

## Touch Screen and Wireless Communication Based Personal Assistant for Dumb and Illiterate in Airlines

**V.Chandra Shekher Rao**

**MTech(ES),**

Rajamahendra College of Engineering, Hyderabad.

**S Archana, M.Tech**

**Asst prof,**

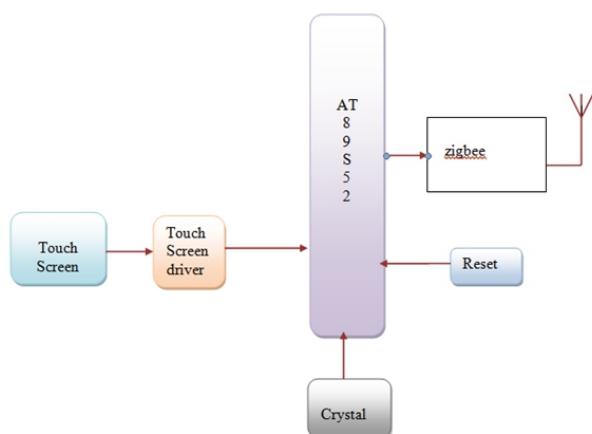
Rajamahendra College of Engineering, Hyderabad.

### Abstract :

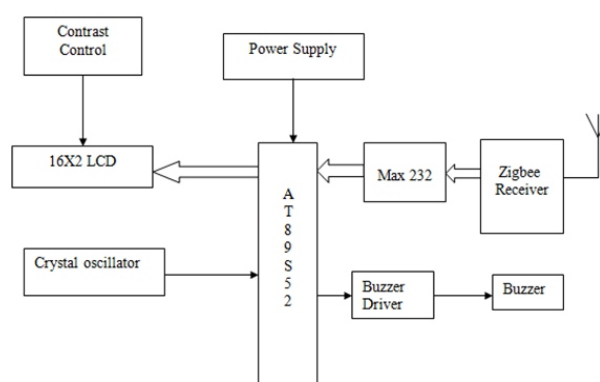
The main purpose of using this project is to give assistance to the illiterate/dumb people traveling by Airlines. So, in this project we are using a device that helps them in expressing their needs like coffee, tea, drinks etc to the concerned staff of airlines in the flight. The major technology which we are using in this project is Zigbee wireless communication with interface of touch screen. By the usage of Touch screen Display even reduces the difficulty to airhostess in receiving the customers with different languages and the Message can be send for long distance( within the plane) by using Zigbee Technology.

### Introduction:

In this project we are using a device that helps them in expressing their needs like coffee, tea, drinks etc to the concerned staff of airlines in the flight. The major technology which we are using in this project is Zigbee wireless communication with interface of touch screen. By the usage of Touch screen Display even reduces the difficulty to airhostess in receiving the customers with different languages and the Message can be send for long distance( within the plane) by using Zigbee Technology.



### (2) Receiver:



### Working Procedure:

- » The project is built around the AT89S52 micro controller from Atmel.
- » This micro controller provides all the functionality of the display and wireless control.
- » This project consists of Zigbee based system that transmits the wireless signals according to the input given by the user using touch screen.
- » At the receiver end the information will be displayed on LCD in English language.
- » Here when user sends his need through touch screen, then microcontroller transmits that information through Zigbee transmitter.
- » The information received by the Zigbee receiver will be displayed on LCD.

### LPC2148 CONTROLLER:

#### General description:

The LPC2141/42/44/46/48 microcontrollers are based on a 16-bit/32-bit ARM7TDMI-CPU with real-time emulation and embedded trace support, that combine microcontroller with embedded high speed flash memory ranging from 32 kB to 512 kB. A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at the maximum clock rate.

For critical code size applications, the alternative 16-bit Thumb mode reduces code by more than 30 % with minimal performance penalty. Due to their tiny size and low power consumption, LPC2141/42/44/46/48 are ideal for applications where miniaturization is a key requirement, such as access control and point-of-sale. Serial communications interfaces ranging from a USB 2.0 Full-speed device, multiple UARTs, SPI, SSP to I2C-bus and on-chip SRAM of 8 kB up to 40 kB, make these devices very well suited for communication gateways and protocol converters, soft modems, voice recognition and low end imaging, providing both large buffer size and high processing power. Various 32-bit timers, single or dual 10-bit ADC(s), 10-bit DAC, PWM channels and 45 fast GPIO lines with up to nine edge or level sensitive external interrupt pins make these microcontrollers suitable for industrial control and medical systems.

### Memory map:

The LPC2141/42/44/46/48 memory map incorporates several distinct regions, as shown in Figure. In addition, the CPU interrupt vectors may be remapped to allow them to reside in either flash memory (the default) or on-chip static RAM. This is described in Section 6.19 “System control”.

4.0 GB	AHB PERIPHERALS	0xFFFF FFFF
3.75 GB	VPS PERIPHERALS	0xF000 0000
3.5 GB	RESERVED ADDRESS SPACE	0xE000 0000
3.0 GB	RESERVED ADDRESS SPACE	0xC000 0000
2.0 GB	BOOT BLOCK (12 kB REMAPPED FROM ON-CHIP FLASH MEMORY)	0x8000 0000 0x7FFF FFFF
	RESERVED ADDRESS SPACE	0x7FFF 0000 0x7FFF CFFF
	8 kB ON-CHIP USB DMA RAM (LPC2146/2148)	0x7FD0 2000 0x7FD0 1FFF
	RESERVED ADDRESS SPACE	0x7FD0 0000 0x7FCF FFFF
	32 kB ON-CHIP STATIC RAM (LPC2146/2148)	0x4000 8000 0x4000 7FFF
	16 kB ON-CHIP STATIC RAM (LPC2142/2144)	0x4000 4000 0x4000 3FFF
	8 kB ON-CHIP STATIC RAM (LPC2141)	0x4000 2000 0x4000 1FFF
1.0 GB	RESERVED ADDRESS SPACE	0x4000 0000 0x3FFF FFFF
	TOTAL OF 512 kB ON-CHIP NON-VOLATILE MEMORY (LPC2148)	0x0008 0000 0x0007 FFFF
	TOTAL OF 256 kB ON-CHIP NON-VOLATILE MEMORY (LPC2146)	0x0004 0000 0x0003 FFFF
	TOTAL OF 128 kB ON-CHIP NON-VOLATILE MEMORY (LPC2144)	0x0002 0000 0x0001 FFFF
	TOTAL OF 64 kB ON-CHIP NON-VOLATILE MEMORY (LPC2142)	0x0001 0000 0x0000 FFFF
	TOTAL OF 32 kB ON-CHIP NON-VOLATILE MEMORY (LPC2141)	0x0000 8000 0x0000 7FFF
0.0 GB		0x0000 0000

### ZIGBEE TECHNOLOGY:

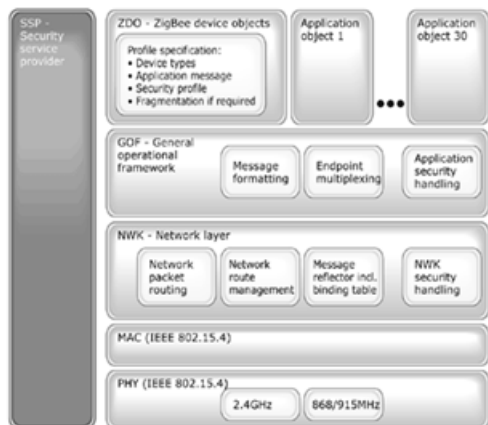


ZigBee module. The €1 coin, shown for size reference, is about 23 mm (0.9 inch) in diameter. ZigBee is a specification for a suite of high level communication protocols using small, low-power digital radios based on the IEEE 802.15.4-2003 standard for wireless personal area networks (WPANs), such as wireless headphones connecting with cell phones via short-range radio.

The technology defined by the ZigBee specification is intended to be simpler and less expensive than other WPANs, such as Bluetooth. ZigBee is targeted at radio-frequency (RF) applications that require a low data rate, long battery life, and secure networking. The ZigBee Alliance is a group of companies that maintain and publish the ZigBee standard.



## ARCHITECTURE:



ZigBee is a home-area network designed specifically to replace the proliferation of individual remote controls. ZigBee was created to satisfy the market's need for a cost-effective, standards-based wireless network that supports low data rates, low power consumption, security, and reliability. It may be helpful to think of IEEE 802.15.4 as the physical radio and ZigBee as the logical network and application software. Following the standard Open Systems Interconnection (OSI) reference model, ZigBee's protocol stack is structured in layers. The first two layers, physical (PHY) and media access (MAC), are defined by the IEEE 802.15.4 standard. The layers above them are defined by the ZigBee Alliance. The IEEE working group passed the first draft of PHY and MAC in 2003.

## Applications of Zigbee:



## AT89S52:

Microprocessors and microcontrollers are widely used in embedded systems products. Microcontroller is a programmable device. A microcontroller has a CPU in addition to a fixed amount of RAM, ROM, I/O ports and a timer embedded all on a single chip. The fixed amount of on-chip ROM, RAM and number of I/O ports in microcontrollers makes them ideal for many applications in which cost and space are critical.

The Intel 8052 is Harvard architecture, single chip micro-controller ( $\mu$ C) which was developed by Intel in 1980 for use in embedded systems. It was popular in the 1980s and early 1990s, but today it has largely been superseded by a vast range of enhanced devices with 8052-compatible processor cores that are manufactured by more than 20 independent manufacturers including Atmel, Infineon Technologies and Maxim Integrated Products. 8052 is an 8-bit processor, meaning that the CPU can work on only 8 bits of data at a time.

Data larger than 8 bits has to be broken into 8-bit pieces to be processed by the CPU. 8052 is available in different memory types such as UV-EPROM, Flash and NV-RAM. The present project is implemented on KeilVision. In order to program the device, proload tool has been used to burn the program onto the microcontroller.

## TOUCH SCREEN:

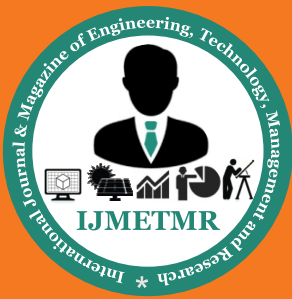
A touchscreen is an electronic visual display that can detect the presence and location of a touch within the display area. The term generally refers to touching the display of the device with a finger or hand. Touchscreens can also sense other passive objects, such as a stylus. Touchscreen is common in devices such as all-in-one computers, tablet computers, and smartphones. The touchscreen has two main attributes.

First, it enables one to interact directly with what is displayed, rather than indirectly with a cursor controlled by a mouse or touchpad. Secondly, it lets one do so without requiring any intermediate device that would need to be held in the hand. Such displays can be attached to computers, or to networks as terminals.

## CONCLUSION:

This project presents the ZIGBEE based Touch screen operated system for dumb and illiterates which is to provide better personal assistance depending on user requirement. The project is been designed and implemented with Atmel 89S52 MCU in embedded system domain. Experimental work has been carried out carefully.

The result shows that higher efficiency is indeed achieved using the embedded system according to requirement of the user. Zigbee technology will provide efficient way to transmit the message and is displayed on LCD.



## REFERENCES:

- [1] T. Birtley, (2010) Japan debates care for elderly. [Cited 21/09/2010]. Available: <http://www.youtube.com/watch?v=C0UTqfigSec>
- [2] Guangming Song, Fei Ding, Weijuan Zhang and Aiguo Song, "A Wireless Power Outlet System for Smart Homes," IEEE Transactions on Consumer Electronics, Vol. 54, No.4, NOVEMBER 2008.
- [3] (2010) uControl Home security system website. [Cited 2010 14th Oct]. Available: <http://www.itechnews.net/2008/05/20/ucontrolhome-security-system/>
- [4] R. Gadalla, "Voice Recognition System for Massey University Smart house," M. Eng thesis, Massey University, Auckland, New Zealand, 2006.
- [5] (2010) Home Automated Living website. [Cited 2010 14th Oct]. Available: <http://www.homeautomatedliving.com/default.htm>.
- [6] L. R. Rabiner and R. W. Schafer, Digital Processing of Speech Signals, New Jersey, US: Prentice Hall Inc, 200