



# Design of Elegant Meter for Controlling the Peripheral Loads

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**Abstract:** In this paper Wireless Sensor Home Area Network (WSHAN) with IOT interfaced sensible meter is developed in addition to carry out. Due to the raising wishes on electrical energy, the usual electric grid should be changed with smart, long lasting, professional and additionally costly efficient sensible grid packages. Wireless Sensor Networks (WSN) has a important duty to set up sincere as well as luxurious efficient wise electric power grid applications. Our gadget determines electricity use logs data stay and also well-known shows the time of usage worth's. The system likewise manages any sort of device attached to power results. While powering on in addition to off, zero-go of Air Conditioner sign is noticed to determine stage exchange. The sensible meter gives proper energy use in addition to transfer's statistics with WIFI to COMPUTER (Personal Computer). The individual tests the electricity information and additionally from every other region regulates the gadget.

**Keywords:** Wireless Sensor Networks; Internet Of Things; Smart Grid; Power Grid;

## INTRODUCTION

The smart grid manages and distributes power in a greater efficient, cost effective, and at ease manner and it integrates many specific technologies, products, services to electric consumer aspect home equipment with sensing, communications, and manage technology from generation, transmission and distribution. With a smart meter, every tool used in homes and homes can be scheduled, remotely managed and monitored by using clever grid technologies. Designed stand-through power saving clever socket with wireless sensor community which has a comparable design for plug gadget. But the device purposes best control the plug stand-by energy. Our goal is that clever meter has an interactive person interface to give device scheduling management. Reference used Bluetooth to enforce transportable smart meter over smart phone. Design of a clever energy meter with Bluetooth low power is supplied. Reference [1] designed a clever meters that use magnetic flux. Smart strength meter design the use of GPRS communication is presented. The main objective of the research is developing and testing Our SM offers consumers to examine the real time information which provide the concept of electricity intake real time and pricing facts. The other objective is to optimize domestic electricity usage and help home energy price saving.

## RELATED STUDY

The New approach of our design is the use of circuit breaker relay which gives the advantage of protection against over voltages. We detect also zero-cross of AC signal to calculate phase shift and turn on and off the devices with solid state relay which gives the advantage of fast switching and high current conducting. We measured power

usage of three unit devices which are a LCD TV, satellite receiver and home theater sound system with the same hub. We collected the data and transfer it with the communication path to the coordinator node and stored to the data base successfully.

Smart Grid (SG) with its dynamic model has an exciting potential. Fig. shows evolutionary perspective of SG in past, present and future plans. Also Table I compares the standard grid to SG. SG provides two way communication and energy flow comparing to existing conventional grid. Fig. shows general communication architecture for smart grid from power generation, transmission, distribution to buildings and homes. Smart grid information path starts with broadcasting from sensors or smart devices to smart meters and then passing to the control centers. In communication side the wireless networks are one the most researched area in smart grid power systems. The wireless networks served a couple of advantages in installation and large coverage, but limited bandwidth and interference is the main lacking. While a new ZigBee-based energy meter is detected by the ZigBee coordinator, the coordinator will execute the connection procedures to let the meter join the ZigBee network and then maintain the network for other ZigBee-base energy meter devices. The second task of the coordinator is to communicate with the computer for getting commands from the user and sending data to the database system. The last task of coordinator is to control the ZigBee-base energy meter for reading out data. Figure 4 describes the task of ZigBee-based energy meter devices. The first task is to find a network setup by the ZigBee coordinator, and then try to join the network. If the network is an automatic energy meter reading system, it will join

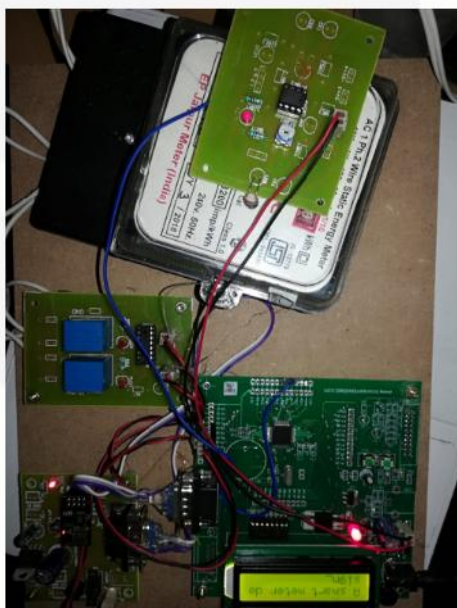
the network. The next task is a power consumption reading from energy meters. As soon as the ZigBee-base energy meter received a command to read data, it will read data and then send to the ZigBee coordinator

### AN OVERVIEW OF PROPOSED SYSTEM

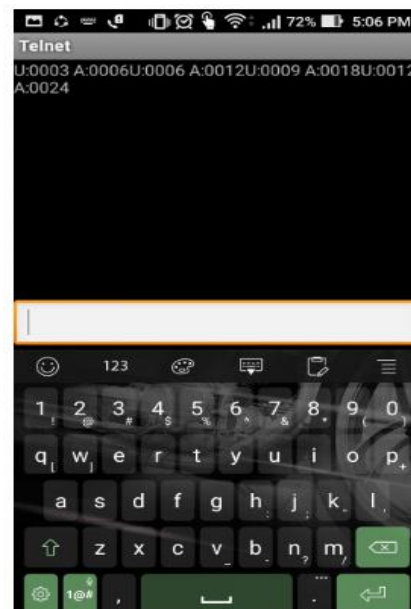
Smart meters are electronic measurement devices used by utilities to communicate information for billing customers, track and record customers' electric use and operating their electric systems. With smart meters, sending data to the electricity supplier automatically, there would not be the need to have the meter mounted outside the customer premises. Placing the meters inside a garage or other room would provide a much more protected location and aid in the security of the smart grid. This would require moving or extending the power line terminus from their normal location to the interior which would add considerable expense, and most likely be prohibitive for any extensive smart grid projects. As a matter of fact, for any new homes built in areas with existing smart meters infrastructure, this may be a useful option. Data can be sent wirelessly to an access point at the power pole or via communication over the low voltage power lines.



**Fig.3.2. Amount and units indication.**



**Fig.3.1. Working model.**



**Fig.3.3. Output results across by using TELNET application.**

### CONCLUSION

In this project Wireless Sensor Home Area Network (WSHAN) with IOT interfaced smart meter was designed, implemented and tested. Our system measures energy usage logs data real time and controls any device connected to power outputs. The power usage was measured by the smart meter prototype and the calculated data was transmitted through wifi communication to PC (Personal Computer). With the PC software, scheduling with TOU pricing showed that it creates an economic expenditure for consumer and it's all the same for the utility side. Our contribution is a smart meter system with consumer control in energy saving events corresponding to smart grid concept.

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