



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJIRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 11, Issue 8, August 2022

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.118

 9940 572 462

 6381 907 438

 [ijirset@gmail.com](mailto:ijirset@gmail.com)

 [www.ijirset.com](http://www.ijirset.com)

# Embedded Based Customized Wireless Message Circular System for College, Industries

Palvi Arvind Borkar<sup>1</sup>

P.G. Student, Department of Electronics and Telecommunication Engineering, Zeal College of Engineering, Dhayari Narhe Road, Narhe, Pune, Maharashtra, India<sup>1</sup>

**ABSTRACT:** An embedded system is a special-purpose computer system designed to perform a dedicated function. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded system is fast growing technology in various fields like industrial automation, home appliances, automobiles, aeronautics etc. Embedded technology uses PC or a controller to do the specified task and the programming is done using assembly language programming or embedded C. In contrast to general-purpose computers, embedded systems perform a narrow range of pre-defined tasks. Thus, they usually do not have any of the typical computer peripheral devices such as a keyboard, display monitor, serial connections, mass storage (e.g., hard disk drives), etc. or any kind of user interface software, unless required by the product in which they are used in. This can make it possible to greatly reduce the complexity, size and cost and increase the robustness of embedded systems as compared with general purpose systems.

An E-circular system consisting of code number was designed, and we are transmitting the data through wireless medium and data is displayed on the LCD display in the corresponding classroom or lecturer hall or some other places.

**KEYWORDS:** Microcontroller, LCD, E-circular System, Cost, Embedded C .

## I. INTRODUCTION

Over the past few years, wireless technology has a tremendous progress in every sector. As a means of communication, notice board can be widely used in schools, colleges, universities, hospitals to major organizations. Wireless notice boards tackle the global problem of deforestation by conveying messages at large without the use of paper. The notice boards we usually see are fixed and to convey a message it needs involvement of some additional people to do tasks like printing it in paper, distributing those papers and attaching them in the board. So, it requires more effort as well as in case of emergency manual notice board is time consuming and it also takes more space where we hang the notice. To minimize the complexity, a wireless notice board display is proposed which can instantly display any message or alert sent by a user without having assist of any additional people . The main objective of this system is to make it as simple and convenient as possible for the user to access and update notice from anywhere and also save paper. In this paper, wireless display technology is used to make the notice board portable. An **embedded system** can also be explained as a special-purpose system in which the computer is completely encapsulated by or dedicated to the device or system it controls. Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or a few pre-defined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded systems are often mass-produced, benefiting from economies of scale

## II. RELATED WORK

### A. Design and Implementation of an E-Notice Board using a NodeMCU

- Md. Bakhtiar Abid, Mamunur Rashid Rumon, Tasnuba Sraboni, Romaiya Hossain, Farah Ahmed, Jia Uddin proposed project can decrease work load and human dependency.
- It is proposed to design display toolkit which can be used from an authorized app.
- The display boards are one of the most important media for transferring information to the maximum number of end users.
- With the advancement in technology the display board systems are migrating from normal hand-

written display to digital display.

- A user can send a message from anywhere in the world. Being user friendly, long range and speedy mean of conveying information are major characteristics of this system.

#### *B. E-CIRCULAR SYSTEM*

- Mr. S. Natarajan, M. Dharini, A. Dhanupriya used this method, of delivery messages from main station to destination easily.
- The person who is sending message can send it to various class rooms and also to single class room.
- Messages are to be typed on a mobile or computer which could be displayed on a display unit through GSM modem.
- We are not using any written format this will reduce man power.
- Thus the information could reach the receiver quickly at right time.
- There is no delay in transmission of information.

### III. METHODOLOGY

The microcontroller 89S51 has in-built full duplex UART which is connected to PC or monitor where the input will be given by user. For microcontroller a power supply of 5V DC will be given. By the help of Keil Software the input program will get stored in Microcontroller. Then the input will be transferred to an encoder. The encoder will transfer the message to radio frequency module transmitter by encoding the input. The RF Module Transmitter contains a small wire which acts as a wireless antenna. The data input will be received via air to RF Module Receiver and the input will be transferred to the decoder. The decoder will decode the message and will transfer it to microcontroller which also has a power supply of 5V DC. The microcontroller will then display the message via display attached to it.

#### **Proposed System**

We can define an embedded system as “a computing device built into a device that is not a computer, and meant for doing specific computing tasks”. An embedded system is a special purpose computer system usually built into an environment connected to systems through sensors, actuators and other I/O interfaces. Embedded system must meet timing and other constraints imposed on it by environment.

#### **A. Microcontroller**

- Atmel/Phillips Microcontroller **89S51**, 8 bit Micro controller from **MCS-51** Intel family, 4K bytes of Flash, 128 bytes of RAM.
- It has 40 pins configuration and other components interfaced to its ports.
- In addition, the AT89S51 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes.
- The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning.
- The Atmel AT89S51 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications. 89S51 contains a non-volatile FLASH program memory that is parallel programmable.

#### **Specifications:**

- A. Core Processor: 8051
- B. Data Bus Width: 8 bit
- C. Maximum Clock Frequency: 33 MHz
- D. Program Memory Size: 4 KB
- E. Program Memory Type: Flash
- F. RAM Size: 128 B
- G. ADC: No
- H. Number of Programmable I/Os: 32
- I. Number of Timers: 2
- J. Supply Voltage Range: 4 V to 5.5 V
- K. Package: PDIP

### B. ENCODER

An encoder is a device, circuit, transducer, software program, algorithm or person that converts information from one format or code to another, for the purposes of standardization, speed, secrecy, security, or saving space by shrinking size.

### FEATURES

- Operating voltage: 2.4V~12V
- Low power and high noise immunity CMOS technology
- Low standby current
- Three words transmission
- Built-in oscillator needs only 5% resistor
- Easy interface with an RF or infrared transmission media
- Minimal external components

### C. DECODER

A decoder is a device which does the reverse of an encoder, undoing the encoding so that the original information can be retrieved. The same method used to encode is usually just reversed in order to decode. In digital electronics, a decoder can take the form of a multiple-input, multiple-output logic circuit that converts coded inputs into coded outputs, where the input and output codes are different. e.g. n-to-2<sup>n</sup>, binary - coded decimal decoders. Enable inputs must be on for the decoder to function, otherwise its outputs assume a single "disabled" output code word.

### Features

- Operating voltage: 2.4V~12V
- Low power and high noise immunity CMOS technology
- Low standby current
- Capable of decoding 18 bits of information
- Pairs with HOLTEK's 3<sup>18</sup> series of encoders
- 8~18 address pins
- 0~8 data pins
- Trinary address setting
- Two times of receiving check
- Built-in oscillator needs only a 5% resistor
- Valid transmission indicator
- Easily interface with an RF or an infrared transmission medium
- Minimal external components

### D. RF MODULE (TX, RX)

Radio frequency (RF) is a frequency or rate of oscillation within the range of about 3Hz to 300 GHz.

This range corresponds to frequency of alternating current electrical signals used to produce and detect radio waves. Since most of this range is beyond the vibration rate that most mechanical systems can respond to, RF usually refers to oscillations in electrical circuits or electromagnetic radiation.

The TWS-434 transmitter accepts both linear and digital inputs, can operate from 1.5 to 12 Volts-DC, and makes building a miniature hand-held RF transmitter very easy. The TWS-434 is approximately the size of a standard postage stamp.

The receiver also operates at 433.92MHz, and has a sensitivity of 3uV. The RWS-434 receiver operates from 4.5 to 5.5 volts-DC, and has both linear and digital outputs.

### E. LCD Display( Liquid Crystal Display)

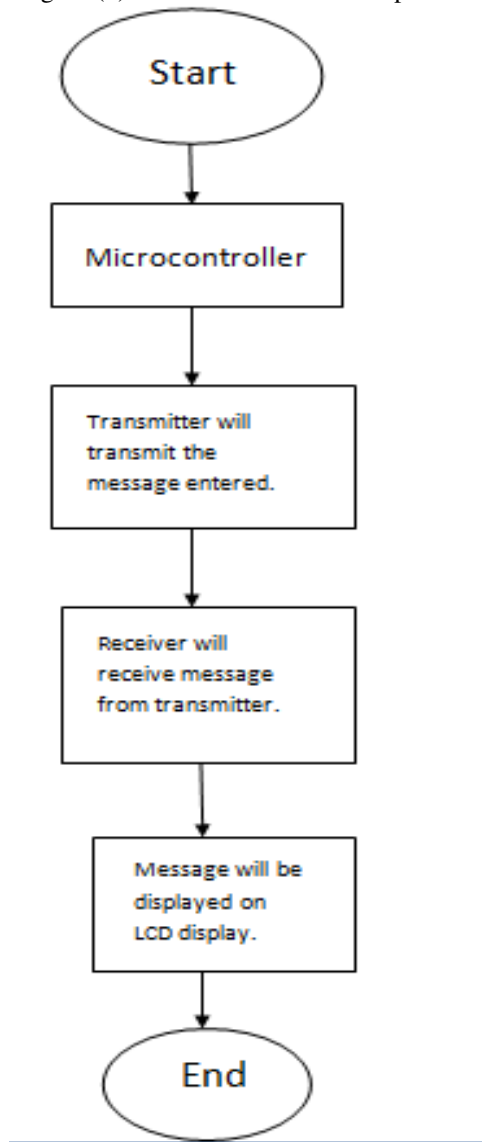
- The receiver also operates at 433.92MHz, and has a sensitivity of 3uV.
- The RWS-434 receiver operates from 4.5 to 5.5 volts-DC, and has both linear and digital outputs.
- LCDs can add a lot to your application in terms of providing an useful interface for the user, debugging an application or just giving it a "professional" look.
- The most common type of LCD controller is the Hitachi 44780, which provides a relatively simple interface between a processor and an LCD.



- Using this interface is often not attempted by inexperienced designers and programmers because it is difficult to find good documentation on the interface, initializing the interface can be a problem and the displays themselves are expensive.

#### IV. EXPERIMENTAL RESULTS

Figure (a) shows the flow of process. Figure (b) shows the hardware setup.



(a)





(b)

## V. CONCLUSION

Now a day's messages are to be displayed in a digital format. This project is used to mainly display the message in separate class rooms and even group of class rooms. Suppose the same message is to be displayed in the class rooms or department then we have to go there with a laptop and change the message by connecting it to the display board. We are designing a new display system which we can access remotely, thus utilizing Embedded C. For every message received, the system will check for the source number and if the source number is correct the controller will display the message.

## REFERENCES

- [1] R. Umayalakshmi, "Embedded Based Customized Wireless Message Circular System for College Industries using Arduino controller ", September 2018 | IJIRT | Volume 5 Issue 4 |
- [2] Mr. S. Natarajan, M. Dharini, A. Dhanupriya "E-CIRCULAR SYSTEM", International Journal of Engineering And Computer Science ISSN: 2319-7242 Volume 3 Issue 3 March, 2014
- [3] Md. Bakhtiar Abid, 1Mamunur Rashid Rumon, Tasnuba Sraboni, Romaiya Hossain, Farah Ahmed, 2 Jia Uddin, "Design and Implementation of an E-Notice Board using a Node MCU", Research Gate
- [4] 8051-MICROCONTROLLER AND EMBEDDED SYSTEM.Pg.No.120-25 - Mohd. Ali Mazidi
- [5] [www.atmel.databook.com](http://www.atmel.databook.com)
- [6] [www.keil.com](http://www.keil.com)
- [7] [www.google.com](http://www.google.com)



**INNO SPACE**  
SJIF Scientific Journal Impact Factor  
**Impact Factor: 8.118**



**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details