ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 10, October 2018

IOT Based Smart Wireless Sensor Network For Industrial Automation

Deepali A. Wavre[1], V.N.Bhonge [2]

P.G. Student, Department of E&TC, SSGMCE Shegaon, Maharashtra, India[1]

Associate Professor, Department of E&TC, SSGMCE Shegaon, Maharashtra, India[2]

ABSTRACT: With development of Automation technology, lifestyles are getting more truthful and less demanding in all perspectives. In this point in time Automatic systems are being favoured over guide framework. With the fast increment in the number of users of internet over the past decade has made Internet an indispensable part of lifestyles, and IoT is the maximum present day and rising internet era. This gadget proposes an internet based totally enterprise automation machine that allows a unmarried enterprise administrator to govern industry appliances without problems utilizing ARM7 processor and IOT. This proposed device takes into consideration automation of commercial loads to perform computerization over net. This utilizes IOT for the web serve interface and ARM7 processor to manner and run circuit masses. User is permitted to ship instructions for machines/load switching over internet utilizing IOT from anyplace on the earth over net. The ARM7 processor captures those commands through internet. Presently the ARM7 strategies got information to dispose of person commonplace. Subsequent to getting commands it displays it on LCD display. Additionally it switches the loads on/off based totally on acquired commands to obtain person desired output. The device as a result accomplishes industry automation over IOT making use of ARM7 processor.

KEYWORDS: Arm7, internet of things (IOT), GSM, LCD, Relay.

I. INTRODUCTION

Automation is one of the growing needs with in industries. Automation decreases the human efforts by way of replacing the human efforts by system that are self operated , The Internet is one approach for the growing platform for automation, thru which new development are made through which on effects monitor too control the device making use of net. As we are making utilization of net the gadget turns into machine and live data tracking is also viable making use of IoT system. IOT may be depicted as connecting everyday objects like smart-telephones, Internet TVs, sensors and actuators to the net in which the gadgets are intelligently connected collectively permitting new varieties of communiqué among things and people and between matters themselves. Here this device proposes a net primarily based enterprise automation device that enables a unmarried industry operator to control enterprise home equipment easily utilizing ARM7 processor and IOT. This proposed device lets in for automation of industrial masses to attain automation through gsm. We make use of IOT for the internet serve interface and ARM7 processor to method and run circuit load. User is authorized to ship instructions for machines/load switching over internet making use of IOT from anyplace within the global over internet. The ARM7 processor captures these commands by using internet over wifi connector. Presently the ARM7 methods obtained facts to extract consumer commands. Once you've got commands it displays it on LCD display. Likewise it switches the masses on/off based totally on received instructions to perform person desired output. The machine on this way achieves industry automation over IOT making use of ARM7 processor.

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 10, October 2018

II. HARDWARE COMPONENT

2.1ARM LPC2148 Microcontroller

We used ARM 7 LPC 2148 microcontroller in our assignment; it plays the function of a relevant processing unit in the assignment. The ARM board controls all the methods related to the machine. Hence, it's far maximum important part of device. LPC2148 microcontroller board is based totally on a sixteen-bit/32-bit ARM7TDMI-S CPU with actual-time emulation and embedded trace help, that combine microcontrollers with embedded high-speed flash reminiscence starting from 32 KB to 512 KB. A 128-bit wide memory interface and unique accelerator architecture permit 32-bit code execution on the maximum clock charge. For important code size programs, the opportunity 16-bit Thumb mode reduces code by means of more than 30% with minimum overall performance penalty. This is 32-bit micro-controller manufactured by way of Philips semiconductors (NXP). Due to their tiny length and occasional electricity intake, LPC2148 is ideal for programs where miniaturization is a key requirement, along with get right of entry to manipulate and point-of-sale.

2.2 Features of LPC2148 Microcontroller:

•16-bit/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package deal.
•eight KB to forty KB of on-chip static RAM and 32 KB to 512 KB of on-chip flash memory; 128-bit huge Interface/accelerator permits excessive-pace 60 MHz operation.
•USB 2.Zero Full-pace compliant tool controller with 2 KB of endpoint RAM. In addition, the LPC2148 provides 8 KB Of on-chip RAM available to USB by way of DMA.
•One or (LPC2141/42 Vs, LPC2144/46/48) 10-bit ADCs provide a complete of 6/14 analog inputs, with conversion Times as low as 2.Forty four ms according to channel.
•Single 10-bit DAC offers variable analog output (LPC2148 only).
•Two 32-bit timers/external event counters (with four capture and 4 examine channels each), PWM unit (six outputs) And watchdog.
•Low power Real-Time Clock (RTC) with unbiased power and 32 kHz clock enter.

2.3 LCD DISPLAY:

This is the instance for the Parallel Port. This instance would not use the Bi-directional feature found on more recent ports, for that reason it ought to paintings with most, if not all Parallel Ports. It but would not display using the Status Port as an input for a sixteen Character x 2 Line LCD Module to the Parallel Port. These LCD Modules are very common these days, and are pretty easy to work with, as all the common sense required walking them is on board.
Pros:
•Very compact and mild
•Low electricity intake
•No geometric distortion
•Little or no flicker relying on backlight technology
•Not tormented by display burn-in
•No excessive voltage or different risks gift in the course of repair/service
•Can be made in nearly any length or shape
•No theoretical resolution limit

2.4 RELAY

A relay is an electrically operated transfer. Many relays use an electromagnet to function a switching mechanism automatically, but different running ideas are also used. Relays are used wherein it's miles vital to control a circuit by means of a low-strength signal (with entire electrical isolation among manage and controlled circuits), or wherein numerous circuits ought to be managed by means of one sign. A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic area which draws a lever and adjustments the switch contacts.

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 10, October 2018

The coil contemporary can be on or off so relays have two transfer positions and maximum have double throw (changeover) transfer contacts as proven within the diagram.

2.5 GSM MODEM:

SIM 800C GSM Chip

SIM800C is a complete Quad-band GSM/GPRS solution in a SMT kind, which can be embedded inside the client applications.SIM800C helps Quad-band 850/900/1800/1900MHz, it may transmit Voice, SMS and information records with low electricity consumption. With tiny length of 17.6*15.7*2.3mm, it may smoothly healthy into slender and compact needs of patron design.SIM800C is a whole Quad-band. A GSM modem is a specialized kind of modem which accepts a SIM card, and operates over a subscription to a cellular operator, similar to a cellular Smartphone. From the cellular operator attitude, a GSM modem appears much like a cell Smartphone. When a GSM modem is attached to a pc, this lets in the laptop to apply the GSM modem to talk over the cellular network. While these GSM modems are maximum often used to offer cellular net connectivity, a lot of them can also be used for sending and receiving SMS and MMS messages. A GSM modem can be a committed modem tool with a serial, USB or Bluetooth connection, or it could be a mobile Smartphone that provides GSM modem competencies.

III. BLOCK DIAGRAM

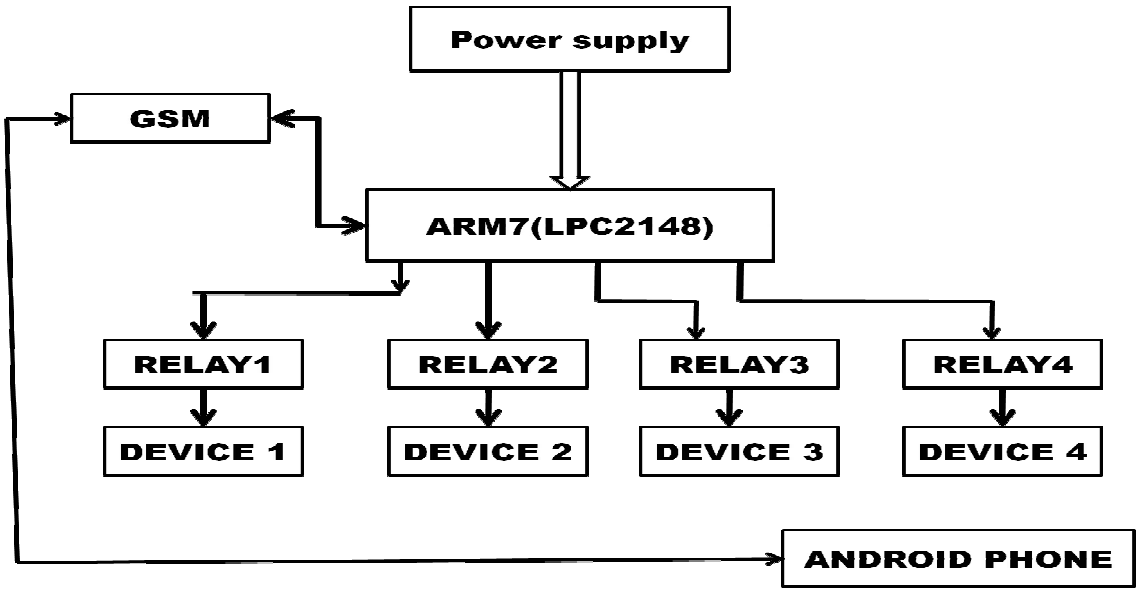

Fig 1: Block Diagram Of a System

IV. WORKING

The undertaking uses a GSM modem duly interfaced to the MC through the extent shifter IC Max232. The SIM card installed GSM modem upon receiving digit command via sms from any cell Smartphone ship that statistics to the MC via serial verbal exchange. Thus even as the program is carried out, it drives relays from the microcontroller thru relay driving force IC ULN2003. Loads are switched ON and switched OFF based totally on the corresponding command despatched from the person's cellular cell phone to GSM modem. As per the program, an acknowledgement is obtained if a sms is sent from the consumer to recognise the repute of the hundreds. The faraway MC sends robotically an sms

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 10, October 2018

confirming the popularity of the loads which includes load1 ON, Load2 OFF, load3 OFF, load4 OFF even as simplest one relay as been switched ON for load1. Accordingly the reputation shall be available relying on the variety of loads ON/OFF. The whole operation is displayed on the LCD display.

Operation Procedure:

1. To switch the 1st load send message '*a*'.
2. To switch off the 1st load send message '*b*'.
3. To switch on the 2nd load send message '*c*'.
4. To switch off the 2d load send message '*d*'.
5. To switch on the 3rd load send message '*e*'.
6. To switch off the 3rd load send message '*f*'.
7. To switch on the 4th load send message '*g*'.
8. To switch off the 4th load send message '*h*'.

V. IMPLEMENTATION RESULT

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 10, October 2018

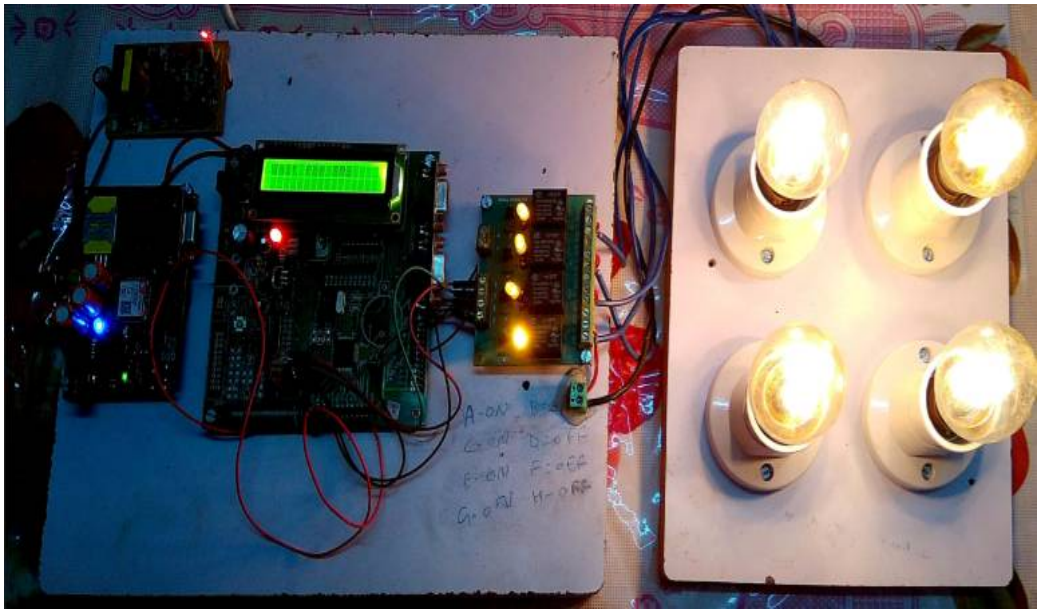

Fig 2: Implementation Of The System

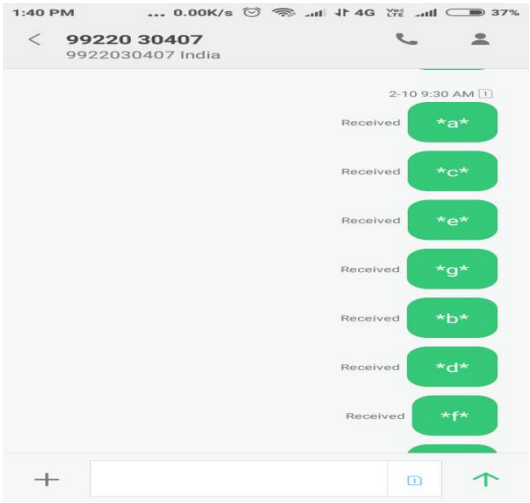

Fig 3: Screenshot Of Mobile Phone

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 10, October 2018

VI. CONCLUSION

In this system could control industrial devices utilizing the wired controls as well as with the assistance of internet of Things which is the developing innovation in recent times we effectively controlled the industrial devices utilizing the IOT interface. This can be helpful to different industrial applications where machines should be controlled from distant places. This system responds to the controls sent as well as monitor gadget on local display for on and off and can perform similar tasks repeatedly reducing human efforts.

REFERENCES

[1] Deepali A. Wavre, V.N.Bhonge, " IOT BASED SMART WIRELESS SENSOR NETWORK FOR INDUSTRIAL AUTOMATION:REVIEW"
[2] Esha Gandotra, Suvidha Kohli, Shavaya Gupta, Rohan Slathia, "IoT based Industry Automation using Arm7" Vol. 6, Issue 5, May 2017.
[3] Pranesh Naik, Ujwal Harode, Oct.-2016 “Raspberry Pi and Iot Based Industrial Automation", Volume-4, Issue-10, Oct.-2016.
[4] M.Lavanya, P. Muthukannan, Y.S.S. Bhargav, V. Suresh, 6 June, 2013 “Iot Based Automated Temperature And Humidity Monitoring and Control", Volume 2 Issue 6 June, 2013 Page No. 1988-1991.
[5] S.Rajesh Kumar, S.Rameshkumar, “Industrial Temperature Monitoring and Control System through Ethernet LAN”.
[6] Bhosale Kiran Uttam, Galande Abhijeet Baspusaheb, Jadhav Pappu Shivaji, Prof.Pisal.R.S, "Industrial Automation using IoT" Volume: 04 Issue: 06 June-2017.
[7] Sampat S. Pawar, P.C. Bhaskar, "Design and Development of ARM based Real-Time Industry Automation System using GSM" 02 Issue: 05 Aug-2015.
[8] Ojaswini Vijay Duragkar, Prof.P. V. Gawande, "Design and Implementation of Industrial Automation System By Using Internet Of Things (Iot) " Volume: 03 Issue: 05 May-2016.
[9] Ashwini Deshpande, Prajakta Pitale, Sangita Sanap, "Industrial Automation using Internet of Things (IOT)” Volume 5 Issue 2, February 2016.
[10] H. K. Merchant D. D. Ahire, “Industrial Automation using IoT with Raspberry Pi ".
[11] Li Da Zu, Internet of Things in industries: A Survey”IEEE transaction on Industrial on Industrial informatica, Vol. no, November 2014.
[12] ARM Datasheet.