



GSM BASED ENERGY THEFT MONITORING SYSTEM

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ABSTRACT

Electricity theft is a very common problem in our country. In India, every year there is very increasing number of electricity theft which results in loss of electricity. Also the ways using which theft can be done are innumerable so we can never keep track of how a theft has occurred, and this issue is needed to be solved as early as possible. The electricity which is generated from the power station is distributed to consumer. The electricity supply which is coming to the consumer meter in that where some people do the theft. They stole the electricity without purchasing from the MSEB. They use the electricity free of cost & also loss taken in the system. So to stop the theft or hooking we have come up with an idea i.e. our paper “GSM BASED ENERGY THEFT MONITORING SYSTEM”.

This paper it is totally based on the GSM system. Here we get the message when the theft is done, the location of theft, the customer meter number and thus we can control and monitor the system. This paper will help the MSEB to overcome the theft problems.

I INTRODUCTION

The proposed paper work aims on the design and development of energy theft prevention aspect. Thereby, energy theft can be reduced to a considerable extent. Hence this paper work is titled as “GSM BASED ENERGY THEFT MONITORING SYSTEM”. In the recent survey conducted by the state electricity departments, shows that the electric generation and consumption records are not tallying due to lot of energy pilferage. As there is no method to detect energy pilferage, the genuine energy consumers are charged with huge charges, thereby it is becoming a burden to them. Hence to avoid and to detect the energy theft, it is decided to put effort in this direction and our paper is taken up to detect energy theft consumer and pass it on to the centralized energy monitoring station.

II. BASIC BLOCK DIAGRAM OF SYSTEM

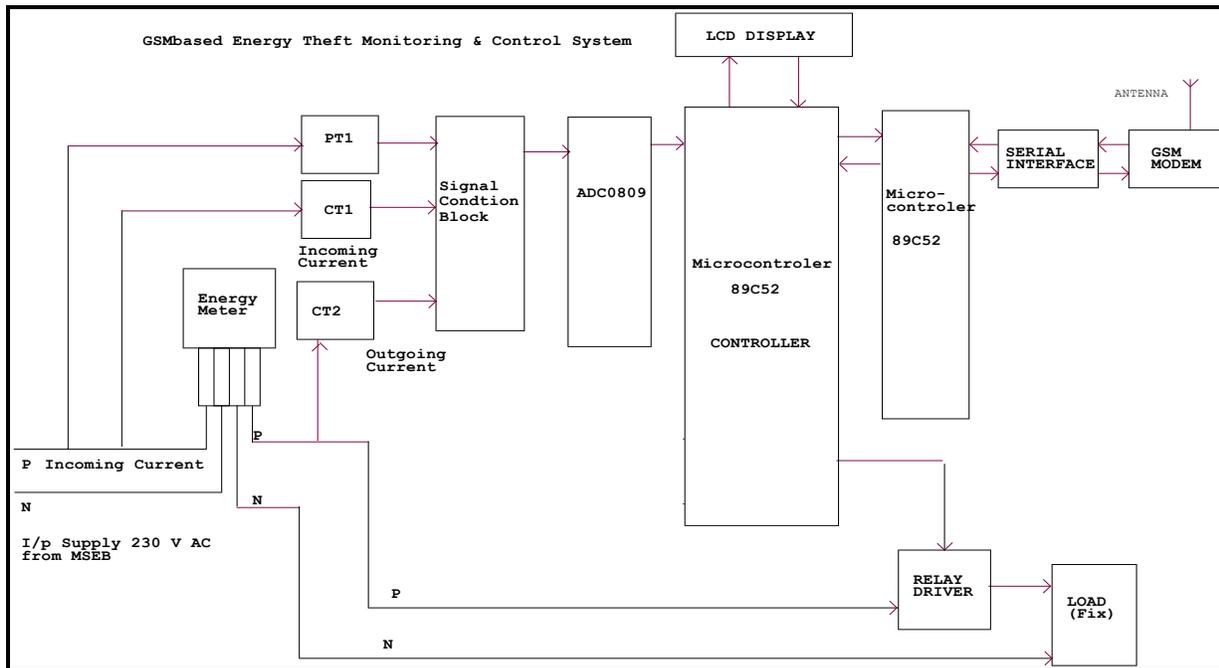


Figure:- Basic Block Diagram of System

III. DESCRIPTION OF EACH BLOCK

Power Supply

Most digital IC's including microcontroller, metering and memory IC's operate on a 5v power supply is required. The 5v supply voltages are obtained from 9v transformer. The output of the secondary is applied to the bridge rectifier, which converts the sinusoidal input into the full wave rectified output.

The filter capacitor at the output of the bridge rectifier is charged to the peak value of the rectified output voltage. Since the diodes are not forward biased during the entire positive and negative half-cycle of the input waveform, the voltage across the filter capacitor is a pulsating dc that is a combination of DC and ripple voltage. From the pulsating dc voltage, a regulated dc voltage is extracted by a regulator IC.





Microcontroller AT89C52

It is heart of our paper. The 89C52 contains a non volatile 8k flash program memory i.e. in both parallel programmable & serial in-system & in application programmable. In system programming (ISP) allows the user to download new code while controller sits in the application. Application (IAP) means that the controller fetches a new program code and reprograms itself while in the system. This allows for remote programming over a modem link. A default serial loader (boot loader) programs in ROM allows serial in system programming of flash memory via the UART without need for a loader in code. For in-application programming user program erase & reprograms the flash memory by use of standard routines contained in ROM. The AT89C52 is a low-power, high-performance CMOS 8-bit microcontroller with 8Kbytes of in-system programmable Flash memory.

Microcontroller AT89C52

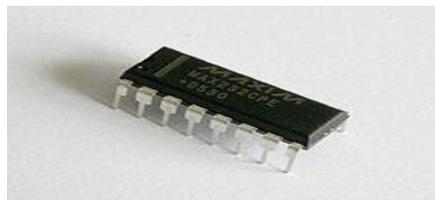
Features:

Compatible with MCS-51® Products, 8K Bytes of In-System Programmable (ISP) Flash Memory, Endurance: 1000 Write/Erase Cycles, 4.0V to 5.5V Operating Range, Fully Static Operation: 0 Hz to 33 MHz, Three-level Program Memory Lock 256 x 8-bit Internal RAM 32 Programmable I/O Lines, Three 16-bit Timer/Counter, Eight Interrupt Source, Full Duplex UART Serial Channel, Low-power Idle and Power-down Modes, Interrupt Recovery from Power-down mode, Dual Data Pointer, Power-off Flag.



MAX 232

The MAX220–MAX249 family of line drivers/receivers is intended for all EIA/TIA-232E and V.28/V.24 communications interfaces, particularly applications where $\pm 12V$ is not available. These parts are especially useful in battery-powered systems, since their low-power shutdown mode reduces power dissipation to less than $5\mu W$. The MAX225, MAX233, MAX235, and MAX245/MAX246/MAX247 use no external components and are recommended for applications where printed circuit board space is critical.



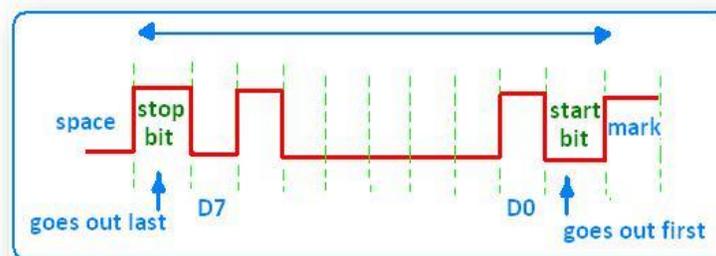
Serial Communication

The fact that serial communication uses a single data line instead of 8-bit line of parallel communication not only makes it cheaper but also enables two computers located in two different cities to communicate over the telephone.

In serial communication data is send one bit at a time.

For serial data communication to work, the byte data must be converted to serial bits using a parallel-in serial-out shift register, and then it can be transmitted over a single data line. This also means that at the receiving end there must be a serial-in-parallel-out shift register to receive the serial data and pack them into a byte. Of course, if data is to be transmitted on the telephone line, it must be converted from 0s to 1s to audio tones, which are sinusoidal-shaped signals. This conversion is performed by a peripheral device called a modem, which stands for "modulator/demodulator".

When the distance is short, the digital signal can be transferred as it is on a simple wire and requires no modulation. However, for long-distance data transfers using communication lines such as a telephone, serial data communication requires a modem to modulate (convert from 0s and 1s to audio tones) and demodulate (converting from audio tones to 0s and 1s).



LCD Module

In recent years the LCD is finding widespread use replacing LEDs (Seven Segment LEDs or other multistage LEDs). The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.





IV. ADVANTAGES

- Reduction in theft
- Very Efficient & precise
- Very reliable and user friendly to operate

V. APPLICATIONS

- Well suited for village areas where theft is more
- It can be used for reducing the human work
- It is used for sensing various kinds of theft

VI. POSSIBLE FUTURE IMPROVEMENTS:

- In addition to the power theft information, the same transmitter can be used for transmitting the data indicating the used energy (number of units). If this is done, then there will be no requirement of data collection (i.e. a lot of man power can be saved).
- Two way communication can be designed, so that a signal (from sub-station) can be transmitted which disconnects the main line from meter if the user did not pay the bill in time or if the user is trying for power theft.

VII CONCLUSION

This paper reduces the electricity theft. Use of GSM in our system provide the numerous advantages of wireless network systems. The metering IC ensure the accurate and reliable measurement of power consumed. Hence we are trying to add some more extra features in our paper which makes this system more reliable and user friendly. With the implementation of this kind of systems in the real time, the need for regular vigilance can be avoided and power can be supplied at the economical rates, thereby improving the economy of the country

RESULT

This system would be eliminating the requirement of human power and thus providing efficiency and accuracy. This paper will give accurate details of energy theft. It will help to manage sensing the parameters and also record details for electricity theft.

This paper will also assure the safety and help in decrease in theft level & would not result in any harm to the environment and surroundings.



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