

EFFICIENT POWER UTILIZER

¹BHOSALE RESHMA, ²BAGWAN TAMANNA, ³SHINDE KARISHMA

SVPM College of Engineering
Malegaon (Bk.), Baramati, Pune; 413115

Abstract: Power is measured in instantaneous quantities, while energy is integral of power over time .For example: A 100W light bulb absorb 100W of power. If operated of 1hour that light bulb absorbs 100W-hours of energy .Maximum demand is the maximum instantaneous power consume over a specified window of time. In the case of that 100W bulb, as it is switch on and off, the instantaneous goes from 0 to 100W to zero. High- tension(HT) consumer have to pay maximum demand charge in addition to usual charge for the number of units consumed .This charge is usually based on the highest amount of power is used during some period(say 30 min) during the metering month. Buzzer is sounded when demand approaches a preset value .If corrective action is not taken, the controller switches of non essential load in logical sequence. The data is send through GSM to the owner. and display the data on LCD .

KEYWORDS: ARM7, GSM Module, MAX 232, LCD16*2 Display, Relay, Buzzer, Energy meter

INTRODUCTION

Maximum demand is the power consumed over a predetermine period of time, which is usually between 8-30 minutes. This charge is usually based on highest amount of power used during some period (say 30 minute) during the metering month. The maximum demand charge often represents a large proportion of the total bill and may be based on only one isolated 30 minute episode of high power use.

Considerable savings can be realized by monitoring power use and turning off or reducing non-essential loads during such periods of high power is used .Maximum demand controller is a device design to meet the need of industries conscious of the value of load management .Buzzer is sounded when demand approaches a preset value .If corrective action is not taken ,the controller switches off non-essential loads in a logical sequence .Switches OFF non essential load means minimize the load which lead to OFF the load by using relay , here relay act as switch .Also in efficient power utilize we distribute the power from one section to another section as per the requirement distribution of power is main of our project .Which save the wastage of power. According to this system all power which is used by consumer in a particular period these details send to owner through GSM .Where GSM is wireless device used to give all detail information to the owner .This data also save in PC or computer for security purpose. This sequence is predetermined by the user and is programmed jointly by the user and the supplier of the device .The plant equipments selected for the load management are stopped and restarted as per the desired load profile .Demand control scheme is implemented by using suitable control contactors.

The maximum demand charge often represents a large portion of the total bill .Monitoring power used and turning OFF a reducing non essential loads during such periods of high power used can realized considerable savings. The maximum demand controller is a realistically priced stand-alone controller suitable for small to medium consumers wishing to reduce their maximum demand in an economical and simple manner. The unit can also be used for reducing cable and transformer loadings .The buzzer is ON when the power is above the set point. The data are sending and display on LCD.

SYSTEM ARCHITECTURE

This is the block diagram of efficient power utilizer system.. The blocks connected here are LCD display, GSM, Buzzer ,Power supply, relay , relay driver, MAX 232,computer, Energy meter, Current to voltage converter, signal conditioning.

BLOCK DIAGRAM:-

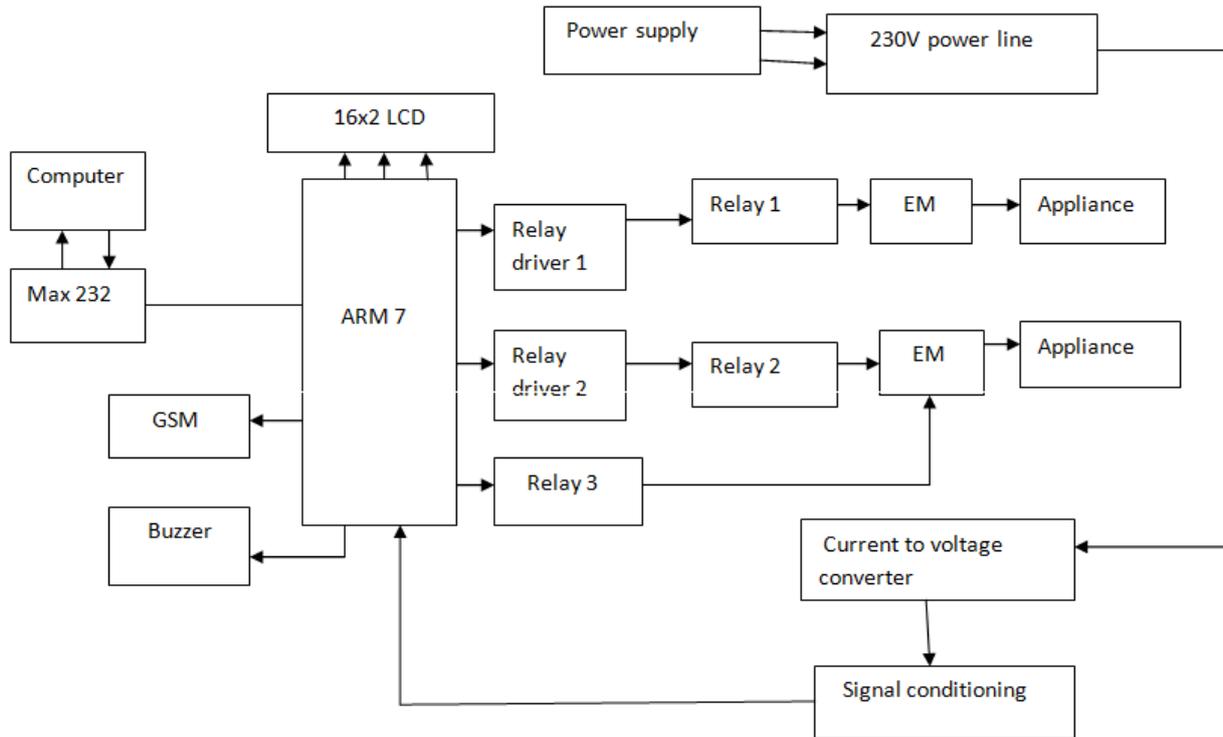


Fig. Block Diagram Of efficient power utilize

CONCLUSION

A good record of the load pattern is obtained which enables accurate predictions and better load distribution. The capital outlay for maximum demand control is low. With good maximum demand indication, it is possible to create awareness of where and when power is used and consequently gets greater power utilization. The data obtained from the MDI controller may be used for the design and development of Smart Grid. Helpful for prediction of estimated load in large load dispatch centre. Proper utilization of electrical power during off peak period.

REFERENCES

- [1].International journal of Electronics and telecommunication Microcontroller based maximum demand indicator and controller for efficient power management. ISSN 2319-2518 www.ijeetc.com vol.2, No.2, April 2013. 2013 IJEETC. All Right Reserved
- [2].Energy efficient technologies in electrical systems.
- [3]. Brown Richard (2008), Electrical Power Distribution Reliability, pp. 17-34
- [4].Maziddi, ARM7 & embedded system 3rd Edition, Pearson
- [5] www.sciencedirect.com
- [6].Capasso A, Grattieri W et al. (1994), "A Bottom-Up Approach to Residential Load Modelling", IEEE Transactions on Power Systems, Vol. 9, No. 2, May.