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Design and implementation secured electric fault indication in PSDP using PIC controller

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Abstract: Electrical energy is very imperative for ever day life and a spine for the industry. Electricity is in discipline to our daily life with increasing need of electricity the power theft is also increasing power theft is a problem that continues to plague power sector across the whole country the objective of this project is to design a system in order to avoid the theft of electricity. The use of the electricity due to theft using GSM module. In order to integrate the various parts together we must first properly understand the working of the different parts to be integrated together. A brief study is alone on the components and the technology which were going to use in our project. In this project, the basic concepts behind RFID technology are introduced, and the associated security issues and threats in using RFID technology, along with possible measures on how to tackle them, are discussed. The objective is to deliver a greater understanding of the security related aspects of this technology

Key Words: PSDP-Power supply distribution point, GSM-Global system for mobile communication .RFID-Radio frequency identity module.

I. INTRODUCTION

In Current electricity distribution system does not provide any kind of security for Power line cables .In these system one can easily access electricity. To overcome the limitations, we have decided to use the new technology which increase efficiency, productivity and enhance user satisfaction for electricity system such as GSM technology.

Transmission line such as cable, power line or telephone line is used to transfer the electrical signal from one device to other device. It is used in T.V. connection, power line is used to Home or industrial power, and telephone line for telephones. It is very wide network of transmission line. If there is problem due rain fall or other problems there will chances for occurring the short circuit or open circuit. It is very difficult to detect the exact fault, a technician comes and goes for whole transmission line, it is hard and time consuming process. So to detect the problems in cable or power line our group has to make a transmission line fault detector.

In our project, the transmitter section is used to detect for indication of fault as open circuited / short circuited or no fault in the line. the transmitter section which can be indicate circuit as indicating about fault i.e. SHORT CIRCUITED/ OPEN CIRCUITED or NO FAULT..As if there is problem in transmission line it detects and coded format indicate the status about fault. Detected fault in transmission line using fault indication module will display on mobile phone through the SMS.

II. METHODOLOGY

1) RFID technology:
RFID and barcodes are similar in that they are both data collection technologies, meaning they automate the process of collecting data. One advantage of RFID is that the technology doesn't require line of sight. RFID tags can be read as long as they are within range of a reader. RFID systems consists of an antenna and a transceiver, which read the radio frequency and transfer the information to a processing device, and a transponder, or tag, which is an integrated circuit containing the RF circuitry and information to be transmitted. RFID systems can be used just about anywhere, from clothing tags to missiles to pet tags to food anywhere that a unique identification system is needed. Its applications that promise to increase efficiency and productivity.

2) GSM technology:
Global System for Mobile Communication. Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. GSM is the name of a standardization group established in 1982 to create a common European mobile telephone standard that would formulate specifications for a pan-European mobile cellular radio system operating at 900 MHz. The SIM300 is a Tri-Band/Quad-Band GSM/GPRS solution in a compact plug-in module. The leading features of SIM300/340 make it ideal for application, such as WLL applications and handheld devices. An embedded Powerful TCP/IP protocol stack

Fig-1: GSM module

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SIM300 Hardware Features:

- The Vext level of SIM300 is the 3.0V/60mA.
- The Vext level of SIM100S is the 2.8V/10mA.
- The customer may use Vext to drive the other IC, for example LCD and serial port **IC.**

III. BLOCK DIAGRAM

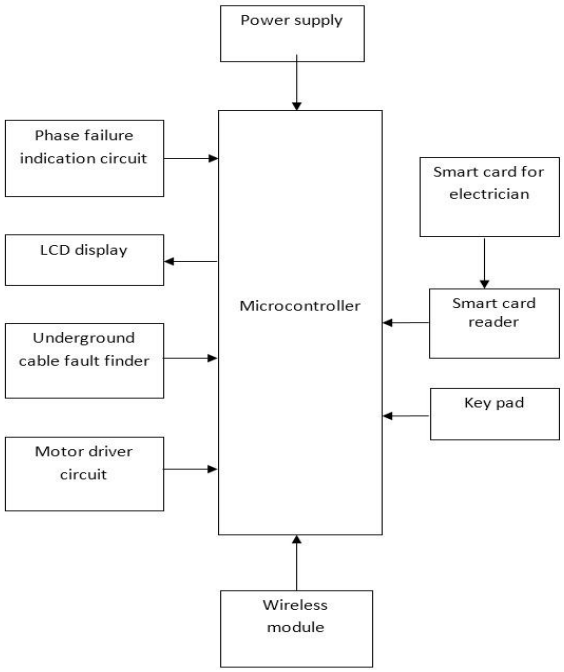

Fig-2: Block Diagram of Site Station

IV. BLOCK DIAGRAM EXPLAINATION

3) Microcontroller
The signals from the RFID reader are given to the microcontroller. Microcontroller processes all these signals and gives data to LCD display.

4) RFID reader
Radio Frequency Identification (RFID) technology is a non-contact, automatic identification technology that uses radio signals to identify, track, sort and detect a variety of objects including people, vehicles, goods and assets without the need for direct contact (as found in magnetic stripe technology) or line of sight contact (as found in bar code technology).

5) RFID tags
An RFID tag, or transponder, that carries object-identifying data. Each tag contains a unique identity code

6) LCD display
Liquid Crystal Display which is commonly known as LCD is an Alphanumeric Display it means that it can display Alphabets, Numbers as well as special symbols thus LCD is a user friendly Display device which can be used for displaying various messages unlike seven segment display which can display only numbers and some of the alphabets.

7) Motor driver IC
This circuit is used to drive dc motor. Motor is an output device; its speed will be varied according to the speed set by the switches.

The speed can be varied by varying the voltage given to the PWM converter (using keypad). The speed of DC motor is directly proportional to armature voltage and inversely proportional to flux. By maintaining the flux constant, the speed can be varied by varying the armature voltage.

8) MAX232
MAX232 IC is used for serial communication.MAX232 is compatible with RS-232 standard, and consists of dual transceiver. Each receiver converts TIA/EIA-232-E C levels into 5V TTL/CMOS levels. Each driver converts TTL/COMS levels into TIA/EIA-232-E levels.

9) RF transmission / reception
RF refers to radio frequency, the mode of communication for wireless technologies of all kinds, including cordless phones, radar, ham radio, GPS, and radio and television broadcasts. In our project, we have successfully implemented RF technology for data transmission as well as reception.

Features:-

- Operating Voltage 5.0V ± 0.5V.
- Operating Current =5.5mA @5.0V
- Operating Principle Monolithic super heterodyne receiving
- Modulation OOK/ASK
- Frequency: 2.4 GHz
- Bandwidth: 2MHz.

V. ADVANTAGES

- Eliminates the continuously monitoring, it facilitates 24 hours a day, 365 Days in year communication between system and user.
- Commands can be given through remote place, directly to the machine.
- By further modification security system can be added.
- Entire control is password protected.
- Easy to install & simple in operation.
- Low cost, high reliability & flexibility.

VI. APPLICATION

- In Current electricity distribution system, does not provide any kind of security in these system one can easily access electricity. To overcome the limitations, we have decided to use the RFID technology for security
- If fault is occurring in power line cables, we can easily identify the fault.
- Using this system, we can provide phase fault detection.

VII. POSSIBLE OUTCOMES

We can use the camera which will be fitted on the distribution points or we can use the camera to find the person which can access electricity in unauthorized way.

VIII.CONCLUSION

In our project-till the date we have designed and simulated the power supply for 5v and motor driver circuit for closing and opening of door. This wireless technique based system is much useful to detect the stealing of the electricity worldwide. To control the revenue losses the authorized officials needs to detect the theft of the electricity i.e. the unauthorized consumption of the electricity. Hence it is the best way to prevent from the electricity theft and for finding cable faults.

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