ISSN XXXX XXXX © 2017 IJESC

IJESC

Research Article Volume 7 Issue No.3

Zigbee Based Electronic Notice Board

Prof.C.N.Bhoyar[1], ShwetaKhobragade[2], SamikshaNeware[3]
Guide[1], UG student[2,3]
Department of Electronics Engineering
PCE, Nagpur, India

Abstract:
Now-a-days advertisement is going digital. The big shops and the shopping centers use digital displays now. Also, in trains and buses the information like platform number, ticket information is displayed in digital boards. This project deals about an advanced hi-tech wireless notice board. In this project the wireless notice board is developed with the help of ZigBee and GSM Technology. The software developed at the personal computer is to assist the user to send the notices to the students through emails through mobiles and to display the notices at the notice board. The ZigBee modules are used for communication wirelessly between the PC and the Notice Board. The GSM modem is used to send the notices messages to the students at their mobiles. The Gmail Web Servers are used to send the multiple emails to the students at their email id. Zigbee is a PAN technology based on the IEEE 802.15.4 standard. Unlike Bluetoothor wireless USB devices, ZigBee devices have the ability to form a mesh network between nodes.

Keywords: Zigbee, GSM Modem, Wireless Technology.

I. INTRODUCTION:-

The wireless technology has been making tremendous progress. The ever increasing use wireless network serves as an indicator of the progress in the area of wireless networks. The technology defined by the ZigBee specification is intended to be simpler and less expensive than other wireless personal area networks (WPANs), such as Bluetooth or Wi-Fi. Applications include wireless light switches, electrical meters with in-home-displays, traffic management systems, and other consumer and industrial equipment that require short-range low-rate wireless data transfer. Notice boards play a vital role mostly in educational institutions. The time table or the schedule of the exams has to be given to the students. This will be done by writing the details on the notice boards. But this process consumes a lot time to update the news on all the notice boards and there may be chances that the person responsible may commit some mistakes or he may be absent sometimes. This project uses the wireless communication, Zigbee. The Zigbee transmitter will be present at the Principal or the person related to the issues to be displayed on the notice board. PC keyboard is used as the input device here in this project. Whenever the user wants to send the news updated to the notice board, he types that particular message using keyboard and the same data will be transmitted through Zigbee transmitter. The receiver receives the data coming from the transmitter and the same data will be received by the microcontroller at the receiver end. The microcontroller sends this data to the display unit and thus the message given by the user at the transmitter end will be displayed on the notice board. Wireless Notice Board has been designed which completely eliminates manual work. The system is divided into two parts; one is hardware and second is software. The LED scrolling board will shows the notice on it using the software part.

II. BLOCK DIAGRAM

The block diagram of wireless notice board is the transmitter side and the receiver sidein the transmitter side we are using the VB.NET languageby using the X-CTU software Here the max 232 IC is used to interfacing with the microcontroller 8051 and the receiver side it display the message on the board.

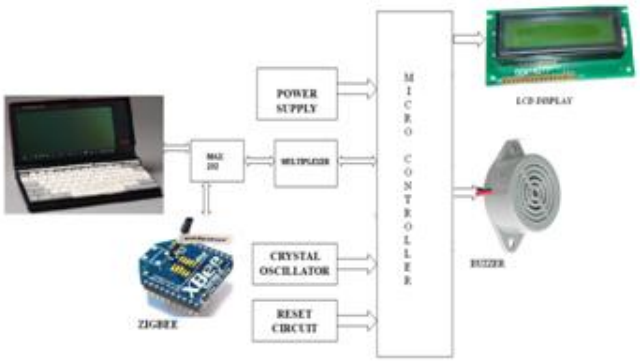


Figure.1. Block Diagram

- **MAX232:-**

The MAX232 IC is used to convert the TTL/CMOS logic levels to RS232 logic levels during serial communication of microcontrollers with PC The controller operates at TTL logic level (0-5V) whereas the serial communication in PC works on RS232 standards (-25 V to + 25V). This makes it difficult to establish a direct link between them to communicate with each other.

- **Microcontroller 89c51:-**

AT89C51 is an 8-bit microcontroller and belongs to Atmel's 8051family. ATMEL 89C51 has 4KB of Flash programmable and erasable read only memory (PEROM) and 128 bytes of RAM. It can be erased and program to a maximum of 1000 times.

- **ZigBee:-**

ZigBee is an IEEE 802.15.4-based specification for a suite of high-level communication protocols used to create personal area

networks with small, low-power. Its low power consumption limits transmission distances to 10–100 meters line-of- sight, depending on power output and environmental characteristics. ZigBee devices can transmit data over long distances by passing data through a mesh network of intermediate devices to reach more distant ones. ZigBee has a defined rate of 250 kbit/s, best suited for intermittent data transmissions from a sensor or input device.

Figure.2. Sensor or input device

- **GSM MODEM:-**

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves.

- **Circuit diagram:-**

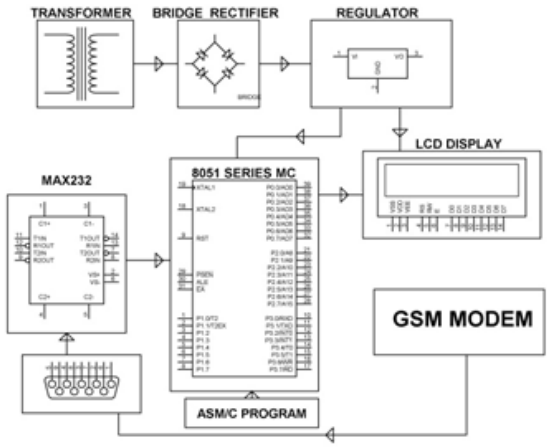
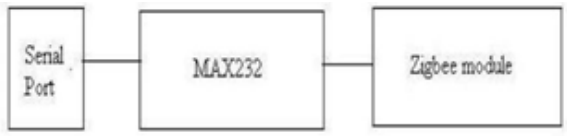


Figure.3.Circuit diagram

- **Transmitter section:-**



Transmitter Section mainly consists of serial port interfaced to Zigbee Module via MAX232. Module of XBEE Series2 of Digi Inc. [4] has been used. The Xbee radios are programmed using X-CTU software in API mode with the desired baud rate. Screenshots of X-CTU are shown in Net based GUI application is developed on PC which enables the user to display message. The application authenticates user and then allows displaying message.

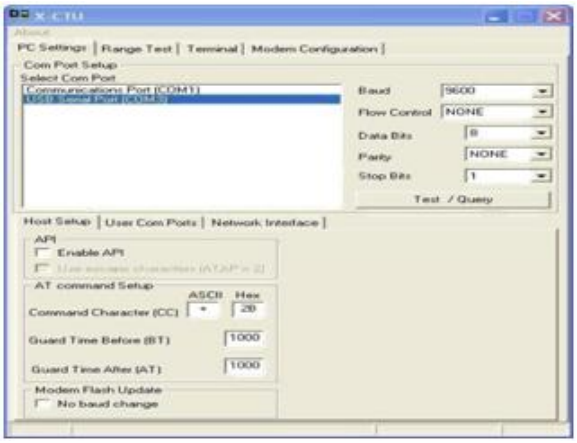


Figure.4. X-CTU

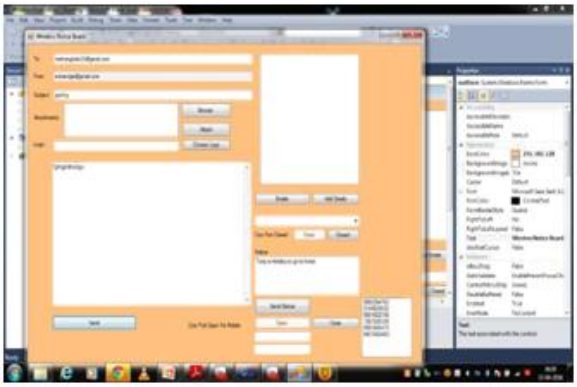


Figure.5. Notice Board Transmitter section

- **Receiver section:-**

Zigbee module on the Receiver side is interfaced with UART (Universal Asynchronous Receiver/ Txr) of Micro-Controller PIC16F877A. Micro-Controller receives the message from Zigbee module on receiver side and displays it on the LED Display. It also provides Synchronization between Transmitter and Receiver.

- **PC Interfacing:-**

To connect to PC you can use either a simple MAX232 circuit to convert display's TTL level of 5V to RS232 level or you can use a USB to TTLUART board. Either way you can get a serial port on PC to connect to and send string. We recommend this Terminal software which can be used test display by sending serial data from PC side.

- **Working :-**

In this project the wireless notice board is developed with the help of ZigBee and GSM Technology. The software developed at the personal computer is to assist the user to send the notices to the students through emails through mobiles and to display the notices at the notice board. The ZigBee modules are used for communication wirelessly between the PC and the Notice Board. The GSM modem is used to send the notices messages to the students at their mobiles. The Gmail Web Servers are used to send the multiple emails to the students at their email id. To

achieve these functionalities Microsoft VB.NET compiler is used for developing the software.

III. CONCLUSION:-

Wireless operations permit services, such as range communications, that are impossible or impractical to implement with the use of wires. It provides fast Transfer of information and is cheaper to install and maintain. These papers provide an efficient way of displaying messages on Notice Board and send emails using Wireless Technology. It also provides user authentication in order to avoid any misuse of proposed system. Cost of printing and photocopying is also reduced as information can be given to a large number of people from our fingertips. Thus we can conclude that this project is just a start, an idea to make use of GSM in communications to a next level.

IV. FUTURE SCOPE:-

Electronic Notice Board is one of the applications where Zigbee can be used effectively. It can also be used in Malls and Highways for Advertisement purpose. A moving display with variable speed can also be used in place of static display.

V. REFERENCES:-

[1]. Memo, A.R.; Dept. of Electron. Eng., Tehran Univ .of Eng. & Technol., Jamshoro, Pakistan; Chowdhry, B.S.; Sherfam Shah, S.M. ; Memo, T.R "An electronic information desk system for information dissemination in educational institutions 11-13 March 2015.

[2]. Kwiatkowski, M. Fac. of Microsystem. Electron. & Photonics, Wroclaw Univ. of Technol. Wozniak, K.; Orczy, L. "Student Notice Board Based on LED Matrix System Controlled over TCP/IP Protocol ", July 2006, Conference Publications.

[3]. Kunai PTayade, Akashi P. Kulkarni, "GSM Mobile Phone Based LED Scrolling Message Display System" International Journal of Scientific Engineering and Technology (ISSN: 2277-1581) Volume 2 Issue 3, PP: 149-155 1 April 2013 IJSET@2013 Page 149.

[4]. ForamKamdar, AnubbhavMalhotra and PritishMahadik "Display Message on Notice Board using GSM", Advance in Electronic and Electric Engineering. ISSN 2231-1297, Volume-3, November-7-(2013), pp. 827-832© Research India Publications http://www.ripublication.com/aeee.htm.