

WIRELESS LED DISPLAY NOTICE BOARD

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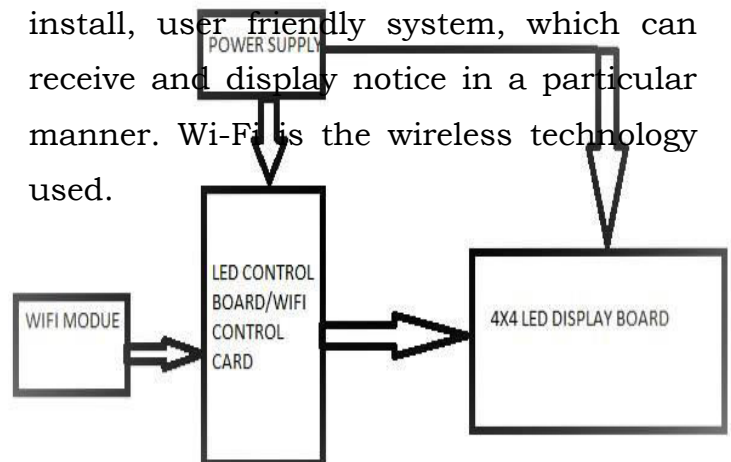
CHALAPATHI NAGAR, LAM, GUNTUR-522034

Abstract - Nowadays conveying messages at large using notice boards are widely used ones ranging from schools to organizations. We know the significance of notice boards in public areas like bus stands, railway stations, airports and banks, etc. But day to day changing these boards is a very difficult task and a waste of time. At present, all electronic boards are designed with a wired system. The major drawback of designing these boards is; not flexible and cannot be located anywhere due to messy wire. To overcome this problem, a wireless board is designed to display the latest information.

1.1 PROJECT OVERVIEW

In today's world of connectedness, people are becoming accustomed to easy access to information. Whether it's through the internet or television, people want to be informed and up-to-date with the latest events happening around the world. Wired network connection such as Ethernet has

many limitations depending on the need and type of connection. Now a day's people prefer wireless connection because they can interact with people easily and it require less time. The main objective of this project is to develop a wireless notice board that display message sent from the user and to design a simple, easy to install, user friendly system, which can receive and display notice in a particular manner. Wi-Fi is the wireless technology used.



1.2 COMPONENTS OVERVIEW

This system uses the following components.

P10 LED Boards- An LED display is a flat panel display, which uses an array of light-emitting diodes as pixels for a video display. Their brightness allows them to be used outdoors where they are visible in the sun for store signs and billboards.

WIFI control card-An LED driver is an electronic device which regulates the power to an LED or a string (or strings) of LEDs.

FRC Cable- FRC is also known as multi wire planar cable because they are the type of cables formed by joining insulated wires in a flat plane forming the Ribbon shape.

Power Supply- The Power Supply is a Primary requirement for the project work. The required DC power supply for the base unit as well as for the recharging unit is derived from the mains line. For this purpose center tapped secondary of 12V-012V transformer is used.

1.3 PROCEDURE

Place All the required number of P10 led modules in required size.

*Connect all the outputs of the one P10 to the other input of serial P10.

*Join all the P10 boards in parallel as all vcc at a point and all grounds at a point.

*Download HUIDA software and connect the HD-w62 control card using USB and change the settings as described the controller and also change screen settings.

*Change the input as WI-FI and initiate WI-FI with password.

*Install the LEDART app in your android phone.

*Connect to the controller WI-FI and initiate the program.

*The display appears on the screen once all the supplies are given.

HD-W62 CONTROL CARD

3.1 WI-FI

3.1.1 What is WI-FI?

Wi-Fi is technology for radio wireless local area networking of devices based on the IEEE 802.11 standards. Wi-Fi is a trademark of the Wi-Fi Alliance, which restricts the use of the term Wi-Fi Certified to products that successfully complete interoperability certification testing.

3.2 LED Control Card

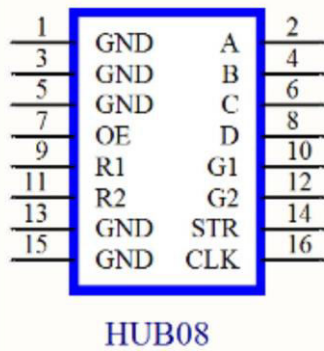
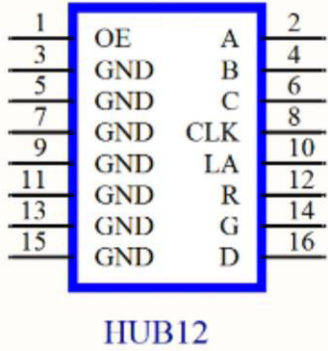
An LED driver is an electronic device which regulates the power to an LED or a string (or strings) of LEDs. An LED driver responds to the changing needs of the LED, or LED circuit, by providing a constant quantity of power to the LED as its electrical properties change with temperature. HD-w62 is Fi-Fi based led driver circuit.

3.3 HD-W62 Control Card

3.3.1 Overview of HD-W62

The HD-W62 is a Wi-Fi enabled LED controlled (driver) card. It is developed by Huidu.

It is For the door header screen, store, car screen and other places information display, Huidu technology launched W series control card, Short distance; only for short distance communication, it can be accessed to the wireless router, to achieve cluster management.



microcontroller or a specialized integrated circuit). Of course that, when X is large, this becomes difficult.

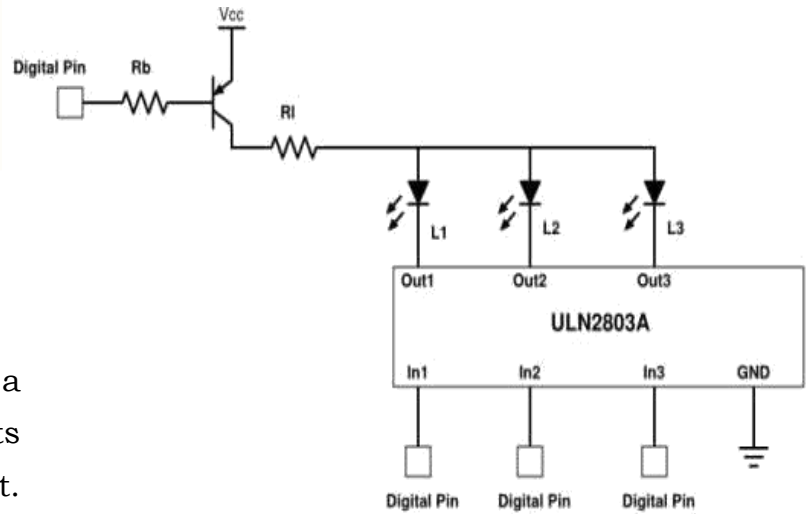
P10 LED BOARD

4.1 LED

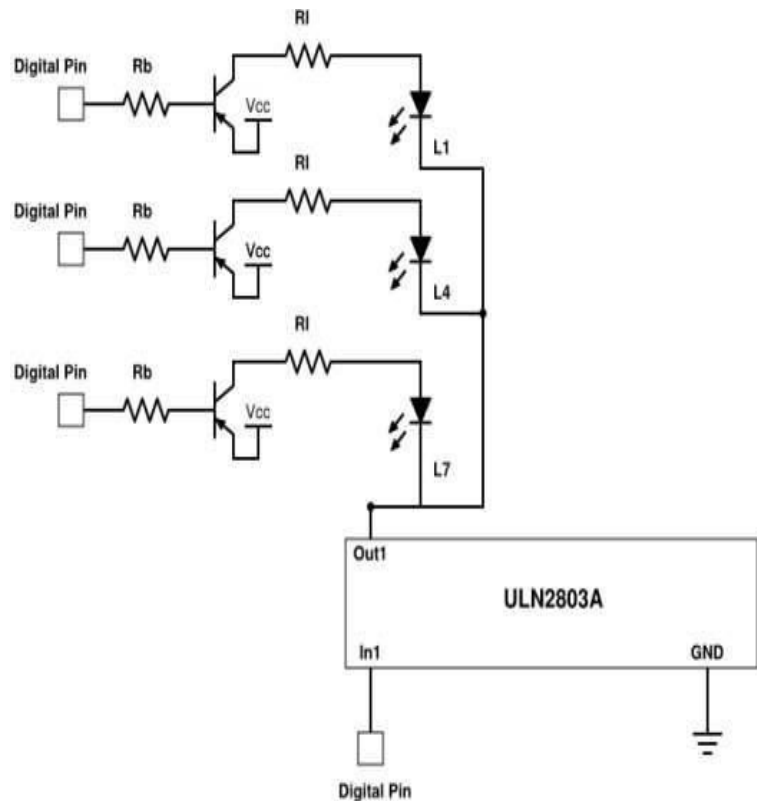
A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons. This effect is called electroluminescence. The color of the light (corresponding to the energy of the photons) is determined by the energy required for electrons to cross the bandgap of the semiconductor.^[6] White light is obtained by using multiple semiconductors or a layer of light-emitting phosphor on the semiconductor device.

4.2 DESIGNING A LED MATRIX

The objective is to explain how to create a simple LED Matrix using PNP transistors and a ULN2803A integrated circuit. We will assume that only one LED (or none) needs to be connected at each time. First of all, we need to take into account that, if we wanted to control a matrix with a total of X LEDs and to be able to control each one individually, we would need a total of X output pins (for example, from a

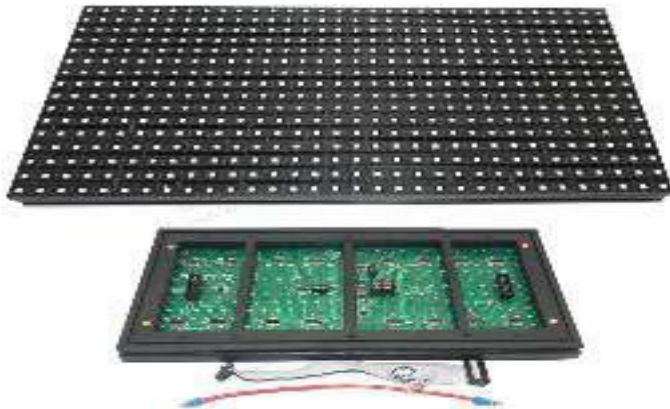


Configuration of a row of the 3x3 LED matrix



Configuration of a column of the 3x3 LED Matrix

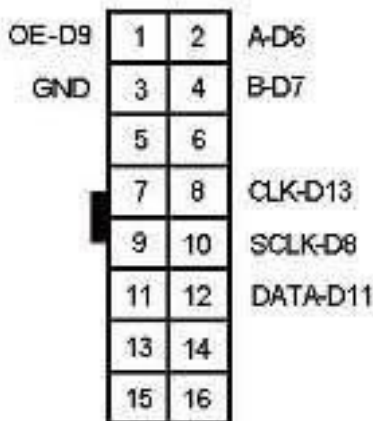
4.3 P10 LED DISPLAY MODULE



P10 LED display module

P10 32x16 (Total 512 LEDs) LED Display module is the easiest way to put together any size of Outdoor or Indoor LED display sign board. This panel is having total 512 high brightness red led's mounted on a high quality plastic housing designed for best display results.

P10 led boards have two ports one input board and another output port.



Pin diagram of P10 led board

*Pin diagram of P10 led display consists of 7 ground pins and one enable pins clock and store clock and data pin and A and B pins.

*OE- pin works as an enable pin



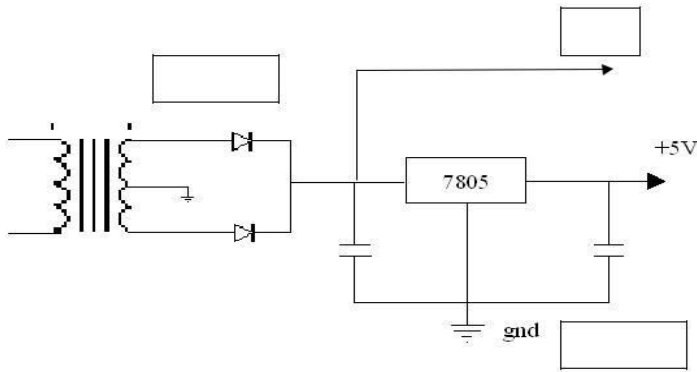
P10 LED back panel

- GND pin as negative
- A and B pins work as two line enabling control pins.
- Clock pin controls the speed.
- Store clock controls the time to send the data.
- Data pin sends the data to the display.

POWER SUPPLY

POWER SUPPLY for Module

The Power Supply is a Primary requirement for the project work. The required DC power supply for the base unit as well as for the recharging unit is derived from the mains line. For this purpose center tapped secondary of 12V-012V transformer is used. From this transformer we getting 5V power supply. In this +5V output is a regulated output and it is designed using 7805 positive voltage regulator. This is a 3 Pin voltage regulator, can deliver current up to 800 milliamps.



HD2016 SOFTWARE

6.1 OVERVIEW

At present, the LED display control system industry uses computer-based control software to control, and each project site requires another computer to debug, which is very inconvenient. The smart phone has become the electronic product that all people carry with them. The mobile phone-based LED screen control software has become an urgent need for the industry.

It is precisely to see this market demand that grayscale technology, the leader in the LED display's asynchronous control system, has undergone a year of painstaking research and development, shocking the cool and easy to use - **LedArt**.

After the user installs this APP on a mobile phone or a tablet computer, it can control the full color and single dual color LED display controlled by the Huidu technology control system via Wi-Fi.

The whole HD2016control system are simple operation, strong function, easy to learn and use, support image-text (Excel, JPG, BMP, GIF, SWF, video, text, animation, word etc.)/Text/animation word/Excel/timer (countdown/up/button countdown /up)/count/lunar calendar /Temperature and humidity/Pray area etc., can support serials port (including 232 and 485), Ethernet port, WIFI, U-disk etc. Multiple control communication, can meet the application of different situations.

RESULT ANALYSIS

The text which is sent through LEDart mobile app is displayed on P10 led board. The data is transmitted through Wi-Fi. We can send up to 8MB of data.



Figure Experimental Setup

CONCLUSION & FUTURE WORK

CONCLUSION

As the technology is getting advanced day to day the digital notice board are moving from manual based to display board. We have developed the model of wireless digital notice board system connected to mobile. Which display the desired message of the user. This proposed system has much upcoming application in educational institutions

FUTURE WORK

Electronic Notice Board is one of the application where WIFI can be used effectively. It can also be used in Malls and Highways for Advertisement purpose. A moving display with variable speed can also be used in place of static display. Our future work is to be based on minimizing cost.

REFERENCES

WEBSITE LINKS:

1. <https://www.wikipedia.org/>
2. <https://www.circuitspecialists.com/blog/build-8x8-led-matrix/>
3. <https://www.researchgate.net/>
4. <https://www.academia.edu>
5. <http://www.huidu.cn/>

JOURNAL PAPER:

Savan Shah.Message Displayed on LCD Screen using GSM and Bluetooth Technology in International Journal of Advanced Research in Computer Communication Engineering. Vol.4, Issue 9, September 2015.

Prof. Sudhir Kadam, Abhishek Saxena, Tushar Gaurav.Android Based Wireless Notice board and Printer in International Journal of Innovative Research in Computer and Communication Engineering. Vol.3, Issue 12, December 2015

Prof. Ravindra Joshi, Abhishek Gupta, Rani Borkar, Samita Gawas, Sarang Joshi. GSM based Wireless Notice Board in International Journal of Technical Research and Application.Issue 40 (KCCEMSR), March 2016.

Prof. Madhavi Repe, Akshay Hadoltikar, Pranav Deshmukh, Sumit Ingle. Android Controlled Digital Notice Board in International Journal of Advance Foundation and Research in Computer. Vol.3, Issue 5,May 2016.Prof. P.yakaiah, Bijjam Swathi, M. Jhansi, B. Nikhala