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Literature Review on Smart Energy Meter

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ABSTRACT: This paper proposed and demonstrated Smart Energy Meter that the users will be able to monitor their current power consumptions (bill) anytime from anywhere by using their mobile phone via. This concept provides a cost efficient manner of electricity billing. The present energy billing systems are discrete, inaccurate, costly and slow. The major drawback of traditional billing system is power and energy theft. The GSM technology is used so that the consumer would receive messages about the consumption of power (in watts) and if it reaches the minimum amount, it would automatically alert the consumer to recharge.

KEYWORDS: Microcontroller AT89S52 ,GSM module , MAX232 , 1 ph energy meter

I. INTRODUCTION

The main objective of the project is to develop a GSM based energy meter reading system and load control through SMS. Electricity department sends employees to take meter reading every month, which is an expensive and time consuming job. The proposed project provides a convenient and efficient method to avoid this problem. The electricity department and the user can get the readings of the energy meter of consumers via SMS. The loads can also be controlled by the user of this system via SMS using this project. A microcontroller input is effectively interfaced to a digital energy meter that takes the reading from the energy meter and displays the same on an LCD. The reading of the energy meter is also sent to the control room by an SMS via SIM loaded GSM modem. This GSM modem can also receive commands from the cell phone to control the owner's electrical loads. It uses a standard digital energy meter that delivers output pulses to the microcontroller to perform counting for necessary action. On receiving command. It can switch ON/OFF the loads.

II. LITERATURE SURVEY

A new concept of energy meter will be discussed, where maximum demand of energy of a consumer will be indicated in the meter used by the consumer. After exceeding the maximum demand, the meter and hence the connection will automatically be disconnected by an embedded system inserted in the meter itself [1] . GSM MODULE SIM 300 is used to produce communication between load circuit and utility side. We actually have used max232 along with DB9 connector to interface it [2] . The system consists of the electricity meter which measures the electricity bill and informs the consumer about the number of units consumed and associated costs with it. The microcontroller coordinates the whole system with the help of its different components connected to it [4] .

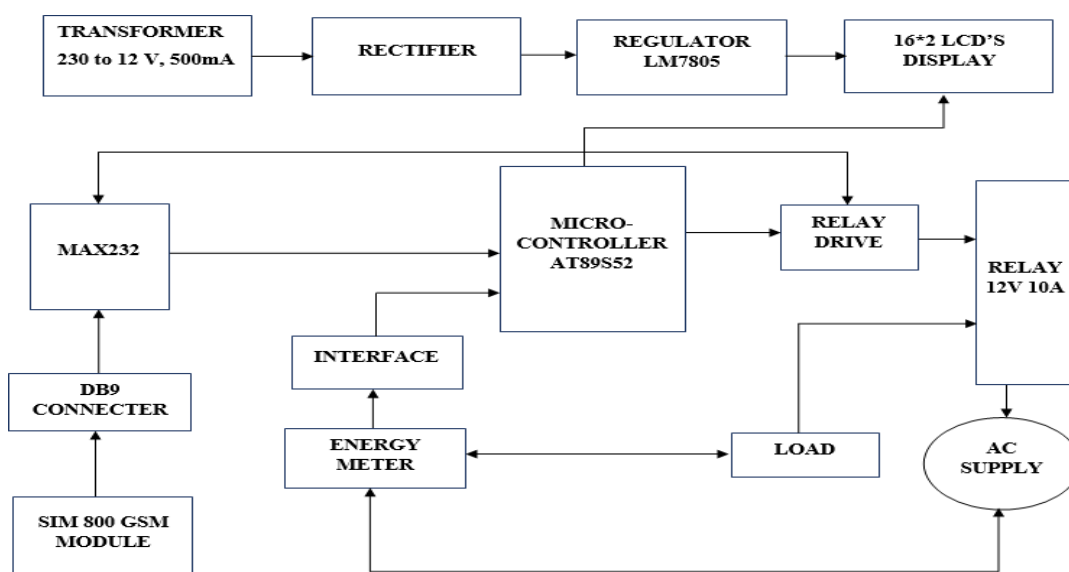
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III. BLOCK DIAGRAM



DESCRIPTION OF BLOCK DIAGRAM

- This power meter billing plus load control using GSM system is directly connected with 230V ac. Because this system mostly consists of electronic components which are operated at 5 or 6V dc therefore 230v ac is stepped down to 9 or 6v ac with the help of step down transformer. Then these ac voltages are converted into dc with help of bridge rectifier and then these are regulated into 5V dc with the help of voltage regulated LM 7805. LCD display, Max232, relay driver and microcontroller are powered up with this voltage regulator. Microcontroller is the basically main intelligent controller of this system. It is interfaced with relay driver, energy meter, LCD display and GSM modem with the help of interfaced device MAX 232.
- The energy meter is interfaced to a microcontroller of AT89S52. The energy meter readings are also read by the microcontroller and displayed on an LCD Screen, this data is also sent via sms through a GSM modem interfaced to the microcontroller.
- The GSM modem also has sms receiving capability. On receiving particular user request, it sends required signal to the microcontroller in order to do counting for required operation.

IV. ADVANTAGES

- Better customer service.
- The system is more costly, more reliable and more efficient as compare to old system.
- Maintenance is very less and higher efficiency.
- Economical and simple to use.

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V. APPLICATION

- This power meter billing plus load control using GSM system could be installed within domestic and commercial building for power meter billing and load control.
- In conventional way for taking the energy meter reading, energy department sends their related person to take the energy meter reading which is so much time consuming and expensive way but by using this power meter billing plus load control using GSM system energy department can save its time and cost.

VI. CONCLUSION

This system consists of the electricity meter which measures the electricity bill and informs the consumer about the number of units consumed and associated costs with it. The design of Smart Energy meter using GSM technology can make the users to pay for the electricity before its consumption. In this way, consumers hold credit and then use the electricity until the credit is exhausted. Smart energy meters will bring a solution of creating awareness on unnecessary wastage of power and will tend to reduce wastage of power.

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