

PASSWORD BASED CIRCUIT BREAKER

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ABSTRACT - This paper presents the design and implementation of password based circuit breaker. As in today's world ensuring the safety and security of our electrical system is very crucial. In most of the cases when a fault is occurred electrical technician goes on work by just turning of that breaker without any additional protection , so there in most of cases a chance that one can turn on the breaker and the person working on transmission line get a shock and may have a fatal. So to address this problem have created a solution , while closing or opening of circuit breaker it will require so anyone going on the field will require a password for opening and closing of circuit breaker.

In short, our Password based circuit breaker add an extra layer of security to your electrical system, keeping it safe from unauthorized access and potential danger . It's simple effective and gives you peace of mind knowing that power is in good hands.

INTRODUCTION -

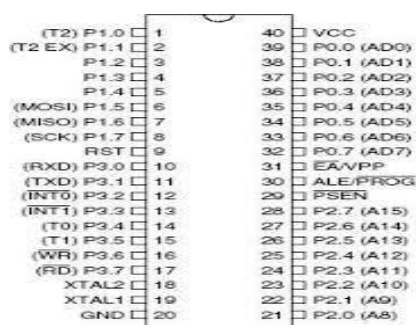
A circuit breaker is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. Its basic function is to detect a fault condition and interrupt current flow. Unlike a fuse, which operates once and then must be replaced, a

circuit breaker can be reset (either manually or automatically) to resume normal operation. The system is fully controlled by the 8-bit microcontroller of the 16f877A family. The password is stored in an EEPROM, interfaced to the microcontroller, and can be changed at any time unlike a fixed one burnt permanently onto the password and a relay to open or close the circuit breaker, which is indicated by a lamp. Any wrong attempt to open the breaker (by entering the wrong password) will actuate an alert, indicated by another lamp

The password-based circuit breaker is a simple project that helps in controlling the electrical lines with the help of a password. The control (ON/OFF) of the electrical lines lies with the line man. This project is arranged in such a way that maintenance staff or line man has to enter the password to ON/OFF the electrical line. Now, if there is any fault in the electrical line, then the line man will switch off the power supply to the line by entering the password and comfortably repair the electrical line. After repairing the line, the line man can switch on the supply to the particular line by entering the password. Separate passwords are assigned for each electrical line.

EXPLANATION OF COMPONENTS:

A. AT89S52: The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density non volatile memory technology and is compatible with the industry standard 80C51 instruction





manage a large amount of voltage/current on the other side but there is no chance that these two voltages mix up.

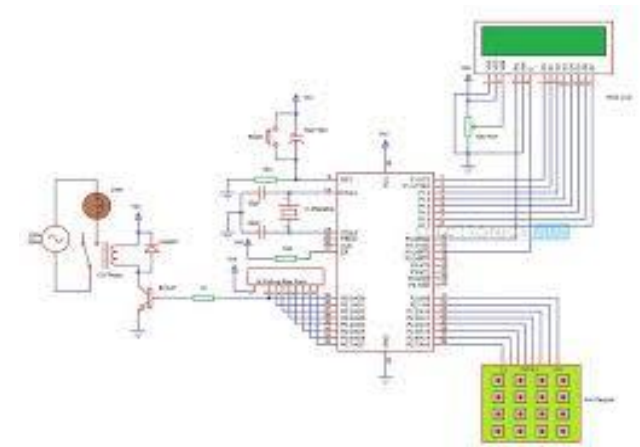
(FIG. RELAY DRIVER)

D. KEYPAD - we are using 16x8 keypad which has 4x4 buttons which are require for entering the password which will be in number, keypad helps us o enter proper password for that particular load, after entering that proper password particular load will be switch on.



(FIG KEYPAD.)

Internal structure Schematic Diagram:



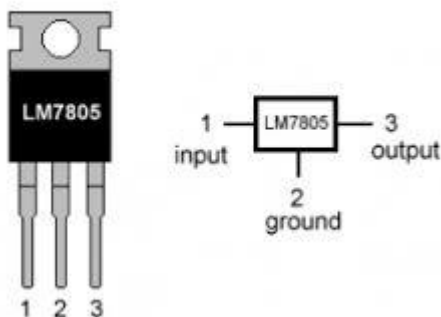
FIG(CIRCUIT DIAGRAM)



(FIG. MICROCONTROLLER AT89S52)

B. IC7805- The LM78XX/LM78XXA series of three-terminal positive regulators are available in the TO220/D-PAK package and with several fixed output voltages, making them useful in a Wide range of applications. Each type employs internal current limiting, thermal shutdown and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output Current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages current

LM7805 PINOUT DIAGRAM



(FIG. IC 7805)

C. RELAY DRIVER- A relay is an electrically controllable switch widely used in industrial controls, automobiles, and appliances. The relay allows the isolation of twoseparate sections of a system with two different voltage sources i.e., a small amount of voltage/current on one side can

RESULT – When the load is off LED shows OFF indication for all four loads.

And when password is entered particular load gets ON and LED also show ON indication shows as below:



CONCLUSION: Hence we have made a solution for the nearmiss or the accident which is caused by misleading, miscommunication taking place on a electrical transmission line by just simply providing a password for particular breaker for closing and opening.

References:

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