

WIRELESS COMMUNICATION FOR DUMB PEOPLE USING PIC18F452 MICROCONTROLLER

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Abstract - The most pain full moment in the life is, when there is a no person to understand our feelings when we are speaking. This difficult situation in every day, every moment encountered by dumb persons in this world. Even though we are having the capability to expressing our feelings in word, we will face this same problem when we are in a place which is not in our state. But we can share our feelings the people by gestures and by drawing pictures. On this basis we are going to develop this project which is having the caliber to take Input from any kind of person. The GLCD displays the different kind of clip arts which can easily understood by the passenger. On the top of the GLCD we placed one touch screen module. If he touches on the GLCD the concerned signal will be transmitted to the micro controller. The signal will be transmitted through Zigbee module from the transmitter part. The concerned signal will be received by another Zigbee module which is kept in the air hostess room LCD. The message will be displayed in the predefined format that means with the concerned seat number and his requirement will be displayed on the LCD. Then the airhostess will assist the passengers.

Keywords – LCD, micro controller, GLCD.

I.INTRODUCTION

An embedded system is a computer system designed to perform one or a few dedicated functions often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet a wide range of end-user needs. Embedded systems control many devices in common use.

Embedded systems are controlled by one or more main processing cores that are typically either microcontrollers or digital signal processors (DSP). The key characteristic, however, is being dedicated to handle a particular task, which may require very powerful processors. For example, air traffic control systems may usefully be viewed as embedded, even though they involve mainframe computers and dedicated regional and national networks between airports and radar sites. (Each radar probably includes one or more embedded systems of its own)

Since the embedded system is dedicated to specific tasks, design engineers can optimize it to reduce the size and cost of the product and increase the reliability and

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performance. Some embedded systems are mass-produced, benefiting from economies of scale. Physically embedded systems range from portable devices such as digital watches and MP3 players, to large stationary installations like traffic lights, factory controllers, or the systems controlling nuclear power plants. Complexity varies from low, with a single microcontroller chip, to very high with multiple units, peripherals and networks mounted inside a large chassis or enclosure.

II.WORKING PROCESS

Resistive touch screens are composed of two flexible sheets coated with a resistive material and separated by an air gap or microdots. When contact is made to the surface of the touch screen, the two sheets are pressed together, registering the precise location of the touch. Because the touch screen senses input from contact with nearly any object (finger, stylus/pen, palm) resistive touch screens are a type of "passive" technology.

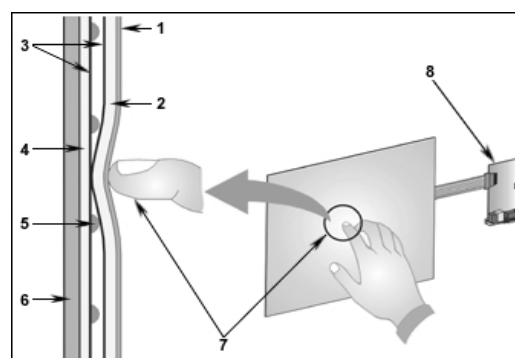


Fig 2.1: Diagram of touch screen working

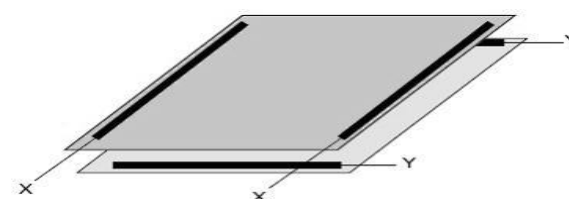


Fig 2.2 Block Diagram of Touch Screen Interface

When a position is measured on a 4-wire touch screen, voltage is applied across the screen in the Y direction; and a touch presses the layers together, where a voltage can be read from one of the X electrodes. The contact made as a result of the touch creates a voltage divider at that point, so the Y coordinate can be determined; the process then repeats with

the X direction being driven, and a reading is taken from one of the Y electrodes. A touch-screen controller is simply an ADC that has built-in switches to control which electrodes are driven and which electrodes are used as the input to the ADC.

➤ **Graphic LCD with Touch Screen**

These GLCD have common display drivers like KS0108 and T6963C and 4 wire resistive touch screen. There is no need for touch screen digitizer/controller for micro controllers having on chip ADC with four analog channels. Just connect the four wire of touch screen to analog inputs and read the respective digital data for X and Y direction of touched point.



Fig 2.3: Graphic LCD with Touch Screen

1 Graphic LCD 128x64

This 128x64 graphic LCD is the latest high quality offering from Crystal Fonts. This production unit is much more than just a surplus LCD found on many electronics sites! This CFA model comes with an EL backlight and a 4-wire analog touch screen! You can use it for anything! Check out the example screen shots from Crystal Fonts.

➤ **Features**

- Ultrathin and light TAB construction
- Wide viewing angles
- Built-in controller: Samsung KS0713 (data sheet 850K).
- Great for hand held instruments, cell phones, PDAs, etc.
- Ultra low power consumption

➤ **Dimensions**

- 56.0mm x 42.5mm Module Outline (less tab)
- 52.0mm x 33.5mm Viewing Area
- 47.76mm x 30.29mm Active Area
- 0.35mm x 0.40mm Dot Pitch



Fig2.4: 128x64 Graphic LCD

This is a 128x64 liquid crystal display that supports Chinese characters, English characters, and even graphics, very suitable for interactive work.

➤ **Specifications**

1. **Voltage:** 5V
2. With Chinese font.
3. Blue backlit.
4. **Controller:** ST7920
5. **Size:** 93x70mm

III ZIGBEE

The name of ZigBee [5] comes from the zigzagging path a bee (a data packet) takes to get from flower to flower (or node to node) [6]. ZigBee is primarily intended for low power and low duty-cycle sensors. ZigBee nodes can be active for less than 1% of the time. For instance, an off-line node can connect to a network in about 30 ms. Waking up a sleeping node takes about 15 ms, as does accessing a channel and transmitting data. The ZigBee protocol carries all the benefits of the 802.15.4 IEEE protocol [7] with added networking functionality.

(A). MICRO CONTROLLER

A microcontroller is a small computer on a single integrated circuit consisting internally of a relatively simple CPU, clock, timers, I/O ports, and memory. Program memory in the form of flash, RAM and ROM is also often included on chip. Microcontrollers are designed for dedicated applications.

Some microcontrollers may use four-bit words and operate at clock rate frequencies as low as 4 kHz, as this is adequate for many typical applications, enabling low power consumption (milliwatts or microwatts). Microcontrollers usually contain general purpose input/output pins (GPIO).

(B). PIC18F452 microcontroller

PIC18F452 Micro controller [9] (DIP package). This is a 40-pin microcontroller housed in a DIP package, with a pin configuration similar to the popular PIC16F877. PIC18F2X2 microcontrollers are 28-pin devices, while PIC18F4X2 microcontrollers are 40-pin devices. The architectures of the two groups are almost identical except that the larger devices have more in/out ports and more A/D converter channels. The PIC18F452 consists of 4 timers / counters, 2 capture / compare / PWM registers

rs,USART, 8 10-bit A/D converter,and 256 bytes EEPROM data memory.Most devices in the PIC18F family are source compatible with each other. The architectures of most of microcontrollers in the PIC18F family are similar.

(C).TOUCH SCREEN

1. Resistive Touch screen Technology

Resistive LCD touch screen monitors rely on a touch overlay, which is composed of a flexible top layer and a rigid bottom layer

separated by insulating dots, attached to a touch screen controller[11]. The inside surface of each of the two layers is coated with a transparent metal oxide coating (ITO) that facilitates a gradient across each layer when voltage is applied. Pressing the flexible top sheet creates electrical contact between the resistive layers, producing a switch closing in the circuit. The control electronics alternate voltage between the layers and pass the resulting X and Y touch coordinates to the touch screen controller. The touch screen controller data is then passed on to the computer operating system for processing.Resistive touch screens[12] are composed of two flexible sheets coated with a resistive material and separated by an air gap or microdots. When contact is made to the surface of the touch screen, the two sheets are pressed together, registering the precise location of the touch. Because the touch screen senses input from contact with nearly any object (finger, stylus/pen, palm) resistive touch screens are a type of “passive“ technology.

IV SOFTWARE DESCRIPTION

This project is implemented using following software’s

- Express PCB – for designing circuit
- PIC C compiler - for compilation part
- Proteus 7 (Embedded C) – for simulation part

4.1 Express PCB

Breadboards are great for prototyping equipment as it allows great flexibility to modify a design when needed; however the final product of a project, ideally should have a neat PCB, few cables, and survive a shake test. Not only is a proper PCB neater but it is also more durable as there are no cables which can yank loose.

Express PCB is a software tool to design PCBs specifically for manufacture by the company Express PCB (no other PCB maker accepts Express PCB files). It is very easy to use, but it does have several limitations.

- It can be likened to more of a toy then a professional CAD program.
- It has a poor part library (which we can work around)
- It cannot import or export files in different formats
- It cannot be used to make prepare boards for DIY production

Express PCB has been used to design many PCBs (some layered and with surface-mount parts. Print out PCB patterns and use the toner transfer

insertion point and either use Insert | Picture | From File or copy the image to the Windows clipboard and then Edit | Paste Special | Picture (with “Float over text” unchecked).

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method with an Etch Resistant Pen to make boards. However, Express PCB does not have a nice print layout. Here is the procedure to design in Express PCB and clean up the patterns so they print nicely.

4.1.1 Preparing Express PCB for First Use

Express PCB comes with a less then exciting list of parts. So before any project is started head over to Audio logical and grab the additional parts by morsel, ppl, and tangent, and extract them into your Express PCB directory. At this point start the program and get ready to setup the workspace to suit your style.

Click View -> Options. In this menu, setup the units for “mm” or “in” depending on how you think, and click “see through the top copper layer” at the bottom. The standard color scheme of red and green is generally used but it is not as pleasing as red and blue.

V.RESULT

The project “*Wireless communication for dumb people using PIC18F452 micro Controller*” was designed a user friendly multi- language communication system for illiterate/ dumb people traveling by Airlines.

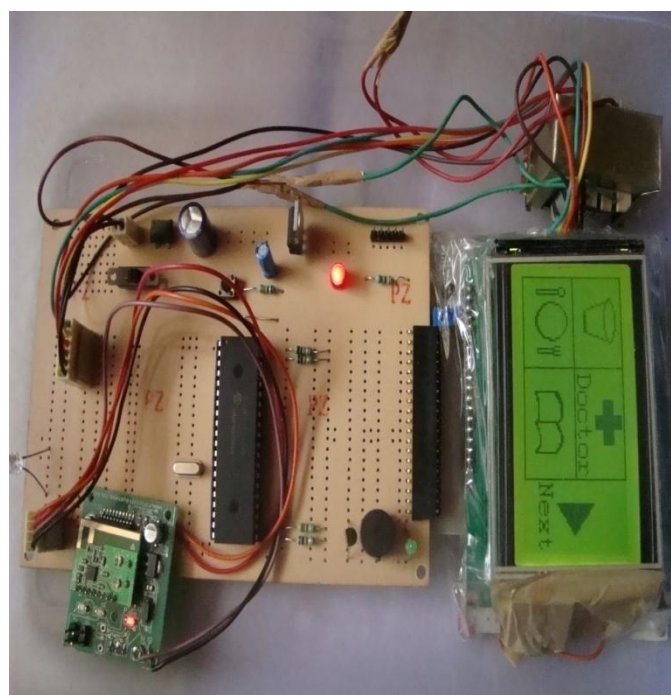


Fig 5.1: TX section of the project

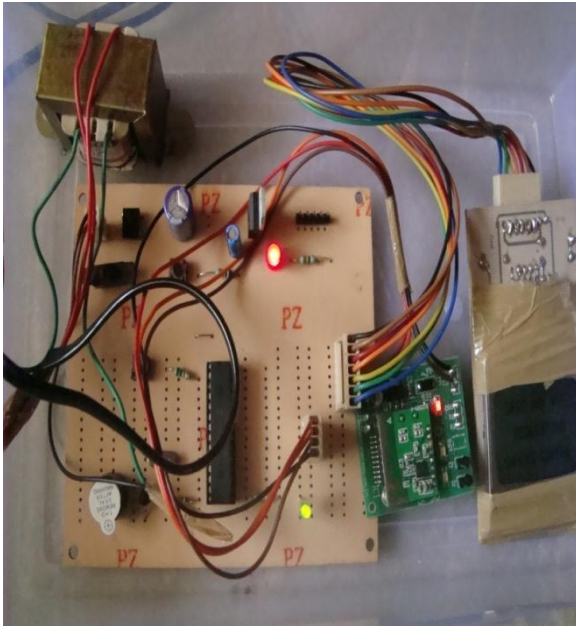


Fig 5.2: RX section of the project

VI. CONCLUSION

Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested.

VII. FUTURE SCOPE

This project provides an efficient device that helps dumb/illiterate to communicate with airhostess in airlines. Zigbee used in this project provides a typical range of 50m. By using high power Zigbee module we can extend this range up to 1.3 km. using Zigbee we can send text only. By using IR/RF transmitter and receiver we can send audio and video signals also. Touch screen used here is 4wire resistive touch screen. Response time is also very less. Resistant to intense light and not very sensitive as compared to other time. By using other technology like surface technologies but it accepts only one touch at a acoustic wave or infrared we can further improve project so that it can accept more than touch at a time

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