Atmega 328 Based Menu Ordering System Using Zigbee

Amit Kumar, Sidhart Bhatia

Abstract: Zigbee is a wireless protocol for transmitting data for short distances efficiently .In menu ordering system we wanted to make a system which is user friendly, less time consuming and cost efficient .As it is a combination of electronics and computer based system we can basically call it an embedded system. It is becoming difficult for restaurants to manage their staff also they don't want that their customer to wait for waiter to get free, so to provide a better solution to this problem we came up with an idea of making menu ordering system automated.

Keywords: Zigbee, Atmega328, XPT2046IC

————————————— ◆ —————————————

I. Introduction

It is an embedded system which is to be installed on every table in the restaurant. A touch screen display is provided on each of the table which is embedded with a microcontroller unit and Zigbee transmitter on user side and a Zigbee receiver and P.C on another side. Our touch screen is made up of X coordinate and Y coordinates. Touch screen is divided into three rows and two columns, so we can place six item list on front desk. By pressing on a particular item from the list we get a particular value of X,Y coordinates .Depending upon these value we came to know in which row and column it is pressed .We had already stored our item value in microcontroller so by knowing the row and column location a particular code having the name of the item is send by Zigbee transmitter which is received at the receiver end and displayed on P.C. We can also send a conformation message from that P.C to the lcd display attached on the main circuit.
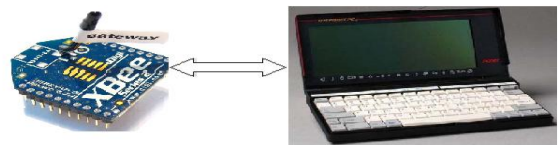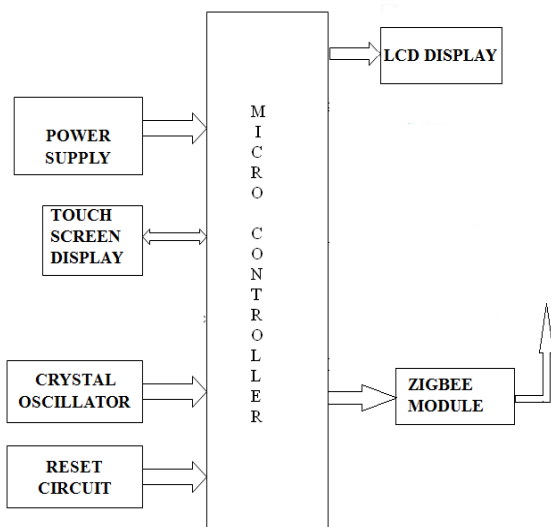
II. Block Diagram

Figure1. *Transmitter Side*

Transmitter side is the user side, it consist of microcontroller unit, touch screen unit, Zigbee transmitter unit. User gives input from the touch screen unit which is read out by microcontroller unit and accordingly particular code is send out by using zigbee transmitter unit.

Figure 2. *Receiver unit*

Receiver unit simply consist of Zigbee receiver unit and a P.C. unit. Commands send by zigbee transmitter are received at this end and are displayed on p.c screen .Conformation message is send by using keyboard from the computer.

III. Hardware Tools

i. xpt2046 touch controller:

It is used to control a 4 wire resistive touch screen integrating a 12 bit 125khz SAR type analog to digital converter. Pressed screen location is detected by two A/D Conversions.
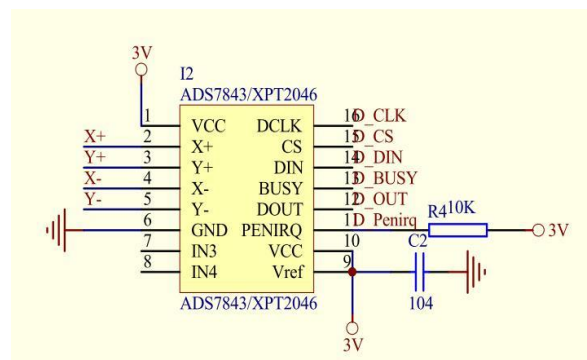

Figure 3. *Pin Diagram of XPT2046*

X and Y are the coordinates i.e analog input value that we got from touch screen when we press the touch screen and his value is used to detect the position of touch.

ii. lcd Display unit

A 16X2 Lcd is used ,which consist of 8 bit data line(PIN D0-D7) used to send commands and data.It is used in 4 bit mode(D4-D7)

Figure 4. *Pin of Lcd*

The roll of lcd is to just display the conformation message that is send by computer to the customer's table. For this we use RS=1 and R/W=0 to send data and send a high to low pulse to Enable pin.

iii. Zigbee Module

It is a specification for high level communication protocol based on IEEE802.15.4 used for wireless transmission upto 100 meters at a fix data rate of 250kbits/s.
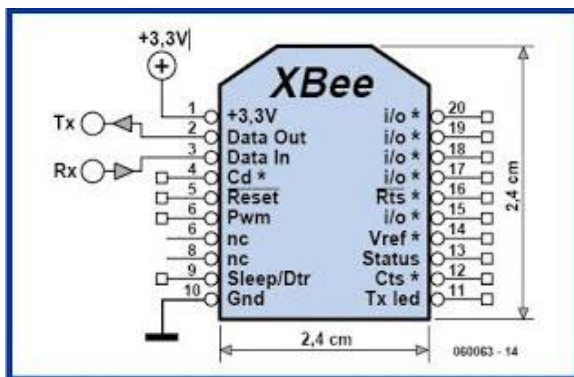

Figure 5. *Pin Diagram of Zigbee Module*

The programming of ATmega 328 is done with the help of ARDUINO software and USB to Serial converter is used at receiver end to communicate with computer. XCTU Digi software is used to send conformation command and to receive command from Zigbee receiver and to show them on computer.

V. Conclusion and future scope

Wireless technology is very useful as it is faster, easy to access and cost efficient. Zigbee based menu ordering system will definitely help to save time and easy access to food. It will increase the revenue of restaurants. For further improvements we can use graphical lcd to display charts and graphs, can display estimated time of customer order, new schemes & offers can be displayed on GLCD.

VII. References

[1] Veerasingam, S.; Karodi, S.; Shukla, S.; Yeleti, M.C., "Design of Wireless Sensor Network Node on ZigBee for Temperature Monitoring," Advances in Computing, Control, & Telecommunication Technologies, 2009. ACT '09. International Conference on , vol., no., pp.20,23, 28-29 Dec. 2009

[2] Sun Guiling; Qingqing Song, "Design of the Restaurant Self-Service Ordering System Based on ZigBee Technology,"Wireless Communications Networking and Mobile Computing (WiCOM), 2010 6th International Conference on, vol., no., pp.1,4, 23-25 Sept. 2010.

[3] Hashim,Nik Mohd Zarifie and Ali,Nur Alisa and Ja'afar,Abd Shukur and Mohamad, Najmiah Radiah and Salahuddin, Lizawatiand Ishak, Noor Asryran (2013) Smart Ordering System via Bluetooth. International Journal of Computer Trends and Technology (IJCTT), 4 (7). pp. 2253-2256.

[4] Iovine, J. (2000), "PIC Microcontroller Project Book." Washington, C.D: McGraw-Hill.

[5] (2013)ElectronicsLab.com.[Online].Availablehttp://www.electronicslab.com/blog/?tag=microcontroller?&lang=en_u s&output=json