CPU with only 35 single word1 instruction .Since it follows the RISC architecture, all single cycle instruction take only one instruction cycle expect for program branches which Takes two cycles .PIC18f4550 comes with 3 operating speeds with 4, 8 or 20MHz clock input. Since each instruction cycle takes four operating clock cycle, each instruction takes 20MHz oscillator used .it has two types of internal memory program memory and data memory. Program memory provided by 8K words of FLASH memory and data memory has two sources. One type of data memory is a 368 byte RAM and other 256 byte EEPROM. The core features include interrupt capability up to 40 source, power saving SLEEP mode and single 5V in circuit serial programming capability. The sink current, which indicate driving power from I/O port, is high with 25mA.power consumption is less than 2mA in 5V operating condition.

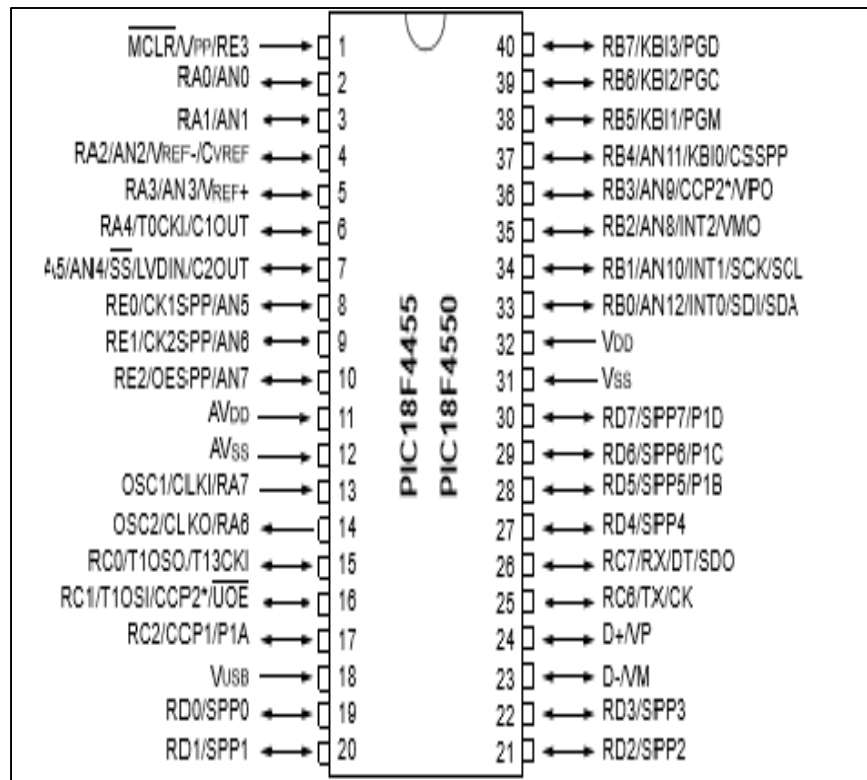


Fig. 2: PIC18F4550 Pic Microcontroller

A. The peripheral features include

- 40 pin DIP
- Three 16 bit Timer/counter.
- One 8 Bit Timer/Counter.
- 35 I/O pins with individual direction control
- High current Sink/Source 25 ma/25Ma
- DC-48MHZ external clock modes
- 16 bit wide instructions, 8 bit wide data path.
- Priority level for interrupt
- 16K Byte Flash Program Memory.
- 2048 byte RAM data memory.
- 256 byte EEPROM data memory

IV. MQ3 SENSOR

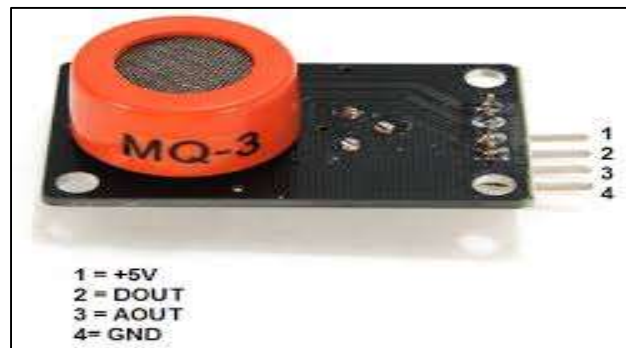


Fig. 3: MQ-3 Alcohol Sensor

Basically it has 6 pins cover and the body. We can use only 4 of them. 2 of them are used for heating purpose which is called H led between and other two are for connecting power and ground which called A and B. Then when alcohol molecule in the air meet the electrode that is between alumina and tin oxide ,ethanol burns into acetic acid then more current is produced If alcohol molecule contents is more than more current will produced. So, the current change we get the different values from the sensor. This system is quite simple. First we can use 5V and one of the H pins goes to the power and the other one is connected to the ground. And the pin A is connected between the power and the pin H and the pin B goes to the micro controller. We can use the POT resistor 100k to 470k, to getting more accurate values.

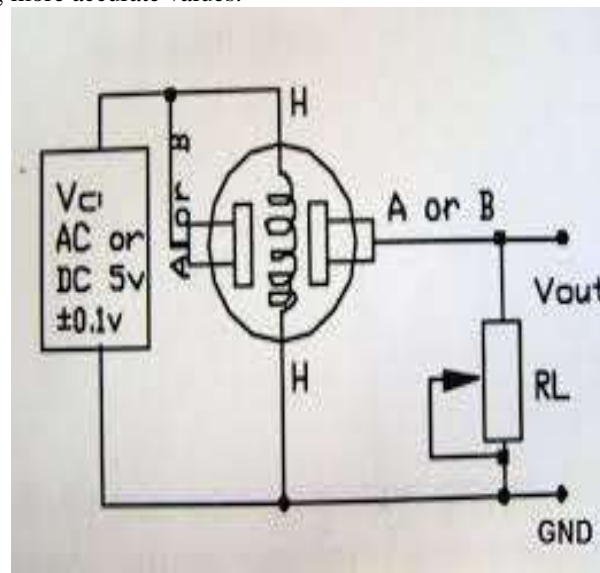


Fig. 4: Circuit Diagram of MQ-3 sensor

V. FEATURES OF SENSOR

- High sensitive to alcohol.
- Fast response and high sensitivity.
- Stable and long life.
- 5v operation
- LED's for output and power
- Low cost
- Current consumption 150 mA

VI. VOICE MODULE (APR2060)

The APR2060 is the powerful audio processor along with high performance analog to digital and digital to analog convertors .it is the fully integrated solution offering high performance and unparalleled integration with analog input, digital processing and analog output functionality.

High quality audio/ voice system with a lower bill of material cost can be implemented with APR2060.

The APR2060 is specially design for simple key trigger, user can record and play back the message averagely for1, 2 or 4 voice messages by switch. It is suitable in simple interface of need to limit the length of single message for e.g. toys. It can effectively reduce electric current consuming 10uA and Increase the using time in any project powered by batteries.

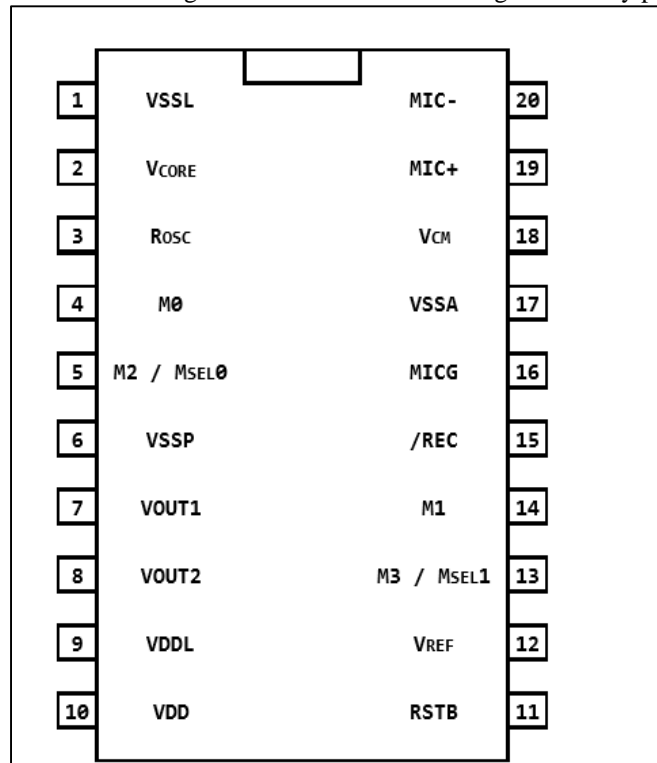


Fig. 5: pin diagram of APR2060

VII. FEATURE OF APR2060

- LED indicator for power, record mode or busy status
- Voltage 3-6v operation
- Nonvolatile flash memory technology, no battery backup required.
- Can drive speaker directly.
- Direct microcontroller interfacing connector
- Audio can be recorded by on board MIC or external source.
- 40sec of recording duration selectable in total 1, 2, 3 segments. LCD

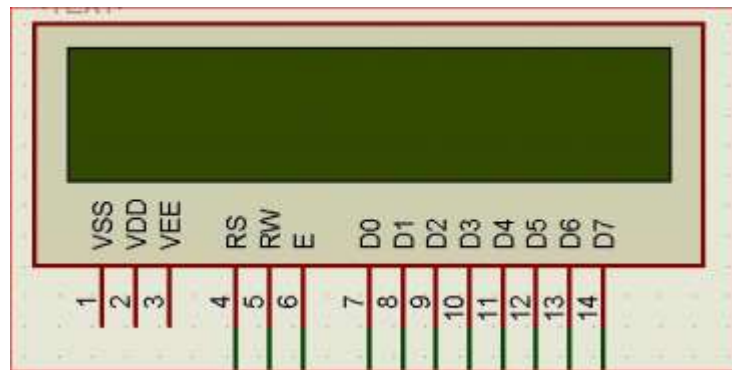


Fig. 6: LCD Diagram

It is a 16*2 LCD display and it is widely use in various electronic circuits and devices. And also use over seven segment display and other multi segment display, LED. The LCD is very economically, easily programmable, no limitation of displaying special and even custom character and so on.

A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers Command and Data.

A. FEATURES

- Cost effective
- Light in weight
- Better screen privacy
- Improve image quality and contrast
- Long life

VIII. CONCLUSION

In this way we can reduces or stop the range of alcohol consumed by students. So that no need of checking room by rector. It avoid diseases. Reduce the alcohol consumption average.

ACKNOWLEDGEMENT

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REFERENCES

- [1] Microcontroller and embedded system- Mazidi
- [2] Electronics for you
- [3] Electronics express
- [4] [www.easydriveforum.com/road accident-in-india-834.html](http://www.easydriveforum.com/road%20accident-in-india-834.html)