



INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

Versatile Economical Message Transfer

Kaushal P Patel*, **Adit J Solanki**, **Kinjal H Patel**, **Prof. Sunny S Shahdadpuri**

* Student, Department of Electronics and Communication, Sigma Institute Of Engineering, Vadodara, Gujarat, India.

Student, Department of Electronics and Communication, Sigma Institute Of Engineering, Vadodara, Gujarat, India.

Student, Department of Electronics and Communication, Sigma Institute Of Engineering, Vadodara, Gujarat, India.

Professor, Department of Electronics and Communication, Sigma Institute Of Engineering, Vadodara, Gujarat, India.

Abstract

This project work is to design a system which will help us to transmit text message on LCD display and audio message to the speaker using a free ware wireless protocol. This system does not use any of internet device or GSM based protocols. Here the basic and essential concepts of radio communication is utilized to create a wireless communication channel between Computer-LCD display and computer/microphone-speaker. Here a computer is placed at the transmitter side from where the message is to be transmitted serially through USART protocol. ARDUINO microcontroller and low power 2.4GHz transceiver is used as interfacing unit between the transmitter and receiver side. On the receiver side a LCD display unit and a speaker is used for displaying the text and audio messages.

Keywords: serial communication, USART protocol, message transfer, audio-text message.

Introduction

Communication between two personalities in industries, hospitals, rural areas and colleges for any type of work is needed in case of emergency and for personal communication also. For this we have to install wired connection using intercom communication, LAN, WAN, MAN internet protocols, RFID and IR communications, WIFI, Zigbee for communication between PCs and other devices. For all this connection we have to pay charges for short range communication.

This system was earlier introduced with RFID for one way (simplex) communication between two PCs and it covers upto 20-40 meters of range. This range can be increased by using a low power CC2500 transceiver module which covers upto 50-100 meters of range in a free communication area.

This project is an implementation to the idea of the wireless communication between a PC and a LCD display and speaker using a low power CC2500 transceiver module with USART protocol for transmitting and receiving the data (text and audio message).

The project is built around the ARDUINO UNO micro controller. This micro controller provides all the functionality of the wireless control and help in

displaying the text and audio effects for given text and audio message respectively.

Description

This project work on the principle of UART protocol. A universal asynchronous receive/transmit (UART) is an integrated circuit which plays the most important role in serial communication. It handles the conversion between serial and parallel data. Serial communication reduces the distortion of a signal, therefore makes data transfer between two systems separated in great distance possible. It contains a parallel-to serial converter for data transmitted from the computer and a serial to parallel converter for data coming in via the serial line. The UART also has a buffer for temporarily storing data from high speed transmissions[2].

The UART serial communication module is divided into three sub-modules: the baud rate generator, receiver module and transmitter module. Therefore, the implementation of the UART communication module is actually the realization of the three sub-modules. The baud rate generator is used to produce a local clock signal which is much higher than the baud rate to control the UART receive and transmit. The UART

receiver module is used to receive the serial signals at RXD, and convert them into parallel data. The UART transmit module converts the bytes into serial bits according to the basic frame format and transmits those bits through TXD[1].

Figure:

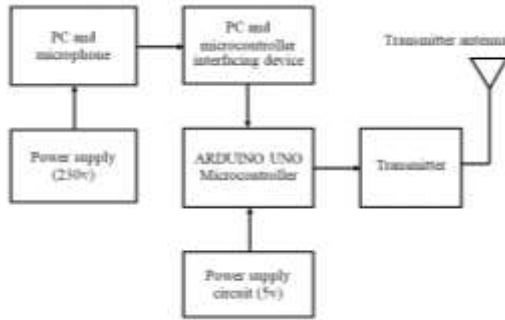


Fig.1.1. Block diagram of transmitter section of wireless communication network for message transfer

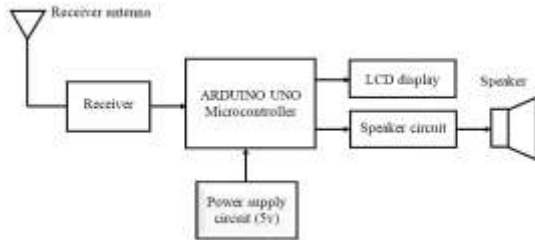


Fig.1.2. Block diagram of receiver section of wireless communication network for message transfer

Transmitter Section

At the transmitter side we will use PC (computer) and microphone as input device for data input. Where PC is used for text message and microphone is used for audio message which is to be transmitted at destination device.

The message which is typed on the keyboard is first send to ARDUINO UNO controller where the data processed and is converted from parallel to serial communication using USART protocol and audio message is converted to electrical signal using the microphone and the data is then amplified and modulated for transmission using CC2500 module.

Receiver Section

At receiver side, the transceiver module receives the data which is demodulated and send to the controller. If the text message received then it is processed through controller and passed to the LCD display. If audio message is received then it is passed to the speaker. The message which is in serial form is converted to parallel form for displaying on 16*2 LCD display and a speaker circuit is used for audio

processing of the audio message.

Conclusion

This paper will be the basic paper of our project, future implementation would yield complete paper which would contain every other details.

We can successfully transmit the data in the form of an text and audio message from the PC and microphone to the LCD display and speaker via the CC2500 module. CC2500 module is a low power consumption device as compared to Bluetooth, WIFI and Zigbee. Also, by connecting CC2500 module in mesh network we can increase the range of communication. The hardware can be implemented on a large scale at various public places like railway and bus station, airports college campus, industrial campus etc.

References

- [1] Neha R Laddha, A P Thakare, "A Review on serial communication by UART" International journal of advanced research in computer science and software engineering, Vol. 3(1),2013.
- [2] "Embedded System: Architecture, Programming and Design" by Rajkamal

Author Bibliography

	Kaushal P Patel Student, Department of Electronics And Communication, Sigma Institute of Engineering, Vadodara, Gujarat, India. Email: kaushalpatel47@gmail.com
	Kinjal H Patel Student, Department of Electronics And Communication, Sigma Institute of Engineering, Vadodara, Gujarat, India. Email: kinjal.patel16591@gmail.com
	Adit J Solanki Student, Department of Electronics And Communication, Sigma Institute of Engineering, Vadodara, Gujarat, India. Email: adit.j.solanki@gmail.com

