

Smart Electric Distribution Pole with GSM based Network and Reduce the Losses

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Abstract— The purpose of this project is to acquire the remote electrical parameters like Voltage and current of consumer meter through Smart pole and send these real time values over GSM network using GSM Modem/phone at Electricity station. This project is also designed by protect the electrical circuitry to operating an Electromagnetic Relay. Same the main purpose of this project is by disconnect the electricity of any consumer remotely if he is not paying electrical bill on time.

I. INTRODUCTION

The time complicated interlocking and operation controlling requirements usually noticed in the Smart pole working, which lead to necessity of automation of the undergoing process. Smart pole automation, which is the creation of a highly reliable, self-healing power system that rapidly responds to real time events with appropriate actions, ensures to maintain uninterrupted power services to the end users.

If any consumer is not paying bill then from the office end operator will send specific code to stop the connectivity of the consumer meter from smart pole. If he pays the bill then he will reconnect their connection without going to that place. The monitoring mobile is present in the main station. The microcontroller at the Smart Pole monitors and captures the current, voltage and temperature values for a particular period of time interval. A embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are ADC and Microcontrollers. Microprocessors are commonly referred to as simply accept the inputs, process it and gave the output.

II. BLOCK DIAGRAM

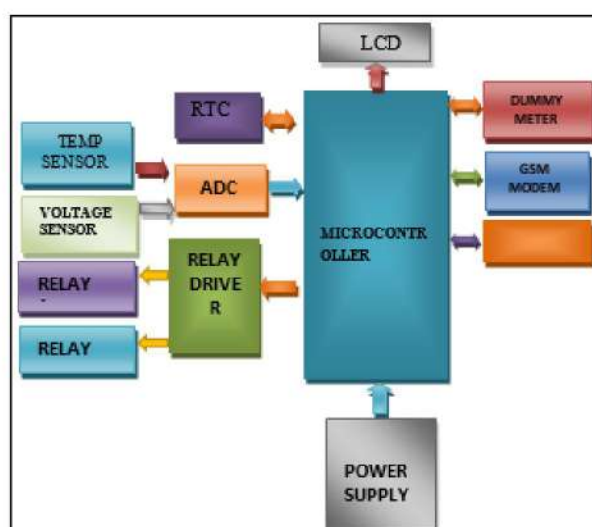


Fig. 1: smart pole with GSM network”.

A. Micro-controller board:

It is a low power high-performance CMOS 8-bit microcomputer with 64K bytes of Flash Programmable and Erasable ROM.

B. Memory Block:

A larger amounts of static data Stroed to be (USB drives) a specific type of EEPROM such as flash memory is more Economical than traditional EEPROM devices

C. ADC:

A/D converter is that it can continuously follow the input signal and give updated digital O/P data if the signal doesn't change too rapidly.

D. Real Time Clock (RTC):

The DS1307 serial real-time clock (RTC) is a lack of power, full binary coded decimal (BCD) clock/calendar plus 56 bytes of NV SRAM.

E. Display Block:

In this project, we are using 16X2 LCD displays, for displaying meter reading with current date and time.

F. Power Supply:

The power supply depends upon the power requirement and this requirement is determined by its rating. For our project we require + 5 Volt.

III. DESIGN AND WORKING

This project continuously monitors the load conditions of the Smart pole. It also monitors the load condition of the devices present in the Smart pole. If the load increases beyond the Smart pole rated capacity, the microcontroller will automatically send SMS to shut down the Smart pole and intimates the same to the operator by sending a message through a GSM modem.

Whenever the temperature of transformer increase temperature sensor will send signal to microcontroller through ADC then the microcontroller.

Voltage sensor will be used to check the power supply of particular area if power supply is off it will send message through GSM to main station.