

DESIGN AND FABRICATION OF SMART ENERGY METER FOR SMART CITIES

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Abstract- the application and protocol built on top of sophisticated and interconnected computer network the billing of users every where in the world 24*7 fashion we all realize that electric city energy meter installed in every one's like Home, industry , offices to count the electric city consumption based on traditional technology.

I. INTRODUCTION

Energy emergency is the one of the major problem in india. Effective use of available energy and not increasing the energy production is the one of the best solution for this problem. Avoiding energy wastage and proper monitoring of energy consumption can help to reduce the energy emergency. Energy consumption monitoring is not an easy task because consumers are not aware of their energy consumption and electricity bill ,this proposed method will help to monitor the energy consumption and to generate electricity bill.

II. COMPONENTS

ESP32



Fig 1:ESP32

It is a programming module. its range is 80MHZ and 12E used here. It is doesn't have Particular USB port. Hence we have to use separate USB port. USB is connected to serial adapter here we use FT232R serial to UART board.

RELAY:



FIG 2: RELAY

In order to apply the load attach to the system we use relay driver ULN 2003.

CURRENT SENSOR:



FIG 3: CURRENT SENSOR

For measuring both AC and DC signals ACS712 current sensor is used. This current sensor good sensor for measuring power consumption system. It is measure up to 5AMP of DC.

OLED DISPLAY:



FIG 4: LED display

Here we use OLED of 0.96inch which doesn't have any back light. It is self illuminated high decision.

III. METHOLOGY

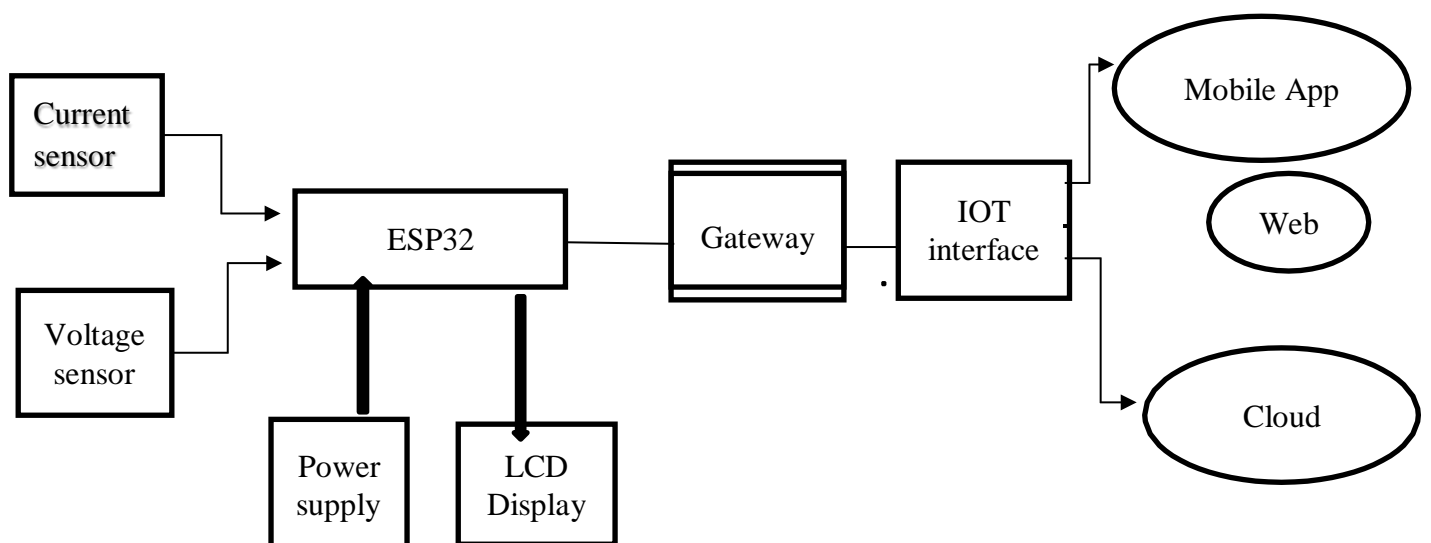


Fig 1.

The fabrication of smart energy meter as shown in the fig 1.it is consists of current sensor, voltage sensor, ESP32, Power supply, LED Display, Gateway, IOT interface, Mobile App, Web, Cloud, Relay and transformer. It is used as clamp type energy meter.230v AC mains is the input given to the transformer and ACmains is converted to low voltage.

Energy meter measure the live current, voltage and power in terms of Kw-h. ESP 32 reads all the parameter and it send to the cloud. Node MCU is a WIFI device which has microcontroller in it.

The IOT base system use to users can switch ON/OFF the home appliances, WIFI module transfer and receive data from cloud and its send to the Arduino and Arduino control. The relay can helps to switch on and off the circuit of the home or substation. we must be select the suitable transformer, it is one of the great importance.

IV. RESULTS

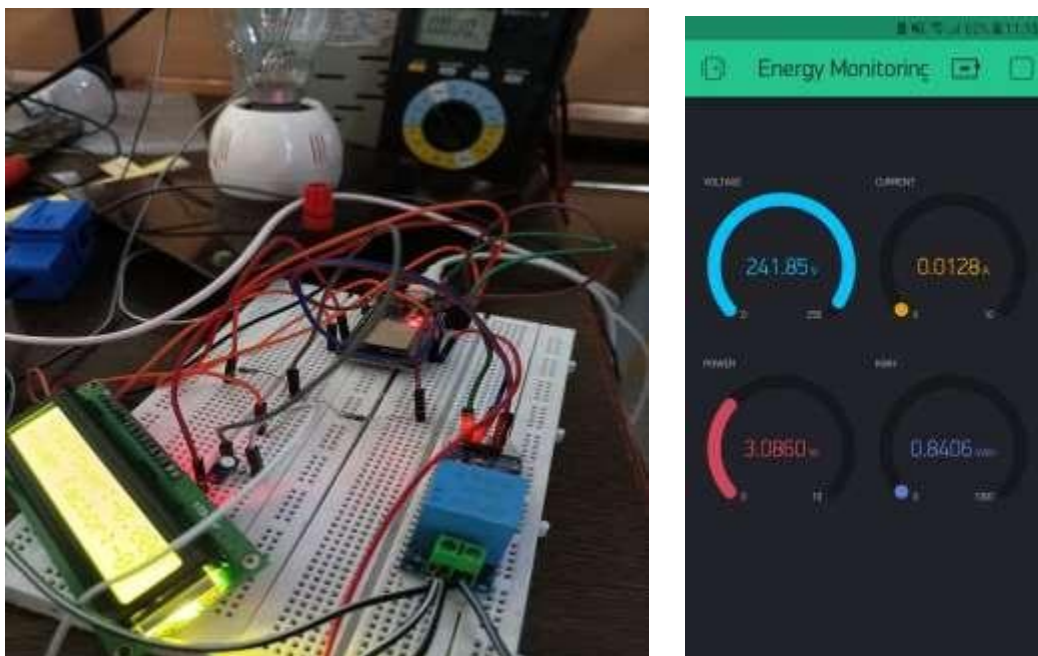


FIG 6: output display

Firstly we have to switch on the main supply. current sensor can be utilized to sense the load current The IOT based platform “thing Speak” it is helps to store, collect, analyse data from Arduino and other supporting headwear. At initial no information is transferred to the cloud via ESP32. After connecting information is transferred to the cloud.

V. CONCLUSION AND FUTURE SCOPE

This project describes usage of “DESIGN AND FABRICATION OF SMART ENERGY METER FOR SMART CITIES”. The technological used in every field and non-stop process. The IOT based energy meter using new and efficient technology to get the future prospective.

The energy meter proposed model automates process of billing and detect tempering. We can also allowsremote monitoring. The future propose system can be extended to be used as prepaid energy meter.

Reference

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