

Password Based Circuit Breaker for Electrical Line Man Safety

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ABSTRACT

Along with the constant improvement of different electronic devices, the safety of line man has also become a matter of great concern, as the lives of linemen are at risk while they work by switching off the circuit breakers, because even after the circuit breaker has been turned off, someone can unknowingly turn it on while the lineman is still working. Password Based Circuit Breaker is a simple project that helps in controlling the electrical lines with the help of a password. 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 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 the line man will switch off the power supply to the line by entering password and comfortably repair the electrical line, and after coming to the substation line man switch on the supply to the particular line by entering the password. Separate passwords are assigned for each electrical line.

I. INTRODUCTION

A circuit breaker is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by excess current from an overload or short circuit. Its basic function is to interrupt current flow after a fault is detected. 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. Circuit breakers are made in varying sizes, from small devices that protect low-current circuits or individual household appliance, up to large switchgear designed to protect high voltage circuits feeding an entire city. The generic function of a

circuit breaker, or fuse, as an automatic means of removing power from a faulty system is often abbreviated as OCPD (Over Current Protection Device).

All circuit breaker systems have common features in their operation, but details vary substantially depending on the voltage class, current rating and type of the circuit breaker.

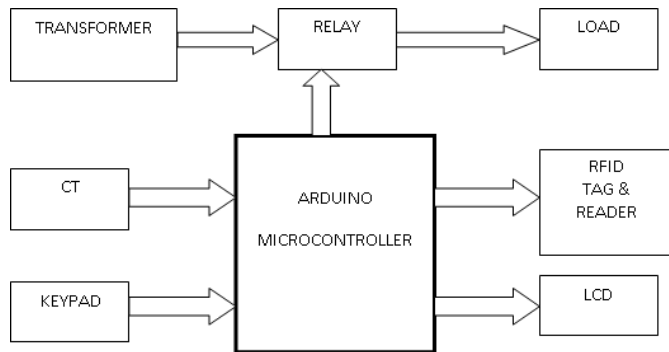
The circuit breaker must first detect a fault condition. In small mains and low voltage circuit breakers, this is usually done within the device itself. Typically, the heating or magnetic effects of electric current are employed. Circuit breakers for large currents or high voltages are usually arranged with protective relay pilot devices to sense a fault condition and to operate

the opening mechanism. These typically require a separate power source, such as a battery, although some high-voltage circuit breakers are self-contained with current transformers, protective relays, and an internal control power source

A lot more research are going on developing new topologies and control strategies for the safety system.

II. EXISTING SYSTEM

In existing system, The lineman can't possible to control the supply system, so there is a possibility of someone else interfering the system and it will even dangerous to his life. The existing system, lineman will go to every circuit breaker source and check it. So it will make more time and difficulties in his work



III. PROPOSED SYSTEM

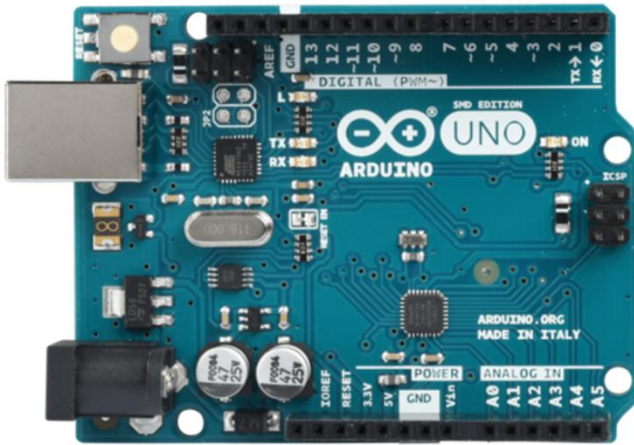
A circuit breaker is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. Its basic function is to detect a fault condition and interrupt current flow. Unlike a fuse, which operates once and then must be replaced, a circuit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

also a provision of changing the password. The system is fully controlled by the Arduino controller family. The password is stored in an, interfaced to the Arduino and the password can be changed any time unlike a fixed one burnt permanently on to the Arduino. 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. Index terms:, Arduino, LCD, Transformer, RFID Reader, Load, Relay, Relay Driver. Nowadays, electric injuries to the line man are growing, while repairing the electrical lines because of the dearth of communiqué between the electric substation and renovation staff. This task gives a technique to this trouble to ensure line man protection. In this proposed device the control (ON/OFF) of the electrical strains lies with line man. This undertaking is organized in this sort of way that renovation workforce or line guy has to enter the password to ON/OFF the electric line.

Now if there is any fault in electric line then line man will transfer off the power deliver to the line via entering password and without difficulty repair the electrical line, and after coming to the substation line guy switch on the deliver to the specific line with the aid of entering the password.

ARDUINO

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter.



"Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous versions, see the index of Arduino boards.

RELAY

The relay is the device that opens or closes the contacts to cause the operation of the other electric control. It detects the intolerable or undesirable condition with an assigned area and gives the commands to the circuit breaker to disconnect the affected area. Thus protects the system from damage.

RFID

Radio Frequency Identification (RFID) is the wireless non-contact use of radio frequency waves to transfer data. Tagging items with RFID tags allows users to automatically and uniquely identify and track inventory and assets. RFID takes auto-ID technology to the next level by allowing tags to be read without line of sight and, depending on the type of RFID, having a read range between a few centimeters to over 20+ meters. RFID has come a long way from its first application of identifying airplanes as friend or foe in World War II. Not only does the technology continue to improve year over year, but the cost of implementing and using an RFID system continues to decrease, making RFID more cost-effective and efficient.

IV. CONCLUSION

It can work on given known password and it gives no scope of password stealing. It ensures the line man safety and it reduces load demand in the distribution side. There is also a provision of changing the password. The electric lineman safety system is designed to control a circuit breaker with help of a password and RFID. OTP generation, OTP verification and scanning of the tags are the major tasks involved in this system. RFID is the main attraction of this project. It provides a new approach to the security of the lineman and completely eliminates the accidents to the lineman due to electric shock during the electric line repair. This system can also implement in many other public areas also. It has been developed by integrated features of all the hardware components used. It provides a new approach to the security of the lineman and it completely eliminates the electrical accidents to the lineman during the electric line repair

V. REFERENCES

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