

Electric Line Man Safety with Password Based Circuit Breaker

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Abstract: 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 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. This ensures security of the worker because no one can turn on the line without his permission. The system is fully controlled by the 8 bit microcontroller of 8051 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 LED..

Keywords: OTP, GSM, Circuit breaker; Password, Wireless communication

I. INTRODUCTION

Nowadays, electrical accidents to the line man are increasing, while repairing the electrical lines due to the lack of communication between the electrical substation and maintenance staff. This project gives a solution to this problem to ensure line man safety. In this proposed system the control (ON/OFF) of the electrical lines lies with 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 electrical line then line man will switch off the power supply to the line by entering password.

This system is fully controlled by a microcontroller from the family. A matrix keypad is interfaced to the microcontroller to enter the password. The entered password is compared with the password stored in the ROM of the microcontroller. If the password entered is correct, then only the line can be turned on/off. The activation/deactivation of the circuit breaker is indicated by a lamp that turns on or off.

Ultra sonic sensors are the devices that use electrical –Mechanical energy transformation to measure to distance from the sensor to the target object. These sensors are categorized into two types according to their working phenomenon piezoelectric sensors and electro static sensors. Here we are using the piezoelectric principle. PIR sensors are small, inexpensive, low power, easy to use and don't wear out. These sensors allow to sense motion, almost always used to detect whether a human has moved in or out of the sensors range

II. PROPOSED METHODOLOGY

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 the GSM modem will send the message to the receiver. 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

GSM modem .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

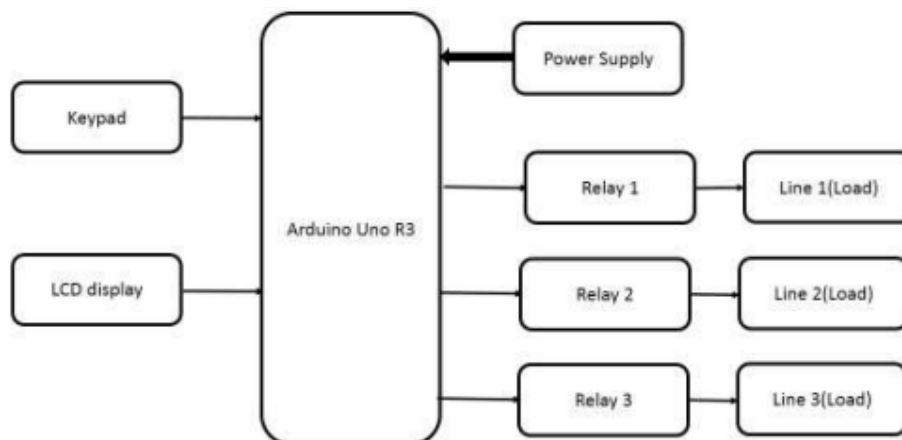
Aim: It can work on a single given known password .No other person can reclose the breaker until the stored password is entered. It gives no scope of password stealing. It is effective in providing safety to the working staff

III. PROBLEM STATEMENT/ OBJECTIVE

Electricity transmitted through power lines destined for commercial, industrial and residential use can involve hundreds of thousands of volts and high currents. Inevitably, there is an element of danger in measuring the voltage on a transmission line because of the need to . Inevitably, there is an element of danger in measuring the voltage on a transmission line because of the need to Nonetheless, are various occasions when contact is made. This project work password based phase line controller is a simple project that helps in controlling the electrical line with help of a password. Now a days electrical accidents to the line men are increasing while repairing the electrical lines. This is due to the lack of proper communication between the electrical sub -station and the maintenance staff.

This project gives a solution to this problem to ensure the safety of the line man. In this proposed project work, the control (ON/OFF) of the electrical line lies with the line man. The concept is designed such that maintenance staff or the line man has to enter the password to switch ON/OFF the electrical line. If there is any fault in the electrical line or any repair is to be done to the line, then the supply to the electrical line is cut off by entering the password and can comfortably repair the line After repairing the line, by entering the password again, supply to the electrical line will be restored. Separate passwords can be assigned to different electrical phase lines. The system is designed with three outputs with three different passwords. At each output a relay is connected and this relay contact is used to make or break supply to the electrical line.

IV .BLOCK DIAGRAM



V. CONCLUSION

It can work on a single given known password. No other person can reclose the breaker until the stored password is entered. It gives no scope of password stealing. It is effective in providing safety to the working staff. It is economical and it can be easily installed. .It can be concluded that the proposed system can be used as an effective application in the present working system and provides safety to lineman and also corrective measures can be taken after HT wire sag intimation

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