

An Efficient Vehicle Control System Implemented in Identification of Alcohol Detection

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Abstract—This framework is basically used to keep the street mishaps by the heavy drinkers. It has a liquor sensor put on the directing of the auto. At the point when the driver begins start, the sensor measures the substance of the liquor in his breath and consequently turns off the auto on the off chance that he is tipsy. In this framework the sensor conveys a current with a straight relationship to the liquor atoms from zero to high focus. On the off chance that the deliberate esteem achieves the edge level, transfer cut off naturally and the ringer produces sound.

Index Terms— Sensor, PCB, Relay DC motor, Buzzer, Resistor.

I. INTRODUCTION

This framework distinguishes the substance of liquor in the breath and afterward it finds the drunkards. It utilizes PIC16F877A, LCD show, MQ-3 gas sensor, hand-off and bell. The yield of the sensor is specifically corresponding to the substance of liquor expended. These days liquor sensor assume a huge part in our general public and it has different applications. This sort of sensors in autos is an incredible wellbeing factor which can be implanted in the guiding of the autos.

At the point when the driver begins the start, sensor measures the substance of the liquor in his breath and naturally turns off the auto which will stop the drink driving guilty parties. In this technique we can decrease liquor related street mishaps and henceforth these sorts of indicators have an awesome importance. It can likewise be utilized as a part of schools, universities, workplaces and some open places, for example, clinics, libraries and so forth.

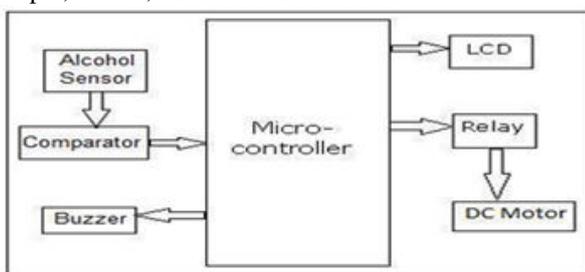


Fig. 1. Block Diagram

The whole framework utilizes the PCB Microcontroller unit (in view of AT89S52) the standard of the equipment diagram as appeared in figure 1. The center capacities modules are Alcohol Sensor module (MQ-3), Comparator,

Microcontroller (AT89S52), 16x2 LCD Display, DC Motor, transistor, voltage controller and hand-off.

A. PCB

A printed circuit board (PCB) mechanically bolsters and electrically associates electronic parts utilizing conductive tracks, cushions and different highlights characterized from copper covered on a non-conductive substrate. Every one of the segments are interfaced to the board and modified according to their usefulness. Printed circuit sheets are utilized as a part of everything except the easiest electronic items. They are additionally utilized as a part of some electrical items, for example, inactive switch boxes. It is additionally utilized as a part of this undertaking.

B. Alcohol Sensor Module

It is utilized to detect the liquor. The yield is in the simple shape. It is connected to the comparator. The simple gas sensor - MQ3 is appropriate for recognizing liquor, this sensor can be utilized as a part of a Breathalyzer. A breathalyzer is only a gadget for evaluating blood liquor content (BAC) from a breath test. It has a high affectability to liquor and little affectability to Benzene. The affectability can be balanced by the potentiometer. Sensitive material of MQ-3 as Shown in Fig. 2 gas sensor is SnO₂, which with lower conductivity in clean air. When the target alcohol gas exist, the sensor's conductivity is higher along with the gas concentration rising, use of simple electro circuit, it convert the change of conductivity to correspond output signal of gas concentration MQ-3 gas sensor has high sensitivity to Alcohol, and has good resistance to disturb of gasoline, smoke and vapor. The sensor could be used to detect alcohol with different concentration; it is with low cost and suitable for different application.



Fig. 2. Alcohol Sensor

1) Sensitivity Adjustment:

Protection estimation of MQ-3 is distinction to different sorts and different focus gases. In this way, when utilizing these parts, affectability modification is exceptionally important. It is prescribed to adjust the identifier for 0.4mg/L (around 200ppm) of liquor fixation in air and utilize estimation of load protection that (RL) around 200 K ω (100K ω to 470 K ω). At the point when precisely estimating, the correct caution point for the gas identifier must be resolved in the wake of considering the temperature and dampness impact.

2) Character configuration:

- Good sensitivity to alcohol gas
- Simple circuit
- Long life and low cost
- High sensitivity to alcohol and small towards benzene

3) Specifications:

- It needs 5V power supply
- Interface type: Analog
- Pin Definition:
 - 1-Output
 - 2-GND
 - 3-VCC
- It has high sensitivity to alcohol and small sensitivity to Benzene
- Quick response and High sensitivity
- Stable and long life
- The size of the circuit is 40x20mm

C. Comparator

The ADC0801, ADC0802, ADC0803, ADC0804 and ADC0805 are CMOS 8-bit successive approximation A/D converter that uses a differential potentiometric ladder. Which is similar to the 256R products. These converters are designed to allow operation with the NSC800 and INS8080A derivative control bus. It is in the form of TRI-STATE. The output latches directly driving the data bus. These Analog to Digital Converter appear like memory locations or I/O ports to the microprocessor and no interfacing logic is needed. Differential analog voltage inputs allow increasing the Common-mode rejection and offsetting the analog zero input voltage value. In addition, the voltage reference input can be adjusted to allow encoding any smaller analog voltage span to the full 8 bits of resolution.

Features:

- It is compatible with 8080 μ P derivatives - no interfacing
- The access time is 135 ns
- Easy interface to all microprocessors
- Works with 2.5V voltage reference
- On-chip clock generator
- 0V to 5V analog input voltage range with single 5V supply
- No zero adjust required

D. Microcontroller (AT89S52)

The AT89S52 as Shown in Fig. 3 uses low power and high-performance CMOS 8bit microcontroller. It has in programmable Flash memory. The device is manufactured using Atmel's high-density non-volatile memory technology. The gadget is good with the business standard 80C51 guideline set and stick out. The on-chip Flash enables the program memory to be reconstructed in-framework or by a standard non-unstable memory developer. By joining an adaptable 8-bit CPU with in-framework programmable Flash on a solid chip, the Atmel AT89S52 is an intense microcontroller which gives a very adaptable and savvy answer for some installed control applications. The AT89S52 gives the accompanying standard highlights: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog clock, two information pointers, three 16-bit clock/counters, a six-vector two-level interfere with engineering, a full duplex serial port, on-chip oscillator, and clock hardware. The AT89S52 is composed with static rationale for activity down to zero recurrence and backings two programming selectable power sparing modes. The Idle Mode stops the CPU while permitting the RAM, clock/counters, serial port, and interfere with framework to keep working. The Power-down mode spares the RAM substance yet solidifies the oscillator, debilitating all other chip capacities until the point that the following hinder or equipment reset.

Features:

1. Compatible with MCS-51Products
2. 4.0V to 5.5V Operating Range
3. Fully Static Operation: 0 Hz to 33 MHz
4. Three-level Program Memory Lock
5. 256 x 8-bit Internal RAM
6. 32 Programmable I/O Lines
7. Three 16-bit Timer/Counters
8. Eight Interrupt Sources
9. Low-power Idle and Power-down Modes
10. Interrupt Recovery from Power-down Mode
11. Power-off Flag

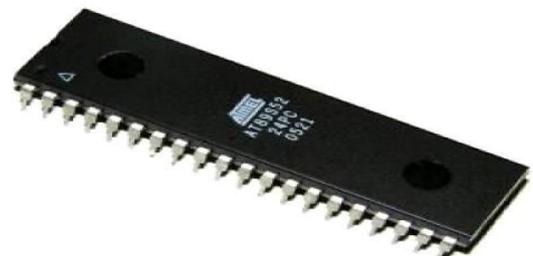


Fig. 3. Microcontroller AT89S52

E. Liquid crystal display

Introduction:

LCD (Liquid Crystal Display) screen is an electronic show module and has an extensive variety of utilizations. A 16x2 LCD show LCD show seven sections as Shown in Fig. 4 and other multi portions LEDs. The Reasons are: LCDs are monetarily minimal effort; They are effectively

programmable; Unlike in seven sections it can show all characters, liveliness et cetera. A 16x2 LCD implies it can show 16 characters for each line and there are 2 such lines. In LCD each character is shown in 5x7 pixel lattice. Generally a LCD has two sort of registers, to be specific Command and Data. The summon enlist stores the charge guideline given to the LCD. A charge direction given to the LCD to complete a predefined assignment like introducing it, cleaning its screen, setting the cursor position controlling showcase and so forth. The information that must be shown in LCD is put away in information enroll. The information is the ASCII estimation of the character to be shown on LCD.



Fig. 4. Liquid crystal display

Features:

Features: 5x8 dots with cursor Built-in controller (KS 0066 or equivalent) +5v power supply (Also available for +3v) 1/16 duty cycle

F. DC Motor

This DC engine current conveying conductor is put in an attractive field; it tends to move and experience a torque. This is known as motoring activity. At the point when attractive field and electric field associates with each other they deliver a mechanical power. The working strategy for DC engine as shown in Fig. 5 depends on this guideline. Fleming's left hand control clarifies the heading of turn this engine. In Fleming's left hand run, the forefinger, center finger and thumb finger of our left hand are stretched out commonly opposite to each other. The forefinger speaks to the course of attractive field. The center finger shows the heading of current. Lastly the thumb speaks to the heading in which the power is experienced by shaft of the dc engine.

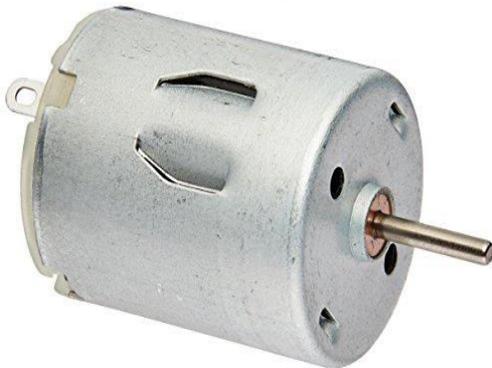


Fig. 5. DC Motor

II. METHODOLOGY

This framework consists of PIC16F877A, LCD

show, MQ-3 gas sensor, handoff and signal. The yield of this sensor is totally equal to amount of alcohol consumption. These days liquor sensor absolutely track the alcohol consumption. When these kind of sensors is placed in automobiles it will be an incredible wellbeing element. At the point when these kind of sensors is placed in automobiles it identifies the alcohol or liquor consumed driver from his breathe by measuring the substance of alcohol present in it. nce the sensor detects the liquor it sets the engine to off. In this way we can lessen the alcohol related accidents. By placing these alcohol detecting sensor in vehicles we can reduce a major number of accidents that happens daily. Majorly it can be utilized in part of School vehicles, Universities, Workplaces, Cabs, Autos and some open places, for examples health centers, hospitals, libraries and so on.

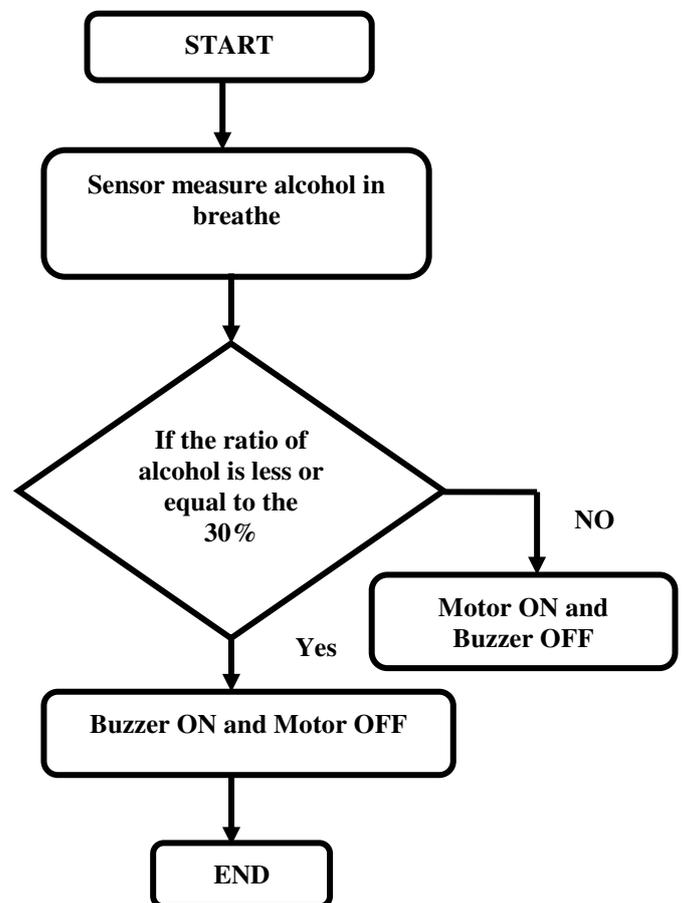


Fig. 6. Process Flow Diagram

III. RESULTS AND DISCUSSION

The circuit has alcohol sensor which measures the content of alcohol from breathe of drunken people. The output of the sensor is equal to the rate of alcohol consumption. The output of the sensor is in form of analog signal so we have to change in digital form. This process is done by using analog to digital converter of the microcontroller unit. The entire circuit is controlled by using microcontroller. When the measured alcohol content reaches 30% that is threshold the

microcontroller switches the ignition ON. Then the relay cuts off automatically. Once the value reaches threshold the buzzer produces sound. The LCD display attached to microcontroller displays the message sent from microcontroller unit.

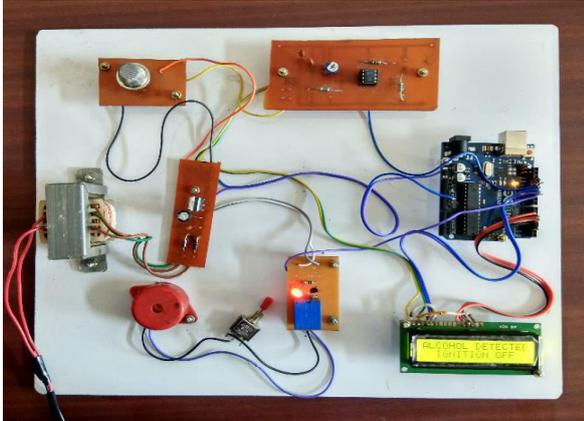


Fig. 7. Hardware Setup

IV. CONCLUSION

Our alcohol detection project has been implemented successfully. This device brings a lot of advancement and changes in our day to day life and it can be easily implemented in vehicles. It can be also used in schools, colleges, offices and some other public places such as hospitals, libraries etc. Through this project we present hardware programming of microcontroller to facilitate as alcohol sensor.

V. SOCIAL BENEFITS

In our day to day life traffic accidents takes a lot of lives. Major accidents occurs due to consumption of alcohol. This project will help our society in preservation of many lives and brings a new step in our vehicle system.

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