International Journal of Research Publication and Reviews

Password Based Circuit Breaker

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A B S T R A C T

To avoid that we introduced the our project password based cicuit breaker using 8051.when we enter the password the 8051 store the password and verify it whenever we enter .Once we enter the password the circuit may be trun on or off with the help of the password

1. Introduction

The entire project is based on Embedded Systems. In this project Microcontroller are used which controls all the operations in regarding the password system. For this process we require the components like microcontroller ,control circuitry, power supply and key pad. This key pads are used for entering password for operating different load which are connected to the controller.

A circuit breaker isan automatically operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. Its basic function is to detect a fault condition and interrupt current flow. Unlike a fuse, which operates once and then must be replaced, a circuit breaker can be reset (either manually or automatically) to resume normal operation. When operated manually we see fatal electrical accidents to the line man are increasing during the electric line repair due to the lack of communication and coordination between the maintenance staff and the electric substation staff. In order to avoid such accidents, the breaker can be so designed such that only authorized person can operate it with a password. Here, there is also a provision of changing the password. The system is fully controlled by the 8 bit microcontroller of 16f877A family. The password is stored in an MC, interfaced to the microcontroller and the password can be changed any time unlike a fixed one burnt permanently on to the microcontroller. A keypad is used to enter the password and a relay to open or close circuit breaker, which is indicated by a lamp. Any wrong attempt to open the breaker (by entering the wrong password) an alert will be actuated, indicated by another lamp.

2. Literature Survey

The embedded systems are electronic devices which are incorporated microprocessors with in their implementations. The embedded systems designers generally have a significant grasps over hardware technologies. They use specific programming languages and software to develop embedded systems and manipulate the equipment. Embedded systems often use a slow processor and small memory size to minimize costs. An embedded system is a special-purpose system in which the computer is completely encapsulated by or dedicated to the device or system it controls. Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or a few pre-defined tasks, usually with very specific requirements.

Password based circuit breaker: A circuit breaker is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. Its basic function is to detect a fault condition and interrupt current flow. Unlike a fuse, which operates once and then must be replaced, a circuit breaker can be reset (either manually or automatically) to resume normal operation. When operated manually we see fatal electrical accidents to the line man are increasing during the electric line repair due to the lack of communication and coordination between the

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maintenance staff and the electric substation staff. In order to avoid such accidents, the breaker can be so designed such that only authorized person can operate it with a password. Here, there is also a provision of changing the password. The system is fully controlled by the 8 bit microcontroller of 16f877A family. The password is stored in an EEPROM, interfaced to the microcontroller and the password can be changed any time unlike a fixed one burnt permanently on to the microcontroller. A keypad is used to enter the password and a relay to open or close circuit breaker, which is indicated by a lamp. Any wrong attempt to open the breaker (by entering the wrong password) an alert will be actuated, indicated by another lamp.

3. Proposed Work

Microcontrollers as name suggests are small controllers. They as single chip computers that are often embedded into other systems to function as processing/controlling unit. Microcontroller – A single chip is used to controlling other devices. Any microcomputer system requires memory for storing the sequence of instructions for making up a pro-gram, parallel port or serial port for communicating with an external system, the timer for controlling purpose like generating time delays, Baud rate for the serial port, apart from the controlling unit called the Central Processing Unit.

At present if there is any maintenance work at the distribution the entire line will be turned off which causes inconvenience to the consumers. The proposed system uses a microcontroller of the 8051 family and a rectified power supply. When the proposed system is ON MC A matrix keypad is interfaced to the microcontroller to enter a password. The password entered is displayed in the LCD. The entered password is compared with password stored in the ROM of the microcontroller. If the password entered is correct, then only the line can be turned ON/OFF. A relay is controlled by a relay driver IC, which is interfaced to the microcontroller also it is interfaced with the MC .Whenever there is a maintenance work in the main line ,the line can be disconnected only when the password entered will match with the stored password. The relay ON/OFF operation will be indicated by the LED's; also it sends a message to the receiver about the line disconnection. As soon as the maintenance work is finished then line man should enter the same password as used to disconnect the line earlier.

ATmega16 is an 8-bit high performance microcontroller of Atmel's Mega AVR family with low power consumption. Atmega16 is based on enhanced RISC (Reduced Instruction Set Computing, Know more about RISC and CISC Architecture) architecture with 131 powerful instructions. Most of the instructions execute in one machine cycle. Atmega16 can work on a maximum frequency of 16MHz

ATmega16 has 16 KB programmable flash memory, static RAM of 1 KB and EEPROM of 512 Bytes. The endurance cycle of flash memory and EEPROM is 10,000 and 100,000, respectively.
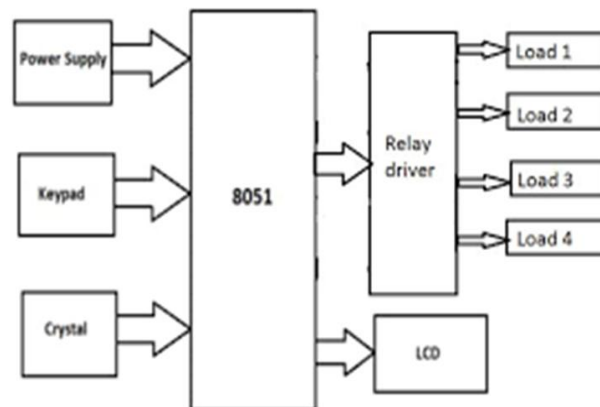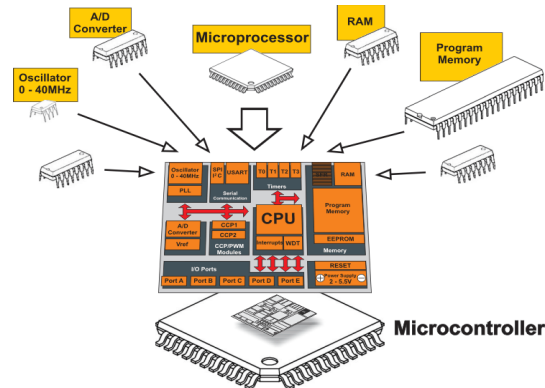

Fig 1 Microcontrollers

ATmega16 is a 40 pin microcontroller. There are 32 I/O (input/output) lines which are divided into four 8-bit ports designated as PORTA, PORTB, PORTC and PORTD.

ATmega16 has various in-built peripherals like USART, ADC, Analog Comparator, SPI, JTAG etc. Each I/O pin has an alternative task related to in-built peripherals. The following table shows the pin description of ATmega16.

When we enter the password through key pad first of all the password is load in controller ,the controller converts the password in BINARY, then controller compare the password with MICRO CONTROLLER password , If password is match with MICRO CONTROLLER password , then controller switch ON the relay, the relay is also connected with O\P device and we get output. But if we enter three time wrong password then buzzer is switched ON. By pressing RST button we can switched OFF the buzzer.

4. Result and Implantation

When the both loads we connected to the realy and we provided the passwords to each loads and we gave 5v power supply and verified the outputs with help of keyboard and power is breaked through password.

5. Conclusion

In the days there is lot of power disspation occurs ,when the power disspation occurs in one palce then the electrical line man repair that but in that so many electical accident occurs due to the flase current produce in it .For that purpose we develop the password based circuit breaker.In these we use the 5v power supply and relay which can allow or breaks the current and a lcd that is liquid crystal dispalyand matrix keybord with these we enter the password.These project mainly about the line man safety.

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