

# Cloud Storage System for a Sensor System Parameter with Real-time Data Website with Secure Login

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## ABSTRACT

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The enterprises are developing systematically. One of the explanation of the developing ventures is the ascent in the populace so there is a need to deal with the consumption of the energy in light of the fact that there is restricted assets. As of late, investigation into energy sparing has been expanding taking into account managing ecological issues and adequately utilizing energy assets. In a family unit or in mechanical plants, power consumption monitoring of individual inductive gadgets and machines. Would have huge effect on energy investment funds finally. In any case, the present act of estimation of power consumption of the entire meter as opposed to singular gadgets brings about punishments for energy misfortunes because of variety of interest charges in a plant. In this way, electrical power consumption monitoring consistently is basic to shield it from surpassing the basic interest level. Power meters are reasonable energy sparing gadgets that can help screen electricity consumption in a plant. This paper examines the turn of events and execution of a smaller scale controller based versatile computerized power meter that has the capacity to quantify a three-stage power flexibly for a solitary gadget to enhance power utilization in a plant. It could likewise be utilized as an instructive device for undergrad examines.

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## I. INTRODUCTION

The power consumption is the primary piece of the electrical hardware utilized in-home or industry. The energy bill and the life of hardware rely upon power consumption. If any gadget is devouring more power then there may be some issue with that gadget. That

gadget will go harm because of increased current consumption and warmth creation thus the energy bill goes high. We cannot screen which gadget is devouring more power as there is just one meter accessible for some heaps.

In the existing framework, either an electronic energy meter or an electro-mechanical meter is fixed in the reason for estimating the utilization. The meters currently being used are just fit for recording KWH units. Meter peruser must record the KWH units utilized at that point despite everything month to month, by walking. The recorded information should be handled by a meter understanding organization. For preparing the meter perusing, the organization needs to right off the bat connect each recorded power use information to a record holder and afterward decide the sum possessed by methods for the particular tax being used numerous frameworks based on different stages have been proposed by various research bunches everywhere throughout the world for Automatic Meter Reading. Tele watt meters were executed to transmit information on a month to month premise to a remote focal office through a committed phone line and a couple of modems.

A microchip or DSP-based meter is utilized to gauge the electricity consumption of various clients in a local location. An ace PC at the control place was utilized to send orders to a remote meter, which thusly transmitted information back, utilizing the Power Line Communication method. These methods were primarily actualized in zones that had a fixed phone organize. Bluetooth energy meters were planned and actualized in certain territories where a few meters in nearness, discussed remotely with a master PC. In this estimation method that incorporates the GSM organize as a method for transmitting energy information is progressively applicable. The GSM arrange offers most inclusion is generally created and creating nations.

Our main aim in this paper is to screen singular power consumption by the heap/gadgets, which will be web-based utilizing IoT. It will assist with monitoring and break down the presentation of the gadget and if any heap is devouring more power than that gadget requires upkeep. This will assist with

improving the gadget life just as it will set aside cash as energy charging is kept up.

We are building the remote sensor arrange based current and temperature monitoring hub for each heap which will send information to the cloud server that we can screen on the web. The Internet of Things (IoT) is turning out to be even more broadly utilized innovation these days. It is frequently used to allude to the developing system for associated gadgets, or "things", that are fit for trade information over on a low data transmission organize. IoT is being utilized in different zones, for example, the car industry, coordination's, human services, perceptive lattice and brilliant urban areas.

## II. LITERATURE REVIEW

The point of this paper [1] is that, In India, plug load gadgets in building divisions are devouring near 40 percent of the complete electricity consumption. Despite the fact that the portion of plug load in building energy is expanding, not very many examinations exist on the attachment level energy utilization and consumption. To address the developing energy utilization of incidental and electronic burden (for example water radiator), a few estimates should be taken. Consequently recognizing needs, these undertaking centers around structuring the gadgets that have worked inability to gauge and report the energy utilization or get control contribution over the system. This examination will help in making energy mindfulness gadgets. The current sensor gauges the current moving through gadget then controller performs essential figuring's on the information and puts that information on the web. By estimating current and voltage, they can break down energy consumption, make the world a more intelligent spot, and settle on better choices utilizing the Internet of Things.

In this paper [2], they plan and actualize a minimal effort IoT energy-monitoring framework that can be

utilized in numerous applications, for example, electricity charging framework, energy the board in the brilliant network, and home robotization. The plan depends on a minimal effort PZEM-004T, utilizing non-intrusive CT sensors, SD3004 electric energy estimation chip, and ESP8266 Wemos D1 scaled-down microcontroller for recovering information from sensor hubs and sending information to server by means of web. The trial results demonstrated that the created energy-monitoring framework can effectively record the voltage, current, dynamic power, and aggregate power consumption.

With the approach of the Internet and computational period, not just the chance to send and get information between people, yet in addition among the gadgets without human power over it. This is known as the Internet of Things (IoT) idea which can be applied for unraveling the developing issue of power/energy the executives. An answer is a modest and simple to actualize and oversee energy monitoring framework for our everyday use of electric power. So as to defeat the human blunders, physical work and cost lessening in energy consumption with more proficiency for the power the executive's framework, in this paper [3], the center mostly around IoT's energy monitoring. The proposed structure is to actualize an ease remote sensor system and convention for keen energy and web application able to do consequently perusing the unit and sending the information naturally to the power clients to see their current energy meter perusing. By utilizing this framework, the clients will know about the electricity utilization in his/her home to decrease the power wastage and cost of consumption.

Notwithstanding numerous endeavours, Energy emergency is the current day issue and it is deteriorating systematically. To defeat this circumstance individuals are finding different energy-producing assets. Among them, power is the principal concern, which should be observed and controlled.

With the ascent in power consumption in all aspects of the world, there is an ensuing ascent in power robbery and overutilization of power. This significant issue is being looked at by the power utilities. In this paper [4], a model is planned which intends to control and screen power consumption of a specific region or area. The planned model screens the power consumption of the end clients and remove the power flexibly when it surpasses as far as possible. The gadget sends the power consumption information to the provider's server utilizing the Internet of Things (IoT) innovation.

### III. IMPLEMENTATION DETAILS

Figure 1 shows the block diagram of the proposed system. In this system, we are monitoring a load - Current and temperature using the sensors. For temperature, we are using MAX6675 Temperature Sensor. The chip makes it easy to obtain temperature readings over a huge temperature range 0°C to 1024°C and employs the most popular the current transformer.

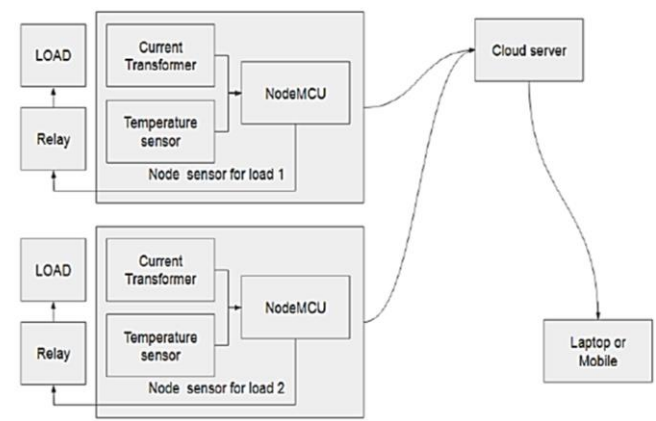


Figure 1. Block Diagram

A current transformer is intended to keep up a precise proportion between the currents in its essential and auxiliary circuits over a characterized run. The substituting current in the essential delivers an exchanging attractive field in the center, which at that point instigates a rotating current in the auxiliary. Thermocouple (Type K). You can also detect small temperature changes as small as 0.25°C (the 12 bit resolution ADC gives this ability  $[1024.0/\text{pow}(2, 12)]$

= 0.25°C]. For measuring current we are using for the load, we are connecting the node and it is connected to a Wi-Fi network so we called it a wireless sensor network.

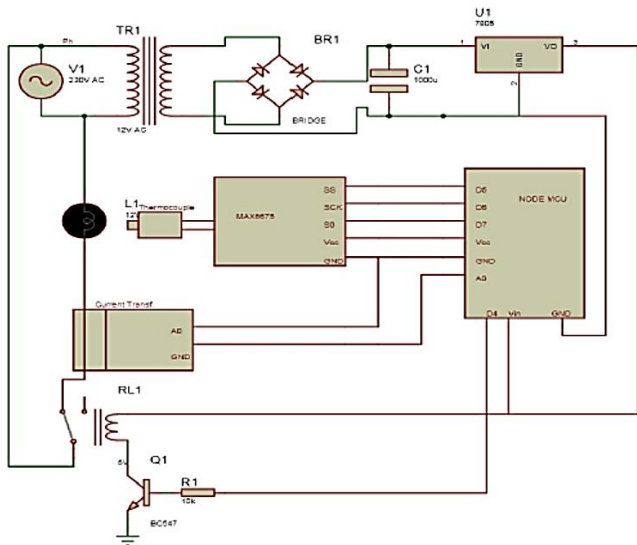


Figure 2. Circuit Diagram

The relay is used to switch OFF the load if it is consuming more power or high temperature to protect it from damage. All the data from each node is going to cloud server, which we can access from anywhere on mobile, or laptop.

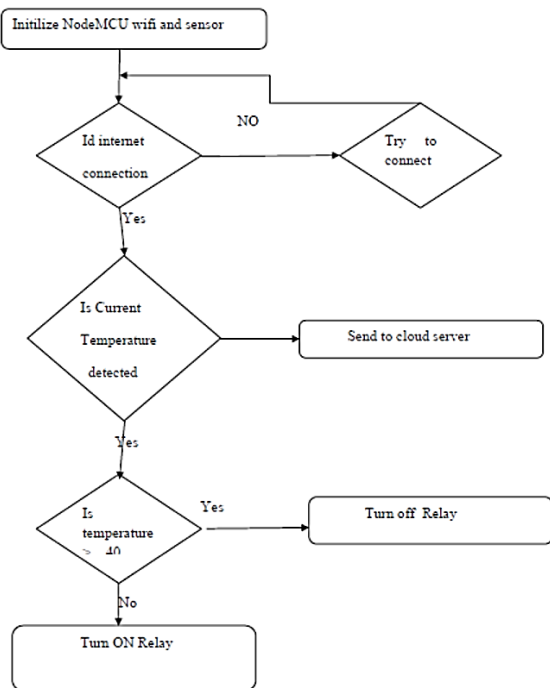


Figure 3. Flowchart for the webserver module.

Figure 3 shows the flow of the entire system couple with web server. Here, once the NodeMCU initialises the hardware circuit, we need to connect it with the internet through the Wi-Fi module. Once it is connected, the temperature and current load monitored through the respective sensors. Once it starts detecting the temperature, it is transmitted to the cloud server as shown in figure 3. Here, if the temperature exceeds the threshold value of 40°C, the relay get signal to turn of the load.

#### IV.CONCLUSION

In the Energy Management framework, the fundamental limitations are exact metering, energy monitoring, and execution of visual information for the customer load profile. This Project is planned in structuring a framework at home or industry which screens the energy consumption of every gadget, which is intended to ascertain the complete energy consumption. A server will be made with proper channels to screen the energy consumption from every one of the gadgets individually. This information will be transferred to the server at the monitoring end. Considering every one of these information singular energy load profile for every one of the gadgets is shown on the website page. Appropriately the examination can be made for the exact use or energy consumption of every gadget so as to additionally lessen the use of the gadget which is drawing the greatest measure of energy. These monitoring reports can be remotely gotten to and would assist shoppers with taking the necessary activity so as to extemporize the energy utilization. In this task we have depicted how monitoring of current and temperature should be possible by utilizing sensors and make some genuine memories information by utilizing NodeMCU.

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