



PC Based Wireless Scrolling Notice Board

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Abstract: this technical paper explains how a reliable and an authentic wireless communication could be easily developed between PC and LCD Display using Arduino Kit. This technical paper explains PC based wireless scrolling notice board which can be widely used for multitude of applications including educational sector, traffic control, banks, and public advertisements, stoke exchanges etc. Moreover we can also learn as well as modify some of the common applications of Arduino Kit as per the requirements and needs of the user. Here we will learn the hardware behind the picture. This technical paper plays a vital role in the state-of-the-art scenario where market window is relentlessly shrinking and really need pocket-friendly and authentic products.

Keywords— *Arduino, microcontroller, PC Interfacing, RF transmitter, RF receiver, LCD*

1. Introduction

This project is used to communicate or transmit a text message from one place to another place through wireless RF medium. The text message entered via keyboard in the PC and transmitted to controller through USB port. This is received by the microcontroller and the message will be transmitted through wireless. At the receiver end the signal will be received by the standard receiver and the analog signal was fed to the microcontroller and which will be decoded by the microcontroller and the message will displayed over the LCD display. We can use multiple receivers and multiple messages sent from the transmitter and received at the various receivers at the same time. Receiver can be accessed separately by its address. The microcontroller is used to do the above work. It gets data from the PC and at the receiver end the microcontroller display the data over the LCD display.

2. Need of PC based wireless scrolling Notice Board

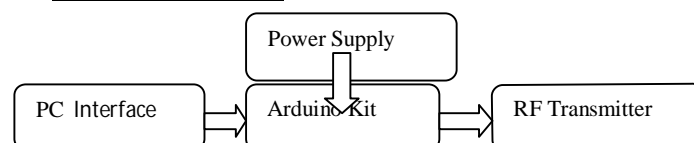
The purpose of PC based wireless scrolling notice board is that, with the help of this notice board we can display notice on board using RF technology. Here we use wireless communication .Due to that it

eliminates the number of wires required for the transmission between transmitter & receiver

3. Block Diagram

The block diagram of the system is shown in fig.1.

Transmitter Unit:



Receiver Unit:

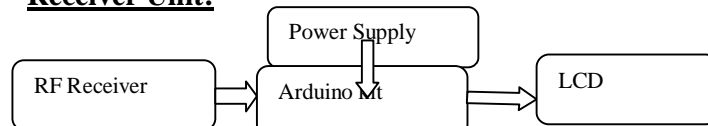


Fig.1. Block diagram

Transmitter Unit:



Input Section:

1. **Interface In PC:** Will be used to send data from PC to Microcontroller
2. **USB to UART converter:** Converts USB data to UART data.(Interfacing)

Controller Unit: This consists of the controller ATMEGA168 which is being programmed to take the input and generate the desired output.

Output unit

1. **RF transmitter:** This is basically 434MHz carrier which will transmit the data wirelessly
2. **LCD:**This is a 16X2 B/W LCD used to display the data.

b)Receiver Unit:

Input unit:

1. **RF receiver:** This is basically 434 MHz RF frequency receiver which will receive the data wirelessly

Controller Unit: This consists of the controller ATMEGA168 which is being programmed to take the input and generate the desired output.

Output unit

1. **LCD:**This is a 16X2 B/W LCD used to display the data.

The major components used in this project are:

1. USB TO UART converter
 2. Microcontroller
 3. RF transmitter receiver
 4. LCD Display
 5. Power supply
- 4.Arduino:**

The Arduino window shown in fig.2

Fig.2:Arduino window



Fig.3: Arduino kit

It includes a code editor with features such as syntax highlighting, brace matching, and automatic indentation, and is also capable of compiling and uploading programs to the board with a single click. There is typically no need to edit make files or run programs on a command-line interface. The Arduino comes with a C/C++ library called "Wiring" (from the project of the same name), which makes many common input/output operations much easier. Arduino programs are written in C/C++.

5. RF Transmitter & RF Receiver Module

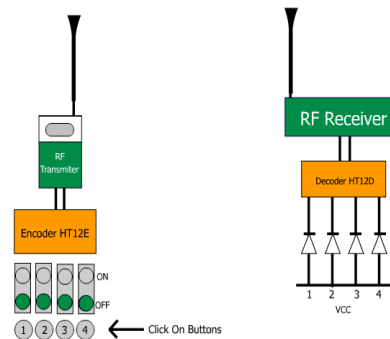


Fig.4: RFTrasmitter& Receiver

This **RF module** comprises of an **RF Transmitter** and an **RF Receiver**. The transmitter/receiver (Tx/Rx) pair operates at a frequency of **434 MHz**. An RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin4. The transmission occurs at the rate of 1Kbps -

10Kbps. The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter

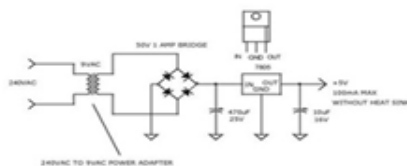
6. LCD Display:

Fig.5: LCD Display

This is 16x2 LCD for the display of the data.

7. Power Supply:

The power supply consists of a step down transformer 230/12V, which steps down the voltage to 12V AC. This is converted to DC using a Bridge rectifier. The ripples are removed using a capacitive filter and it is then regulated to +9V using a voltage



240VAC TO 9V DC POWER SUPPLY

Fig.6: Voltage regulator 7809 regulator 7809 which is required for the operation of the microcontroller and other components.

8. Working:

According to the efficient programming in PC software done if the user types anything on keyboard that will be sent to

the controller and transmitted in the transmitter block. The controller checks for transmission efficiency. As the user press the key the data is sent to controller and transmitted to remote location receiver. The receiver receives the data as it is and gives it to the controller which is displayed on the receiver LCD.

Applications:

1. NOTICE Board.
2. Wireless data acquisition
3. Calling unit
4. Can be used to display Advertisements and News/messages.

Conclusion:

The above technical paper explains how we can develop as well as modify PC based wireless scrolling notice board. In addition to this, there is no any need to burn program separately. In that we can easily make changes in program and the program is burn directly into the Arduino kit.

Future Work:

This technology could be further modified and more upgraded as per individual need and interest. We have discussed some basic ideas of this technology. And depending on innovative applications user can upgrade as per requirement.

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