IoT Base Regular Power Consumption Measuring Device Scheme with Immediate Invoice

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ABSTRACT: Electricity plays a cardinal role in day to day life. The electrical energy use in India is the third biggest after all the countries in world 5.5% worldwide split in recent years. Each human being power utilize watts in India is nearer to 0.7 KW. India's share with global energy demand will rise to 9% by 2035. IOT is an emerging field and IoT based devices have created a revolution in electronics and IT. The foremost objective of this paper is to create awareness about energy consumption and efficient use of home appliances for energy savings. Due to manual work, our existing electricity billing system has major drawbacks. This proposal gives the information on meter reading, power cut and the alert systems for producing an alarm when energy consumption exceeds beyond the specified limit using IoT. This idea is being implemented to reduce the human dependency to collect the monthly reading and minimize the technical problems regarding billing process.

Keywords— Arduino, GSM, IoT, Energy Consumption, Human Dependancy, Shut down, Alert message, Payment details, Daily basis, Alarm systems.

1.INTRODUCTION

The utility sector in our country has one National Grid with an install capability of 330.86 GW as on 30 November 2017. A renewable power plant constituted India is the 3rd biggest producer of electricity in the world and stands fourth largest in the electricity consumption. The electric energy consumed by the agricultural sector was recorded 17.89% in 2015-16 amongst other country. Even with low electrical energy tariff in India, the electricity consumption is low when evaluate to former countries.

The power generation capacity in India is surplus but the sufficient road and rail network for supply electrical energy to everyone is lacking. In order to develop the road and rail network to supply adequate electricity to all the needy people in the country by March 2019, the administration of our country launch a plan called "Power for all".

This plan resolve make certain nonstop and never-ending power supply to all industries, households, and industrial establishment by improving necessary infrastructure. It's a joint responsibility by the administration of our country with state to split financial support and form overall growth of the economy.

The electricity sector in India is dominated by fossil fuels, particularly coal, which produced about two thirds of all electricity in the year 2016. However, only the investment of renewable energy is increased by the Government.

Out of the total power generated the renewable energy constituted for about 28.43% and the non-renewable energy constituted for about 71.57%.

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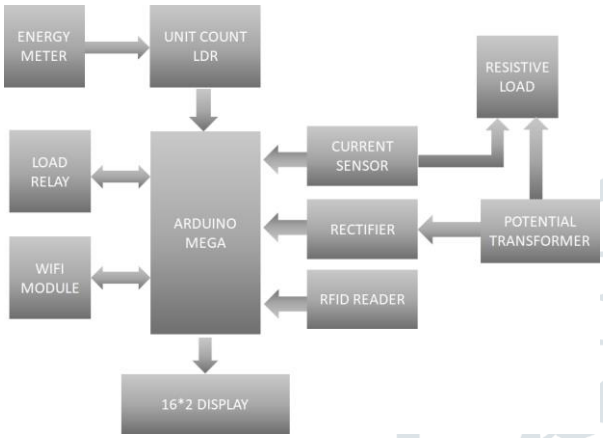
2. METHODOLOGY

The building block figure of the scheme is as shown in the fig. These schemes eliminate the person participation in the electrical energy safeguarding. The major machinery use in this scheme are Arduino Mega, CT antenna, power measuring device, load relay,WiFi module, potential transformer. The current sensor which works as a main meter is coupled to the Arduino Mega using interfacing circuit. The interfacing circuit consists of burden resistor and voltage divider circuit for signal conditioning.

The survive reading as of the CT antenna is composed by the Arduino Mega. The LCD display also shows the theft status. Arduino Mega

is the main component of the system as it takes reading and it sends over IOT.WiFi module is used for IOT operation, energy meter reading can be show on LCD show. Unit count LDR is used to count the consumption of number of units consumed.

BLOCK DIAGRAM



3. SYSTEM DESCRIPTION

a)Smart energy meter

Figure1: Smart energy meter

b) Arduino mega

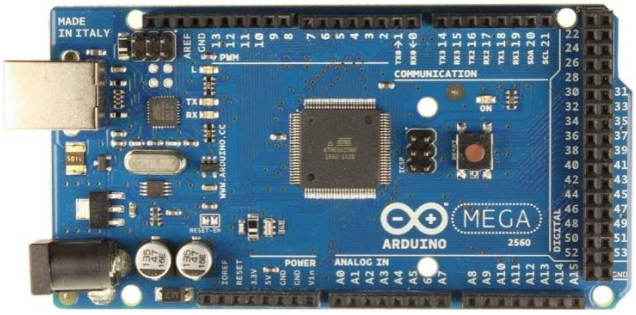


Fig:ArduinoATmega2560

Table 1: Technical Specifications

Technical specs

Microcontroller	ATmega2560
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	54 (of which 15 provide PWM output)
Analog Input Pins	16
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	256 KB of which 8 KB used by bootloader
SRAM	8 KB
EEPROM	4 KB
Clock Speed	16 MHz
Length	101.52 mm
Width	53.3 mm
Weight	37 g

c) Wi Fi

e) LDR(light dependent resistor)

An LDR is an **effort transducer** (antenna) which exchange clarity (light) to resistance. It is made from cadmium sulphide

(CdS) and the resistance decline as the intensity of glow falling on the LDR increases.

FIG6.5 : LDR SENSOR

f) Liquid crystal display (LCD)

The LCD panel used in this block interfaced with micro-controller through output port. This is a 16 × 2 LCD unit, able of show information. The exhibit enclose two inner byte-wide registers, one for orders (RS=0) and the next for character to be show (RS=1).

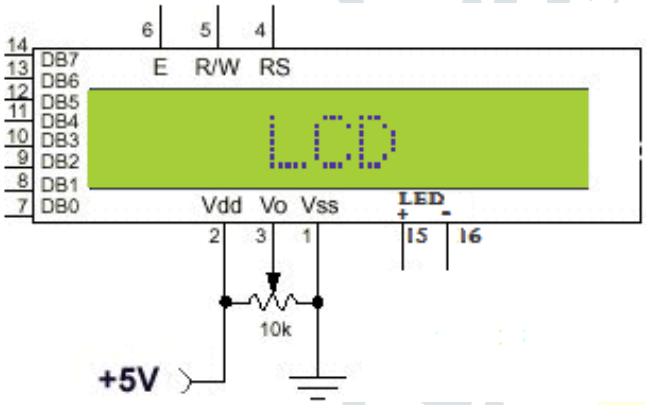


Fig 6.6: LCD Pin out.

g) Relay

- A relay is an electrically function button in which connections can be made to function in the–orderly manner.

CONCLUSION

In this paper, we have make available of wide reporting of the IoT Base regular power measuring device scheme with Instant invoice. Our projected schemes resolve the break between a consumer and the Electricity Board and take their existing system to a whole new level. Our final objective will be to make a prototype model of our project.

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