AUTOMATED ENERGY METER READING USING LORA

Mr.A.Vellingiri[1](AssistantProfessor), Soundarya.R[2] , Santhiya.V[3] ,Suvetha.G[4]
Department of Electronics And Communication Engineering, KGISL Institute Of Technology

Abstract— A programmed meter-perusing framework dependent on LORA is displayed. It helpful to get meter perusing when wanted so meter perusers don't have to visit every client for the devoured vitality information accumulation and to disseminate the bill slip. Microcontroller can be utilized to screen and record the meter readings. In the event of a client defaulter, no compelling reason to send an individual of utility to remove the client association. Utility can cut off and reconnect the client association by electronic mail(EMAIL) to send message month to month and LORA is utilized as the likewise make the exchange to the particular office. Besides, the client can check the status of power (load) from anyplace. In this framework vitality meter readings are being exchanged by making utilization of LORA

Keywords— Energy meter, Lora module, Lora transceiver, antenna, arduino compatible arm, RS480 convertor

I.INTRODUCTION

A power meter, electric meter, electrical meter, or vitality meter is a gadget that estimates the measure of electric vitality devoured by a habitation, a business, or an electrically controlled gadget. Electric utilities utilize electric meters introduced at clients' premises to gauge electric vitality conveyed to their clients for charging purposes. Vitality meters are named per guideline and task. Like Electromechanical meters, Electronic meters, programmed vitality meter, computerized meters and so forth. Programmed vitality meter perusing is an innovation for naturally gathering information from vitality meter and exchanging that information to a focal database for charging. This spares worker treks and implies that charging can be founded on genuine utilization rather that on a gauge dependent on past utilization. This framework gives client better control utilization of power vitality. The energy meter has two standard ratings for unit consumption, in which the 1600imp/kWh and 3200 imp/kWh. The fundamental behind this is the calibrating LED blinks 1600 times to indicate the 1unit of consumption same for 3200imp/kWh meter.Here, the project is implemented on 3200imp/kWh for domestic purpose. This meter indicates 1 unit when calibrated LED blinks 3200times.
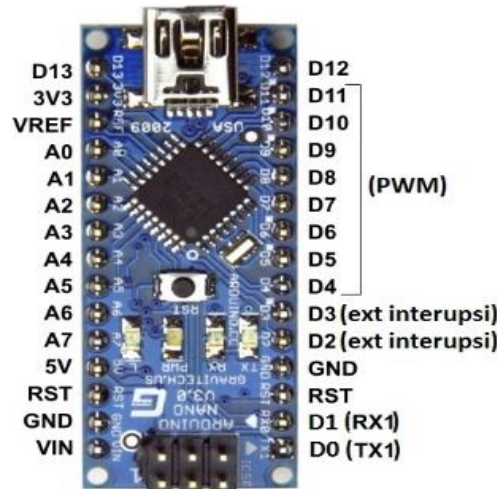
II. EASE OF USE

A.   ENERGY METER

This will change our customary meter with Arduino and LORA, which drives a points of interest and expel mistakes of conventional meter. This meter send us accurate,regular data about your vitality use. So your bills will be precise and there will be a conclusion to submitting meter readings. This vitality screen demonstrates to you how much vitality you're utilizing in cash. So you can perceive what you're going through constantly. Find out about how much vitality things use, will enable you to pick the manner in which you use them. On the off chance that you need to take advantage of being a brilliant meter client, let us know and we'll refresh your keen meters to record readings for time to time.

B.   ARDUINO COMPATIBLE ARM

Arduino is an open-source platform used for electronics projects. Arduino has some advantages over other controller boards.[6,2]Consists of both a physical boards.One is programmable circuit board (often referred to as a microcontroller) and second is a piece of software, or IDE (Integrated Development Environment) that runs on our computer, used to write and upload computer code to the physical board. Easy programming language than C++ etc. No extra hardware is needed.Thus Arduino is basic member of electronics.It consists of RAM, ROM, supply and analogue and digital pins which is required to run electronic system.

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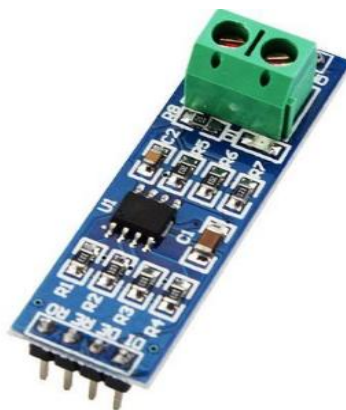*Volume- 5, Special Issue- March, 2019*

C. LORA TRANSCEIVER

Handset module gives a simple to utilize, low power answer for long range remote information transmission. LoRa handsets include a long-extend remote modem that gives ultra-long range spread range correspondence and high impedance insusceptibility while limiting current utilization. Our protected tweak strategy enables handsets inside this item family to accomplish sensitivities of - 137dBm and - 148dBm separately. The high affectability joined with the +22dBm control enhancer make these handsets ideal for any application requiring extent or vigor. LoRa innovation gives noteworthy focal points in both blocking and selectivity over customary tweak strategies, comprehending the conventional plan bargain between range, obstruction invulnerability and vitality utilization. The LoRa RF stage supplements M2M cell framework and gives an ease answer for interfacing battery worked gadgets to the system foundation.

D. RS485 CONVERTOR

RS232 convention is fine in the event that you are intending to convey over short separations of a couple meters, when you increment the range to a couple of 100 meters RS232 convention will progress toward becoming inadequate. For long separation wired correspondence you need to utilize an alternate convention called RS485 which can impart over a kilometer. MAX485 chip is accessible in a 8 Pin DIP bundle which can be effectively mounted on a General Purpose PCB or Bread Board

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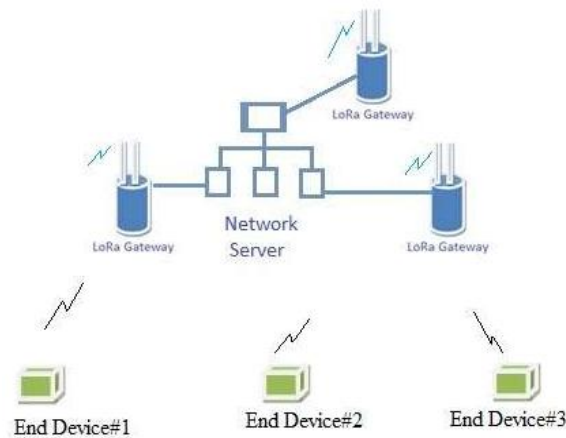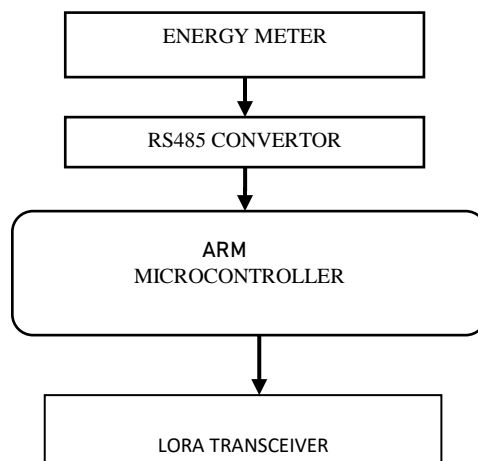*Volume- 5, Special Issue- March, 2019*

III. PROPOSED SYSTEM

Making use of LoRa transceiver and LoRa gateway LORA send email monthly to the customer and send message frequently. It used for long range to transmit. Used to reduce human effort in meter reading and this project is very economical and time saving .System is accurate, simple and low power consumption which is to be used in real time application. By implementing the project it can reduce human effect and human made errors can be reduced. It can be used in hills station .Now the energy meter reading is taken by using load and the reading is sends to the RS convertor and the readings is to be converted and it is stored in microcontroller and it is sends to the LoRa transceiver and it is sends to the respective mail ids.

IV. BLOCK DIAGRAM

LoRa (Long Range), as its meaning suggests, is a communications system intended to be used to send data wirelessly for up to 15 kilometers. The difference of this technology with other wireless systems is its focus on low power consumption while keeping its long range. As such, it is part of the group of IoT standards and protocols. LoRa may refer to the physical layer protocol introduced by LoRaWAN, a network layer protocol intended to be used for battery powered systems.The LoRaWAN network protocol is built on the top of the LoRa physical layer protocol and is primarily used by low-power sensors for communication. A typical LoRaWAN consists of end-node devices (sensors), gateways, network servers and application servers. The sensors transmit data asynchronously through the gateways to a network server which then sends the data to application servers.

V. SYSTEM FLOW DIAGRAM

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VI . EXISTING SYSTEM

Nowadays energy meter reading premise and take the reading manually then issues the bill. In manually human error possible and not provide reliable meter reading. In conventional meter reading system to measure electricity consumption the energy provider company hire a person to visit each house and record the reading manually. In this existing system it consist of GSM module to send messages.

i. It is a time consuming procedure.

ii. There is always a chance of human error while taking the manual meter reading

iii. There is no check and balance and verification procedure of this meter reading.

iv .Extra human power is required.

v. Consumer is not updated of his usage.

vi. Consumer may not get the bill slip within due date.

VII . CONCLUSION

In this project using LORA technology which is broadly used worldwide and reliable in nature, it can be used in remote areas also as the network and communication technology goes on increases our project implementation more effective. With this system the service provider can collect bill anytime with single message .The data collection and manipulation task becomes faster and easier .Changes the unit or rate calculation can be done very effectively. In this project, the data communication is through a mobile network which is done by LoRa system with respect to time. This is designed to convert analogue data of electromagnetic energy meter to digital data. If it implement in real world, then it can help us to reuse the analogue meter. This can be possible using Raspberry pi and Zig-bee boards.

VIII . FUTURE ENHANCEMENT

The framework planned lessens the endeavors of manual information accumulation of vitality meter. Additionally, information which is gotten at specialist co-op side is anything but difficult to control for bill age and another such undertaking.

Rather than LORA systems, some different methods for correspondence ought to be utilized.

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