

LED Rolling Display

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Abstract— A LED Rolling Display typically involves designing and implementing a system that allows users to remotely update and display information on a digital notice board using wireless communication. This includes tasks such as hardware selection, software development for communication protocols, user interface design, and integration with display technologies, additionally; it may involve considerations for security, power management, and scalability depending on the project requirements.

Keywords— LED Rolling Display

INTRODUCTION

In today's fast-paced world, effective communication is vital in shared spaces like offices, schools, and public areas. Traditional notice boards lack real-time updates and dynamism, which led to the development of a Remotely Operated Wireless Notice Board equipped with a Wi-Fi module. This system enables remote updates via a web server or mobile app, making information dissemination seamless. It integrates features like ambient temperature monitoring using a DHT11 sensor, motion detection with a PIR sensor for activating or switching displays, and customizable schedules for automatic display operation. The inclusion of a Wi-Fi module (e.g., W02) ensures internet connectivity, enabling updates from any location. This innovative solution not only enhances communication but also incorporates environmental monitoring for a better user experience.

OBJECTIVE

To securely and efficiently display information on an LED matrix board while preventing unauthorized access.

To protect against overheating by using a Heat sink plate ensuring reliable operation.

To save energy by activating or changing the display based on the presence or absence of people.

To schedule the display to turn ON and OFF within a specified time range, such as 9:00 AM to 5:00 PM.

SYSTEM ARCHITECTURE

Components used

Hardware

1. Wi-Fi Module (W02)
2. SMPS Power supply
3. LED Display (P10)

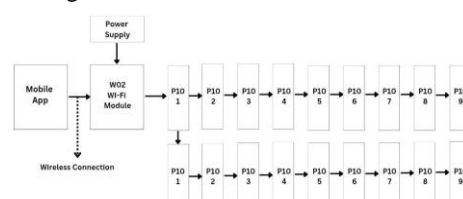
Software:

- LED Arts

II Working principle

A LED Rolling displays messages sent wirelessly via Bluetooth, Wi-Fi, GSM, or RF. The system includes a display unit (LED/LCD), a microcontroller like Arduino, and a wireless communication module. Users send messages from a smartphone or computer, which the microcontroller receives through the wireless module. The microcontroller processes the message and sends commands to the display unit, updating it in real-time. Powered by a power supply, this system is energy-efficient and allows remote, dynamic updates. It's widely used in schools, offices, and public spaces for efficient communication and announcements.

Block Diagram



METHODOLOGY

- 1) Power up the system : The with the WiFi module powers on.LED initializes and Turns on backlight.
- 2) The 230V Power Supply feeds power to the SMPS.
- 3) The SMPS converts the 230V AC to DC power suitable for the W02 Wi-Fi Module And the Matrix LED Display
- 4) The W02 Wi-Fi Module receives commands from the APP and can send data to the Matrix LED Display.
- 5) The Matrix LED Display shows the relevant information.
- 6) The APP allows users to monitor and control the system remotely via Wi-Fi.

RESULTS

A LED Rolling Display allows users to update and display information on a digital notice board from anywhere with an internet connection, eliminating the need to physically change paper notices and enabling quick, real-time updates to messages across a variety of locations; typically achieved through a mobile app or web interface that sends data to a connected device like a microcontroller which then displays the information on an LED screen or LCD panel.

CONCLUSION

The LED rolling display system using the W02 Wi-Fi module provides a simple and effective way to wirelessly display dynamic, scrolling messages on an LED screen. By leveraging Wi-Fi connectivity, users can remotely update the displayed content in real-time through web servers or cloud services. This system is ideal for applications like digital notice boards, IoT dashboards, or smart home interfaces, offering flexibility, ease of use, and cost-effective implementation. The LED rolling display using the W02 Wi-Fi module.(ESP-WROOM-02) is a smart, cost-effective solution for wirelessly displaying scrolling text. It allows real-time message updates via the internet, making it ideal for remote information boards and IoT applications. By combining traditional LEDs with Wi-Fi connectivity, the system enhances communication, is easy to scale, and works well in both personal and commercial use cases.

RESULT



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