iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** III **Month of publication:** March 2019

DOI: http://doi.org/10.22214/ijraset.2019.3175

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue III, Mar 2019- Available at www.ijraset.com

Prepaid Energy Meter Using Arduino and Gsm Module

Snehal Patil[1], Dhanashri Desai[2], Mayuri Kamble[3], Dr. S. T. Jadhav[4]
[1, 2, 3, 4]*BE, ENTC, India*

Abstract: ***Now-a-days different technology has widely developed. At that time we need highly secured and automatic system. Different techniques are used in collection and generation of bill like touch technology, AMR hosting, radio frequency network , handheld , fixed network satellite. This techniques used to collect the reading are fully or partially manual. Now-a-day energy consumption and distribution has become a big subject for discussion because of huge difference in energy production and consumption. In this regard, consumers are facing so many problems due to the frequent power failures another important reason for power cut is due to the un-limited energy consumption of rich-people. In this aspect to minimize the power cut and to distribute the energy equally to all areas, some restriction should have over the power consumption of each and every energy consumer and according to that the Government should implement a policy by introducing autonomous energy meters everywhere in domestic sector one more of region is MSEB is used handheld electricity bill generation process is partially manual. So, due to manual data entry customer and MSEB suffers from some problems like wrong billing, fake billing, cross billing, etc. To automate this we are introducing automatic prepaid energy meter using Arduino and GSM Module. The project aims to minimize this manual works to avoid bill error as well as save time and money.***
Index Terms: Arduino Kit, GSM Module, Energy Meter, Current Sensor, relay, LCD

I. INTRODUCTION

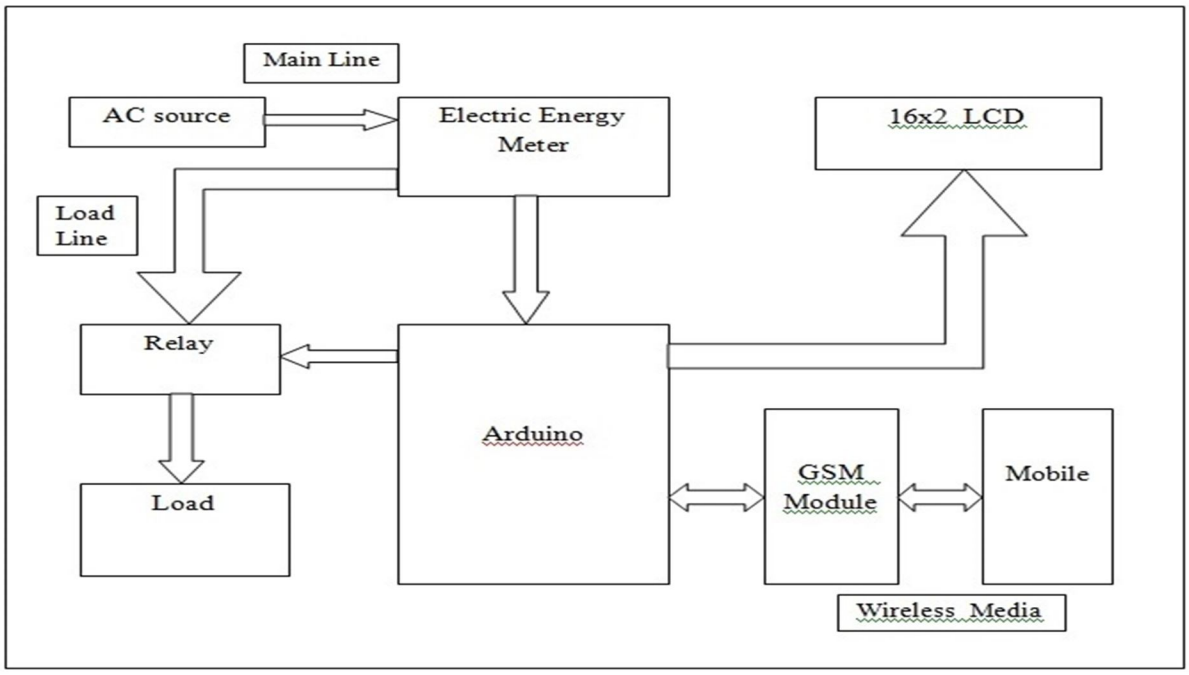
The several advancements electric energy meter is direct billing interface between utilities and consumers for long time. To improving the accuracy in meter reading by replacing conventional electromechanical meters by new electronic meters. The serious problem of the Indian power sector facing collection for the actual electric supplied owing to network losses and energy thefts. Overcome some problem of traditional billing system like inaccuracy, slow, costly and lack in flexibility as well as reliability. Current technique used to collect the reading is fully and partially manual method. So this process is more manpower and time consuming process. So collection of the billing is too late so consumers not pay bill time-to-time. The aim of project is determine by difference between actual power and easily sold power to make user comfortable to plan his beforehand use of power when system is on .The reduces the available balance when the starts counting the numbers of units simultaneously. We check the backup balance is available or not by completion of amount, when balance is available then Again units starts counting otherwise automatically disconnected the line. Buzzer is on to detect the balance is low to recharge again.

A. Working Principle

The arduino and energy meter is interface with each other by using pulse LED (calibration LED or CAL LED). By using opto-coupler IC we can connected CAL LED to arduino. The EEPROM memory reads the stored previous value of rupees when the power is given to the system.

Then the EEPROM restore into the variable and check available balance and take action according to it. When our available balance is greater than 10 rupees to turn on the arduino and get the supply office or home by using relay. If balance is less than 10 rupees then arduino send the message to user phone using GSM module. It sends to user “Our balance is critical and requesting recharge soon”. If balance is less than 5 rupees then arduino cut the electricity connection. When our balance is less than 5 rupees then it send the message to user “Light cut due to low balance please recharge your energy meter To send And receive message GSM module is used. By using AT commands we can check GSM module.

Now system can recharge by simply sending the SMS through our mobile phone. By sending #45* we can recharge 45 rupees to our system. The ‘#’ and ‘*’ is used as the prefix and suffix to recharge amount. By updating balance of system extract recharge amount by receiving the message and system again start electricity of the house or office.



II. RESULT

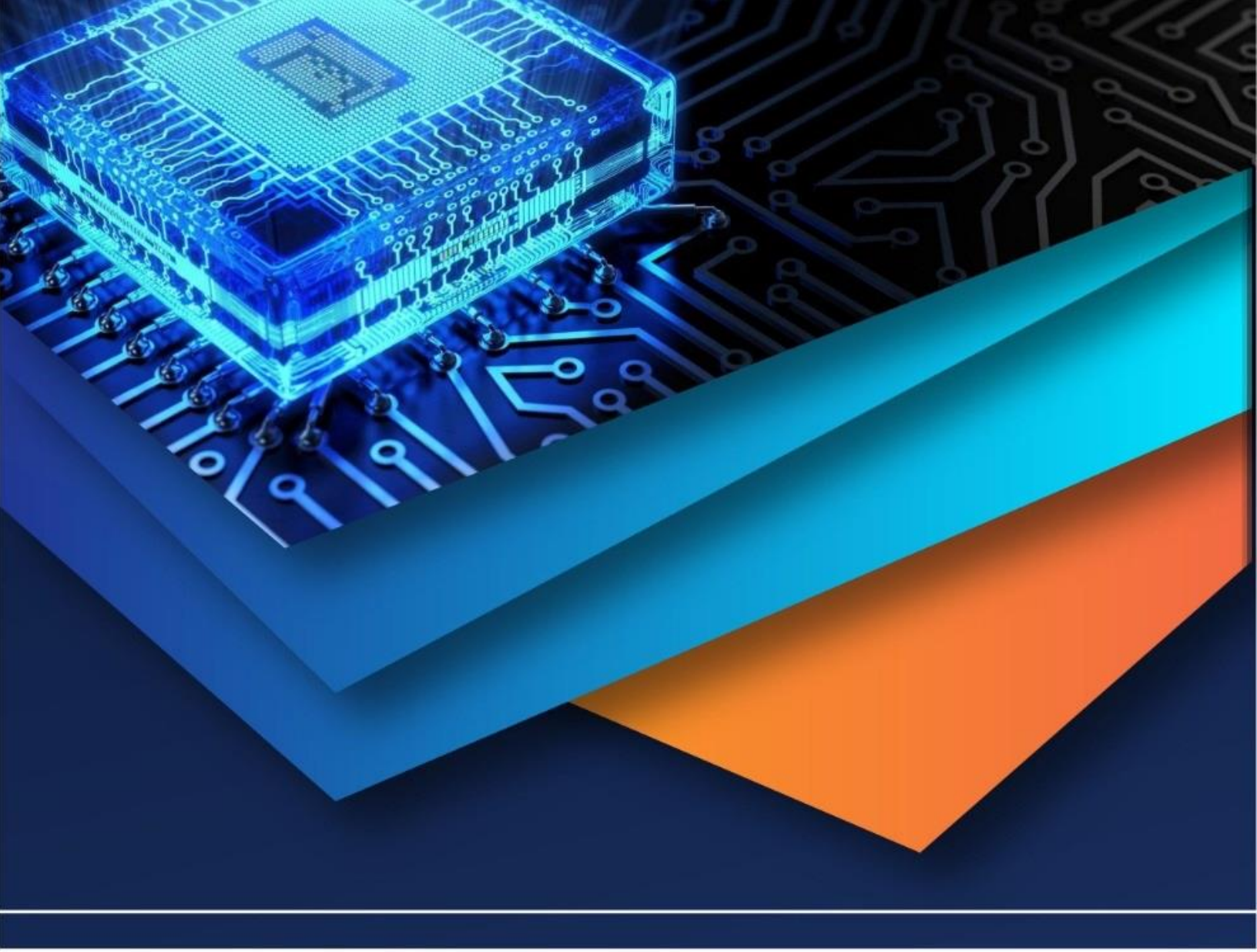
Meter has to provide the supply; the LCD gets the initialized initially. To "START THE SYSTEM" the test SMS is sending to the consumer by sending the message we can recharge meter. By sending the message to the registered MSEB number through the GSM module that is fixed connection between meter and user. The message will get to the user the energy meter is recharged by some amount. User set the recharge up to 3 digits like Rs. 999 in our meter. As per requirement user can recharge the meter then the message is send to user "Your energy meter has been recharged and display Total balance=??" How much balance is left out, we can check in LCD display. When balance is minimum value like Rs.5 user gets the message "Light cut due to low balance please recharge your energy meter soon". When balance is not available then the message is send to the user "Cut power due to balance is not available".

III. CONCLUSION

Manual communication process is present situation to use to the all customers. so the connection between the customer and electricity board to reduces the handhold error like cross billing, wrong billing, fake billing we need to some automated system. The total amount of generated power approximately 9% to 18% amount of power is stolen in India. To avoid the power wastage of consumer side the use of electricity to control the implement of this system. The consumers and society has adverse effects due to revenue the loss of distribution unit and power theft. To implement of this system to increase the rate of paying of the bill by the consumer. The main advantage of this system is this system is quickly detected and to minimize the power pilferage. This system to reduce the costs of energy meter and to reduce the complexity of the circuit. Electric board will improve the overall efficiency in the operation.

REFERENCES

[1] Prof. P. R. Jawale , Mr. V. S. Ghayal, Mr. D.M. Shende, Ms. S. N. Ghogale, Ms. V. B. Nagare "Prepaid Energy Meter using Arduino and GSM Module" International Journal of Research in Advent Technology(E-ISSN:2321-9637).
[2] PRAGNYA.G, S.DURGA PRASAD, TADI CHANDRA SEKHAR "An On Chip Design for Prepaid Electricity Billing System" International Journal of Scientific Engineering & Technology Research ISSN 2319-8
[3] Sachin Divate, Tanaji Dhikale, Trunal Dube, Milan Mitke "REMOTE WIRELESS AUTOMATIC METER READING SYSTEM" International Journal of Emerging Technology and Advanced Engineering(ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 3, Issue 4, April 2013)
[4] Sai Kiran Ellenki, Srikanth Reddy G, Srikanth Ch.(2014) "An Advanced Smart Energy Metering System for Developing Countries" International Journal Of Scientific Research And Educatioal (||Volume||2||Issue|| ||Pages|242-258||2014|| ISSN (e):2321-7545)



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY