



A Review Paper on Solar Powered Portable Electronic Notice Board

¹Priyanka Gaurkhede, ²Priyanka Vaidya, ³Seema Rithe, ⁴Gunjan Motghare

^{1,2,3,4}Department of Electrical Engg, Suryodaya college of Engg, Nagpur

¹Priyankagaurkhede123@gmail.com, ²priyankavaidya576@gmail.com, ³simarithe20@gmail.com,

⁴motgharegunjan1919@gmail.com

ABSTRACT

In this paper, an overview of the solar powered Portable Electronic Notice Board is existing. Global System for Mobile communication (GSM) LED Message Display Board for showing messages or notices at seats that require real time noticing, by sending messages in the form of Short Message Service (SMS) through mobile. This project showcases a model of a Portable Solar Powered Portable Electronic Notice Board in which the messages are scrolling, where it allows the user to variation the message using SMS promptly. It has dual power supply such as Solar Power and Direct current (D.C.) power which creates the skill to do work in any situation. This display unit finds its application in the transportation sector. The LED display board can be used for security awareness and steering in remote locations and highways. It can be used to display safety awareness message if any disturbance in the road ahead found. Moreover, it saves electricity and manpower as well as it is advantageous in those areas which has no supply of electricity.

Key words: GSM, Solar and LED.

INTRODUCTION

A material show is a method of providing information and/or is used as an object for promotion which can be seen in a form of cardboard or tarpaulin at stores and electronic display devices. But the advent of new technologies made the information in the form of an electronic display in the world of advertisements and promotions. The ability to display short messages using LED proves to be a great advantage as LED consumes less power and the entire display unit is very efficient and cost effective way to display messages to people. LED is a solid state light source with attractive properties for its display applications.

The high frequency of 900MHz and international roaming of the GSM makes the mobile phone users to recognize this technology worldwide. Because of the digitalized signal and speech clarity, GSM is considered the third gen (3G) mobile communication system [3]. In this project, an SMS is being sent by the user using GSM through mobile phone which gets displayed on the LED Display Board. The display unit has a dual power supply system. It runs on solar energy during daytime and in the absence of solar energy, it uses the energy stored in the battery during the day. The other modifications in our project is that, if any disturbance found in the system, instantly the user gets notified. For example, if there is a voltage drop or the weather is cloudy for a prolonged time, the user gets notified about the issue and he can take required actions.

EXISTING SYSTEM

The advent of new technologies made the information in the form of an electronic display in the world of advertisements and promotions. The existing system which were instigated had an electronic way of showing messages and used an external power source. The other systems were developed where solar power was used as a source of power but it had no alternatives during absence of solar power. Our proposed system provides a dual power supply in order to compensate

during absence of solar power. Moreover we are using a GSM technology in order to communicate between the user and the LED display board.

Drawbacks

- Not portable.
- Single mode power supply (external or solar power).
- Cannot be castoff in distant locations having no electricity.

PROPOSED SYSTEM

- Our system provides a revolutionary way of displaying messages using GSM technology as the mode of communication between user and the display board. First, a message is sent by the user with a particular authentication key in order to display on board. Now, the SIM card present in the GSM module receives the message and the interfacing between GSM module and Arduino leads to display the message. An interfacing also takes place between Arduino and LED drivers in order to control the LEDs.

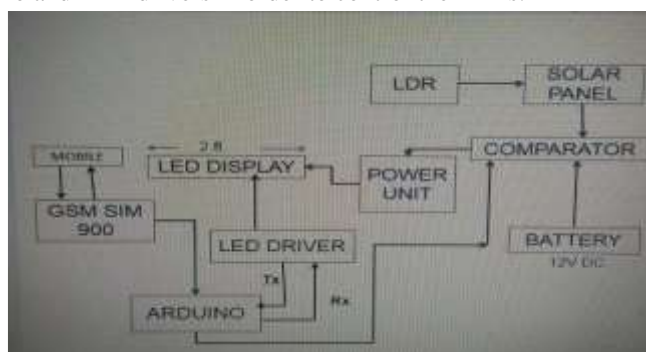


Fig. 1 Block Diagram of proposed system

The power supply is a dual mode power supply having a comparator in order to switch between the modes when required. Primarily, it uses solar energy during day as its power source but switches to battery mode during absence of solar energy. This system has the capability to use solar energy as a direct power source as well as charge the battery simultaneously for alternative purpose.

DESCRIPTION

GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATION)

GSM (Global System for Mobile Communications, initially Groupe Spécial Mobile) is a typical advanced by the European Telecommunications Ideals Institute (ETSI) to define the protocols for additional-generation (2G) digital cellular systems used by mobile phones, firs arranged in Finland in July 1991. As of 2014 it has developed the de facto global usual for mobile communications – with over 90% market share, operating in over 219 countries and territories.

ARDUINO UNO

Arduino Uno is a microcontroller board grounded on the ATmega328P). It has 14 digital input/output pins (of which 6 can be recycled as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It comprises everything desirable to provision the microcontroller; simply join it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. You can play with your Arduino Uno deprived of disturbing too much about liability something wrong, worst case scenario you can swap the chip for a few dollars and start over again.

INTERFACING

Interfacing GSM Module with Arduino

- We use SIM900 GSM Module.
- Checking the power requirements of GSM Module.
- Checking the TTL Output pins in the Module.
- Booting the GSM Module.
- Connecting GSM to Arduino using a program.

The program has two objectives as described below:-

Send SMS using Arduino and GSM Module – to a stated mobile number privileged the program.

Obtain SMS by Arduino and GSM Module – to the SIM card laden in the GSM Module.

Interfacing LED and Arduino display

- Preparing the MATRIX.
- Connecting the shift registers and transistors.
- Single shift register to drive the row.
- Daisy chained shift registers with common clock pin to drive columns.

Pin of Arduino Shift register pins

5 - 12

6 - 11

7 - 14

The above are for the column drivers

9 - 12

10 - 11

The above are for the row drivers.

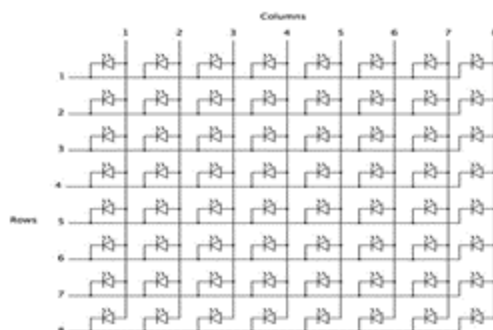


Fig. 1 A LED Matrix

ADVANTAGES

The planned system shows to be advantageous because:

- It is a power effective device.
- It saves the user efficient about the system.
- The device is portable hence it can be used in remote locations.
- The device is cost effective and energy efficient.
- The display system is powered by solar energy.

APPLICATIONS

The proposed system finds its applications in:

- ✓ Educational Institutions and Organizations.
- ✓ Crime Prevention.
- ✓ Managing Traffic.
- ✓ Advertisement.
- ✓ Railway Station.

RESULT

The projected system is a control efficient system of showing messages wirelessly using a solar energy as the power cradle.

This system is a movable device and is made cost real so that it can be used in society and productive to the market.

CONCLUSION

The exhibition boards are one of the major communications middle for mass media. Local language can be extra as a difference in this project. This can be did by using different software's and graphics. This practice saves time, energy and chances also. Material can be agreed to a great figure of people from our fingertips. The project helps in dropping the cost and the components used are very simple and easily understandable and available in the market. We believe that our

project can become commercial and can be used in places such as colleges, banks railway station village areas etc. Thus this project existence extensively recycled GSM and arduino skill has scope for future growth and research and can be adapted according to its applications used by the people.

FUTURE SCOPE

any disruption saving electricity and energy. To contrivance this system in remote locations where barely electricity is found. Moreover, using this system in highways in order to display messages without involving

REFERENCES

- [1]. Gowrishankar Kasilingam, Mritha Ramalingam and Chandra Sekhar, "A Survey of Light Emitting Diode (LED) Asian Journal of Applied Science and Technology (AJAST) Volume 1, Issue 5, Pages 58-60, June 2017 Display Board"-Faculty of Engineering & Computer Technology, AIIMST University, Indian Journal of Science and Technology, Vol 7(2), 185-188, February 2014.
- [2]. S. Gayathri, B.M. Prabhu, T. Vanitha, "Solar Powered Smart 5x7 Led Matrix Scrolling Display", Angel College of Engineering and Technology, Tirupur, International Journal of Trend and Development, vol 2(6), ISSN 2394-9333.
- [3]. Prof. P.P. Titarmare, Naresh Tarte, Jayati Shrivastav, Anjali Yadav, Kartik Sahare, " Improve the Industrial Fault Detecting Process by using Microcontroller and GSM Technology", MARCH - 2019, IJMTE, Volume IX, Issue III, PP. 5589-5592, DOI:16.10089.IJMTE.2019.V9I3.19.28136
- [4]. N. Jagan Mohan Reddy, G. Venkateshwrlu, "Wireless electronic display board using GSM"-CBIT Hyderabad, International Journal of Electrical and Data Communication, ISSN: 2320-2084.