

DIGITILIZATION OF MEASURING FUEL SYSTEM

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ABSTRACT

The aim of the project to display the indication of fuel level by using microcontroller. This project very useful to the vehicle owner and driver to trace the fuel level in the tank. Nowadays there is no digital display concept in the vehicle. This kind of concept is very useful to the automotive industries. Here we are going to display the amount of fuel is present in the fuel tank. Using this concept. we are avoid the empty fuel level in the fuel tank. By using the microcontroller. we are develop this concept. Digital display is interfaced with microcontroller in order to get the fuel level indication. Light emitting diode is interfaced or connected with micro controller. The purpose of LED is gives and indicates the current level of position in the fuel tank. Sensor is used to find and trace the fuel level in the fuel tank. This concept is mainly useful to the automobile industries.

1. INTRODUCTION

This project very useful to the vehicle owner and driver to trace the fuel level in the tank. Nowadays there is no digital display concept in the vehicle. This kind of concept is very useful to the automotive industries. Here we are going to display the amount of fuel is present in the fuel tank. Using this concept. we are avoid the empty fuel level in the fuel tank. By using the microcontroller. we are develop this concept. This concept is mainly useful to the automobile industries.

The 8051 is an 8 bit microcontroller originally developed by Intel in 1980. It is the world's most popular microcontroller core, made by many independent manufacturers. A typical 8051 contains CPU with Boolean processor, 5 or 6 interrupts, 2 or 3 16-bit timer/counters, programmable full-duplex serial port, 32 I/O lines, RAM and ROM/EPROM in some models. The 8051 architecture is quite strange and original. One strong point of the 8051 is the way it handles interrupts.

Vectoring to fixed 8-byte areas is convenient and efficient. The 8051 instruction set is optimized for the one-bit operations so often desired in real-world, real-time control applications. The microcontroller 8051 has many prominent features suitable for such interfacing and controlling applications. They are also suitable for serial port interfacing which is very much needed for data transfer.

The official name of the EIA/TIA-232-E standard is "Interface between Data Terminal Equipment and Data Circuit-Termination Equipment Employing Serial Binary Data Interchange. The standard is simply concerned with serial data communication between a host system (Data Terminal Equipment, or DTE) and a peripheral system (Data Circuit-Terminating Equipment, or DCE). The C programming language is a general-purpose programming language that provides code efficiency, elements of structured programming, and a rich set of operators. C is not a big language and is not designed for any one particular area of application. Its generality combined with its absence of restrictions, makes C a convenient and effective programming solution for a wide variety of software tasks. Many applications can be solved more easily and efficiently with C than with other more specialized languages.

2. WORKING PRINCIPLE

Digital display is interfaced with microcontroller in order to get the fuel level indication. Light emitting diode is interfaced or connected with micro controller. The purpose of LED is gives and indicates the current level of position in the fuel tank. Sensor is used to find and trace the fuel level in the fuel tank.

3. HARDWARE REQUIREMENTS

- MICROCONTROLLER IC
- LCD
- LED
- SENSOR
- FUEL TANK
- BUZZER

4. BLOCK DIAGRAM

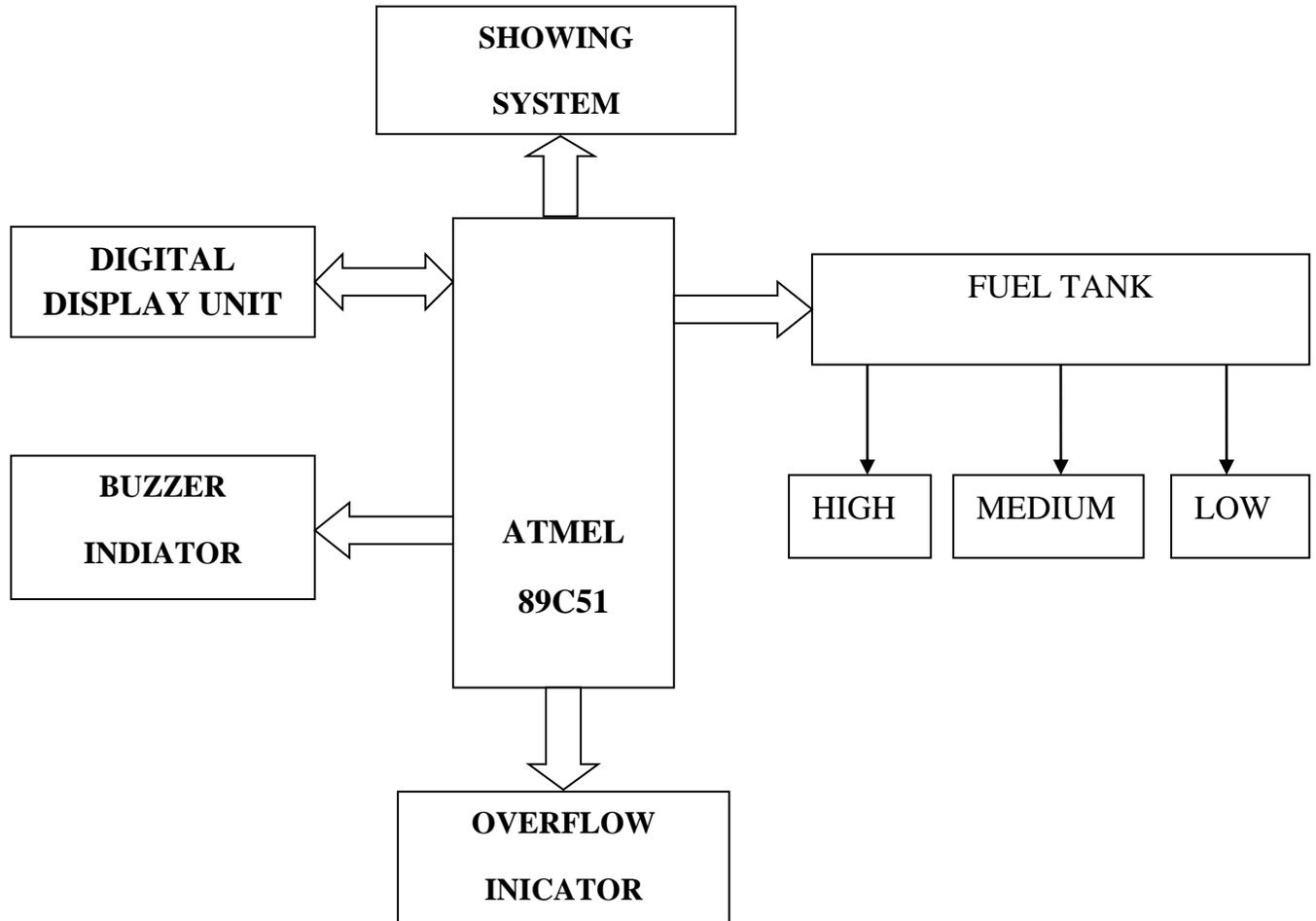


Fig 1: Block diagram

5. PIN DESCRIPTION

The most commonly used LCD found in the market today are 1 Line, 2 Line or 4 Line LCD which have only 1 controller and support at most of 80 characters, whereas LCD supporting more than 80 characters make use of 2HD44780 controllers. Most LCD with 1 controller has 14

Pins and LCD with 2 controller has 16 Pins (two pins are extra in both for back-light LED connections). Pin description is shown in the table below.

The 8-bit data pins, DB0 to DB7, are used to send information to the LCD or to read the contents of the LCD's internal registers. To display letters and numbers, we send ASCII codes for the letters A-Z, a-z and numbers 0-9 to these pins while making RS =1.

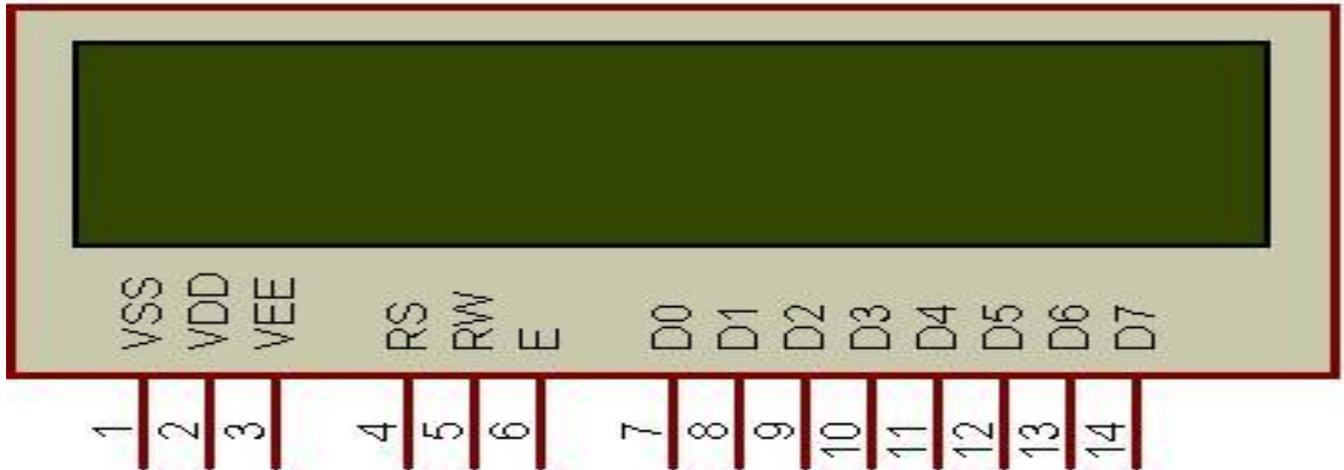


Fig 2: LCD display

6. BLOCK DIAGRAM FOR POWER SUPPLY

A Direct Current (DC) supply is needed by most circuits as a constant reference voltage. Also, some components would be damaged by the negative half-cycles

of an AC supply. A DC supply, stays at a fixed, regular, voltage all of the time, like the voltage from a battery. Following is a block diagram of a power supply system which converts a 230V AC mains supply (230V is the UK mains voltage) into a regulated 5V DC supply.

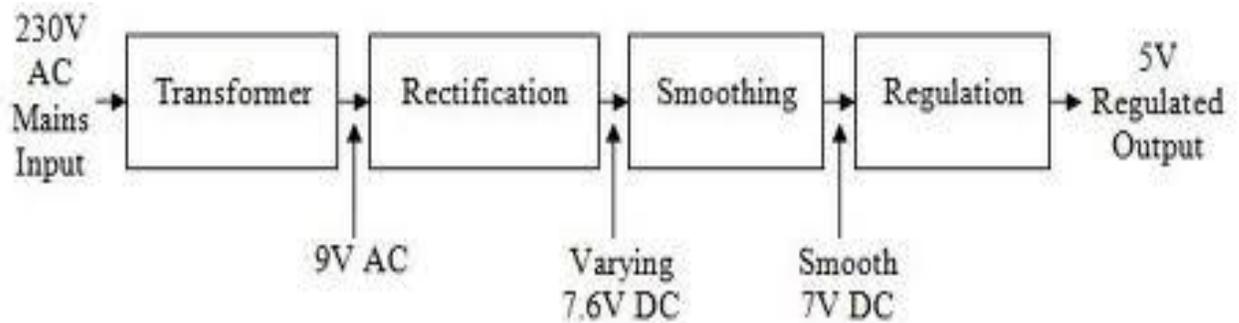


Fig 3: Block diagram for power supply

7. TRANSFORMER

A transformer consists of two coils (often called 'windings') linked by an iron core. There is no electrical connection between the coils, instead they are linked by a magnetic field created in the core. Transformers are used to convert electricity from one voltage to another with minimal loss of power. They only work with AC (alternating current) because they require a changing magnetic field to be created in their core. Transformers can increase voltage (step-up) as well as reduce voltage (step-down).

A bridge configuration that provides the same polarity of output voltage for either polarity of input voltage. When used in its most common application, for

conversion of alternating current (AC) input into direct current (DC) output, it is known as a bridge rectifier.

In the diagrams below, when the input connected to the **left** corner of the diamond is **positive**, and the input connected to the **right** corner is **negative**, current flows from the **upper** supply terminal to the right along the **red** (positive) path to the output, and returns to the **lower** supply terminal via the **blue** (negative) path.

When the input connected to the **left** corner is **negative**, and the input connected to the **right** corner is **positive**, current flows from the **lower** supply terminal to the right along the **red** path to the output, and returns to the **upper** supply terminal via the **blue** path. In each case, the upper right output remains positive and lower right output negative.

8. PIN DIAGRAM

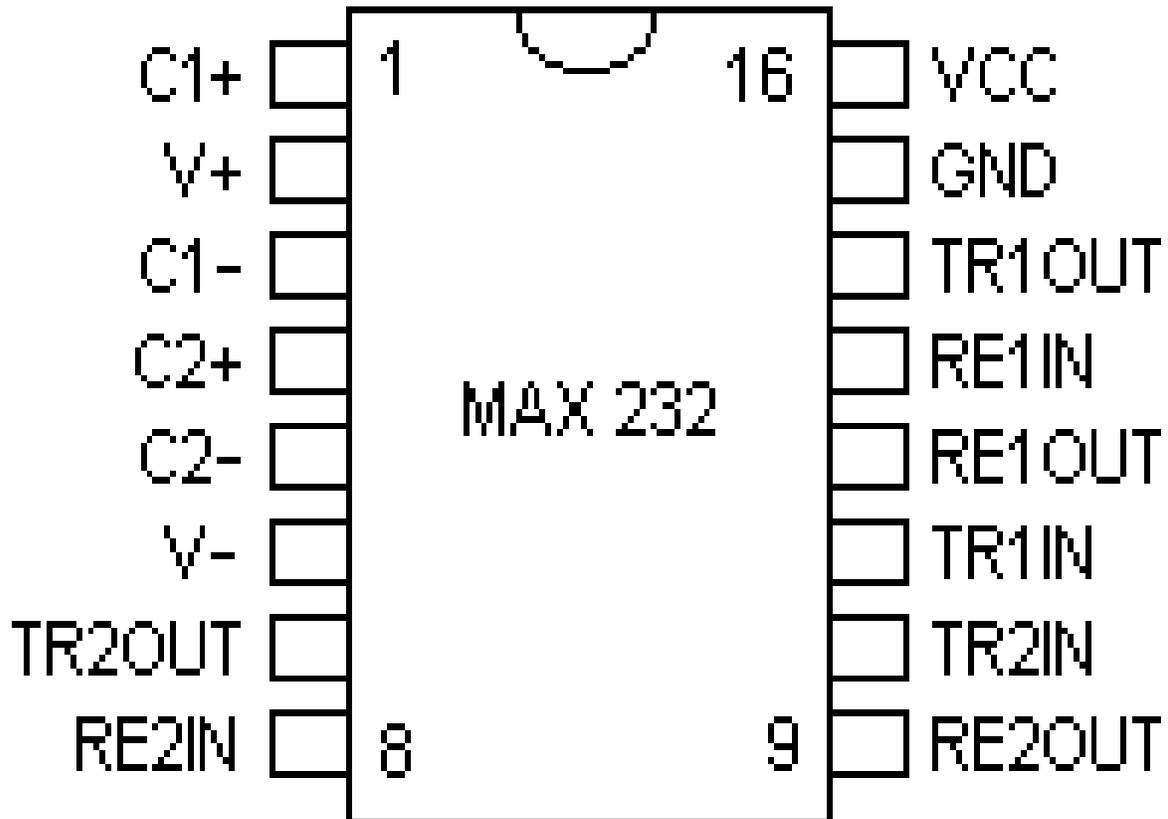


Fig 4: MAX-232 pin diagram

9. BUZZER

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or electronic. Typical uses of buzzers and beepers include alarms, timers and confirmation of user input such as a mouse click or keystroke. Early devices were based on an electromechanical system identical to an electric bell without the metal gong.

Similarly, a relay may be connected to interrupt its own actuating current, causing the contacts to buzz. Often these units were anchored to a wall or ceiling to use it as a sounding board. The word "buzzer" comes from the rasping noise that electromechanical buzzers made

9.1. Types of buzzers:

Buzzers include many different types, which are further available in different sizes and configurations to make them compatible with the builds of various devices and products.

9.2. Magnetic Buzzers:

A magnetic buzzer emits sound by way of a coil. An influx of electricity causes the coil to activate, sounding the buzzer.

9.3. Electromechanical Buzzers:

Electromechanical buzzers can incorporate many different parts in their designs. What differentiates them from other types of buzzers is that a pair of contacts is activated when current is run through the device. These devices can use a bell, but frequently do not. These types of buzzers actually make the buzzing sound that most people associate with electrical buzzers in general.

9.4. Mechanical Buzzers:

Mechanical buzzers are differentiated from other types by the fact that there is no electrical current required to activate them. The buzzer uses some sort of stored energy, usually a spring that is wound tightly. When a mechanical device is tripped, that stored energy is released into the other parts of the mechanism that actually emit the buzzing noise. The hand buzzers that some people use as practical jokes are examples of these types of buzzers. Old alarm clocks that had no batteries or power connections also employed these types of buzzers.

9.5. Piezo Buzzers:

Piezo buzzers are the types found in most desktop computers, though their low expense and good performance makes them popular in other applications, as well. The heart of the device is a piezoelectric amplifier, which is tripped when the circuit is completed. These buzzers can make many different noises, making them particularly versatile. They can emit the hard-to-ignore beep that warns of a failure when booting a computer, the ping that indicates that a car door is open or a simple buzz, depending upon what is needed.

10. CONCLUSION

The aim to display the indication of fuel level by using microcontroller is successfully designed and verified. This project will be very useful to the vehicle owner and driver to trace the fuel level in the tank.

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