

IOT BASED POWER MONITORING SOCKET

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Introduction:

We all know that power is nothing but the rate at which the electric energy is transferred by an electric circuit. Power is an important electrical quantity and today everything in a world depends on having the power to keep them running. Due to industrial growth & urbanization power is a basic need of our life. The need of the power has made it a strategic commodity of the life. Any vulnerability about its supply of energy can undermine the working of whole economy. It is the necessity to manage the consumption of power due to limited availability of resources. So the aim should be to recognize & eliminate the misuse of electricity by figuring out which equipment utilizes how much amount of electricity.

In this new era of internet of things (IOT), we can connect the physical world to internet. Physical world means literally everything like machines and appliances which are used in our jobs and at homes, etc.

The things or objects can be changed into smart things by giving it unique identity in the world. The objects can share information and communicate with each other through web. We can analyze, monitor and control the objects anytime, anywhere from the corner of the world.

Using IOT it is possible to monitor the power consumed by a particular device at home or in any industry.

Objective:

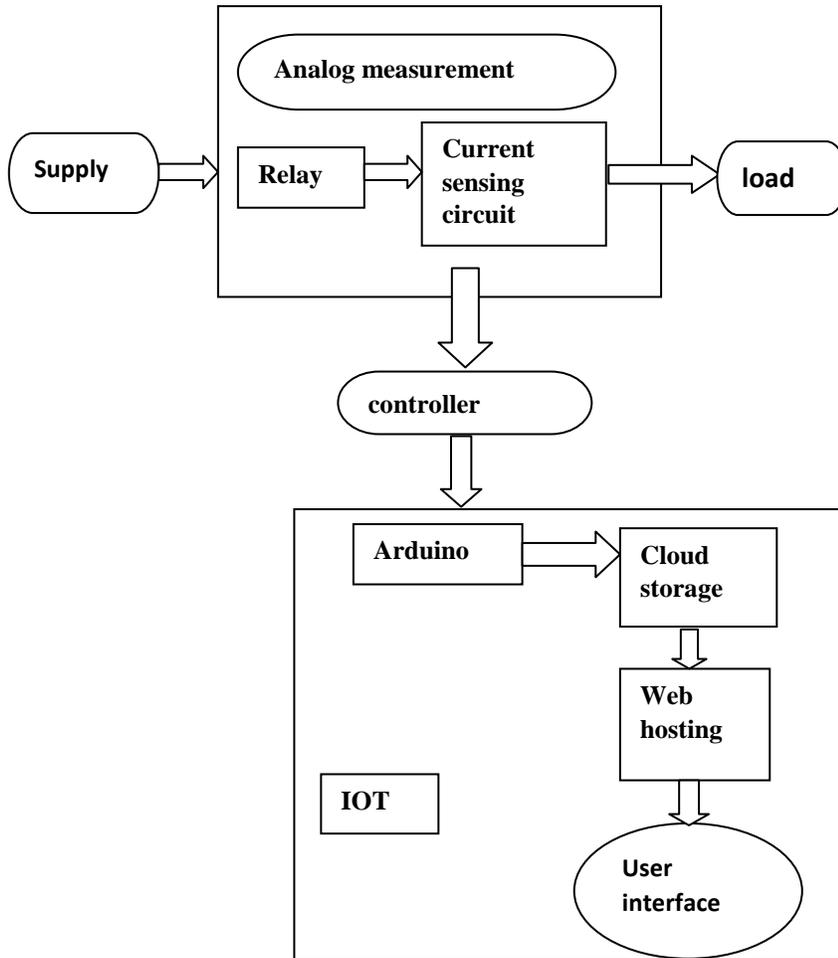
The primary objective of the project is to develop power electrical sockets which can monitor the amount of energy flowing through them. This would help to keep a track of the power consumed by a particular device hence making us save power efficiently. The objectives are

- To develop smart sockets which display the power consumed by particular socket.
- To connect the sockets to internet so that the power consumed through the sockets can be monitored from anywhere in the world.

To develop a cloud application to monitor the power consumed by every such socket in home thus making us monitor power using cloud enabled devices

Methodology:

Block Diagram



- We are giving power supply to the analog measurement circuit which is further connected to load and IOT through the controller, and at the load we are using LCD display
- In the analog measurement circuit, we are using relay and current sensing circuit to sense the current consumed by the particular device
- In the internet of things (IOT), we are using Arduino to calculate the power consumed by the particular device and we are using cloud data to send the information to the mobile.

The power consumed by the particular device will be displayed on the LCD Display as well as the power rating of each device will be read through mobiles using IOT.

Results & Conclusion:

Result: Practical results

Parameter	Single load (60W bulb)	Double load (60W & 25W bulb)

Voltage	230V	230V
Current ($I=P/V$) (Practical)	0.26A	0.26A, 0.10A
Power (Theoretical)	60W	60W,25W
Power (Practical)	59.8W	59.8W, 24.8W

Conclusion:

This project is expected to monitor the energy consumed by each device separately, and let the user know if some device is consuming power. Currently the electric meters installed in home show is the total consumption of power in the home and there is no such existing technology to monitor the power consumed at each & every socket of the home. This project aims to implement such technology by developing smart sockets which can keep a track of power consumed through a particular socket and display it on an android application over the internet. This would help the users use high consumption devices more effectively thus saving power.

Future Scope:

This implementation can be further extended by creating a network of all other electrical appliances. One such example would be using a connected thermostat, water heater & smart watch. Based on the body temperature of the bearer, the temperature of the other two appliances can be altered accordingly. The ability of Internet of Things is limited to our imagination & there is an immense scope in this field.