

# GSM based Monitoring Energy Meter

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**Abstract**— This paper acquaints an arrangement with remotely monitor and control imperativeness meter readings. It urges to examine essentialness meters without going to each and every house/affiliations. This structure incorporates a microcontroller which takes the readings at predictable between times and records it in its memory. This component (remote checking) is made open as it contains a GSM module which communicates the information with respect to the meter scrutinizing by methods for a SMS. The present meter scrutinizing structure does exclude the GSM module. The arrangement proposed and attempted in this paper benefits the GSM structure, it's the nation over degree and the Short Messaging System (SMS) cell broadcasting feature to remotely transmit the individual house/affiliation control use readings. This structure is altogether helpful to the Electricity Department as it enables them to take the meter readings constantly. Catchphrases: 89S51, SIM 300, AT orders.

**Key words:** Monitoring Energy Meter, GSM

## I. INTRODUCTION

Vitality dissemination and utilization in a reasonable manner are essential prerequisites for a practical life. The present arrangement of vitality charging has numerous disadvantages, for example, unreasonable utilization of labor, human blunders, and failure of clients to monitor their vitality utilization and in-wrinkle in the general cost of this technique. To defeat the current disadvantages, a novel strategy has been displayed and tried to remove data about vitality use from a remote area. This paper recommends a GSM based framework to gather, process and tell customers about utilization. This framework will be dependable, proficient and precise to suit the necessities of the buyers. It will help in the minimization of specialized blunders and lessen human reliance in the meantime. The electromechanical vitality meters are being supplanted by computerized vitality meters attributable to their high reliability, exactness and accuracy. Different highlights offered by AMRs are fast, constant vitality cost and enhanced load profile [1]. Some goals of vitality meters are:

- 1) Programming of remote modem with AT summons (An arrangement of predefined directions utilized with GSM/GPRS module to perform different errands).
- 2) Interfacing controller with vitality meter
- 3) Sending message from MODEM to a cell phone.

## II. LITERATURE SURVEY

Amid the utilization of power. The meters right now being used are just fit for recording kWh units. The kWh units utilized must be recorded by meter perusers routinely. The recorded information should be handled by a meter perusing organization. For handling the meter perusing, organization needs to right off the bat interface each recorded power utilization datum to an air conditioner check holder and

afterward decide the sum owed by methods for the particular levy being used. Numerous e-metering frameworks have been proposed in view of GSM, GPRS, Bluetooth as explained in [2], [3], [4]. The GSM/GPRS empowered framework is exceptionally helpful for sending information by means of SMS because of its great zone scope ability and cost viability.

## III. PROCEDURE

The plan utilizes the rule of serial correspondence of microcontrollers. The controller takes readings from the energy meter and sends it to the GSM module. A SIM card empowered GSM module is utilized to impart to the end client. The plan has the accompanying segments:

- GSM Module (SIM 300)
- Microcontroller (89s51)
- Single stage Energy meter
- Voltage controller (5 V)
- LCD driver circuit
- LCD show

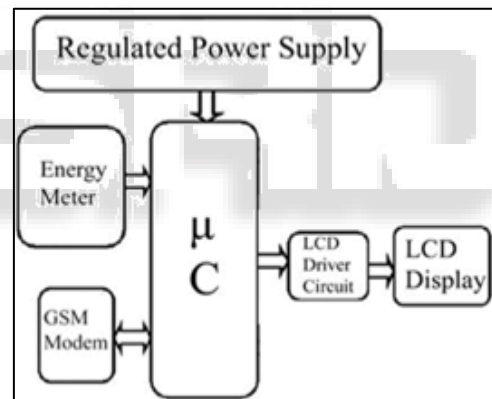


Fig. 1: Block Diagram [5]

The existing systems consist of an electronic energy meter/electro-mechanical meter fixed in the premise for meas

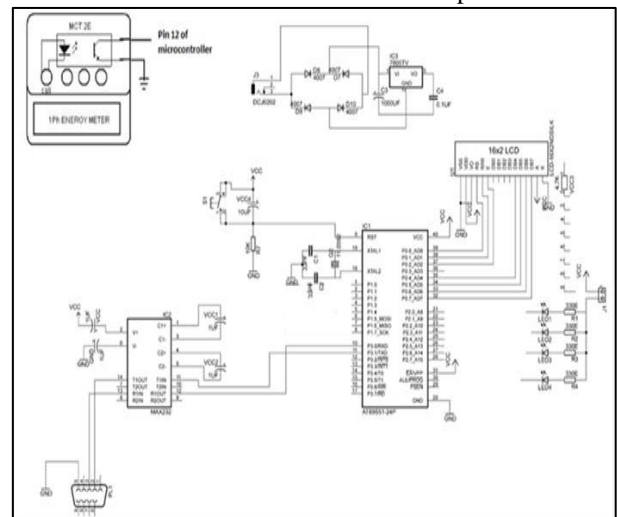


Fig. 3: Circuit Diagram

#### IV. WORKING

The propelled imperativeness meter records the measure of vitality usage. It wears down the start of squints of the LEDs arranged inside the meter. An optocoupler, which includes an IR diode and a photo transistor, is used to recognize the number of flashes by interfacing it to a LED. Each time the LED gleams, current courses through the IR diode inside the optocoupler. It by then delivers infrared light in respect to the current. This released light is event on the base of the photo transistor, doing it switch-ON and lead in a course like a conventional bipolar transistor. The beats from the photo transistor are urged to the microcontroller as a ruin to check the total use of the customer. These readings are secured using an outside memory, EEPROM. The propelled meter used considers 3200 gleams of LED as one unit of vitality usage consistently. In the arrangement completed, regardless, the microcontroller is tweaked to view 320 squints as one unit for every 6 minutes (1 hour=60 minutes/10). It counts the use for 10 such cycles in a solitary hour and a short time later resets after reliably. LCD is related with the little scale controller to demonstrate the present cycle of microcontroller. At the complete of each cycle, the microcontroller figures the bill-ing entirety using standard neighborhood rates and sends both the total usage and the energizing add to the GSM mod-ule through a RS232 connect. GSM module is related with the microcontroller by methods for MAX 232 IC which changes over the RS232 levels into TTL reason levels and the a different way. The GSM module is tweaked using AT charges to remotely transmit the information got, to the customer as a SMS.



Fig. 2: Snapshot of the Implemented Scheme

#### V. APPLICATIONS & FUTURE EXTENSION

- The imperativeness meter can be planned to have an exceptional identification number that will show the region and customer form as the charging system is differing for different sorts of customers. This number nearby the exhausted units of electricity can be sent without human intervention. The leave ment can keep up a database to perceive the sort of zone using this number and figure the bill in like way and send it to the customer.
- For making countries like India where a vital piece of the people lives underneath poverty line will wind up caution while exhausting force if their bills get in touch with them on seven days by week or month to month commence as needed by them.
- If such bills accomplish more a great part of the time, the customers can wind up alert if there is thievery of energy by undesired sources or if the electrical mechanical

assemblies are left in working mode despite when the customers are mysteriously gone.

- The system can be made keen by having a battery fortification if there ought to be an event of vitality dissatisfaction.
- Further trustworthiness examination ought to be conceivable about the amount of frustrations in the midst of the fundamental utilization, create organize and the last stage.
- Effort can be made for the meters to remain generous with the objective that the customers don't have to supplant their meters frequently. Al along these lines, these meters should be great with more than one remote checking structure.

#### VI. CONCLUSION

This arrangement lessens human mediation required in keeping track of the total power use of the customers. An SMS is sent direct to the customer demonstrating the use and bill without the need of any individual from the Electricity Department to physically visit the site to note down the readings by the use of GSM module. This computerization not just lessens the work cost yet what's more makes the structure more efficient and exact.

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