REMOTE AC POWER CONTROL BY ANDROID APPLICATION WITH LCD DISPLAY

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ABSTRACT

Principle of firing angle delay of thyristors using back to back SCR's with control being fed from a microcontroller via opto isolators. The firing angle would be adjusted to maintain the load power by an up and down switch.Remote operation is achieved by any smart-phone/Tablet etc., with Android OS, upon a GUI (Graphical User Interface) based touch screen operation. The project uses zero crossing point of the waveform which is detected by a comparator whose output is then fed to the microcontroller.

INTRODUCTION

What is embedded system?

An Embedded System is a combination of computer hardware and software, and perhaps additional mechanical or other parts, designed to perform a specific function. An embedded system is not a computer system that is used primarily for processing, not a software system on PC or UNIX, not a traditional business or scientific application.. High-end embedded system - Generally 32, 64 Bit Controllers used with OS. Examples Personal Digital Assistant and Mobile phones etc .Lower end embedded systems - Generally 8,16 Bit Controllers used with an minimal operating systems and hardware layout designed for the specific purpose.

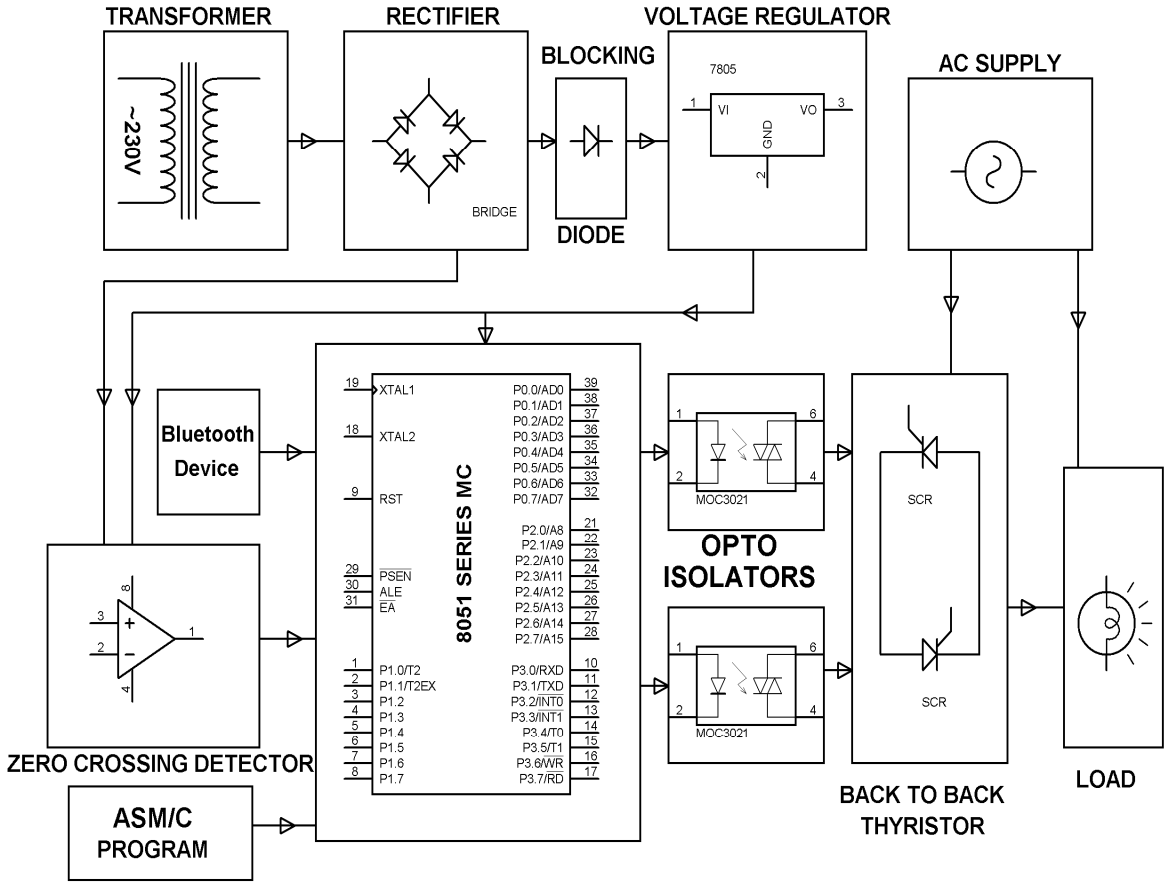
FACTORS THAT LED ANDROID TO BECOME WORLD'S MOST POPULAR OS

Android is open source and Google releases the code under the Apache License. This open-source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers. Additionally, Android has a large community of developers writing applications ("apps") that extend the functionality of devices, written primarily in a customized version of the Java programming language.

LITERATURE SURVEY:-

Based on the project from previous student there is problem with the circuit that caused the transistor blow during the switching. When the current is suddenly shutoff, the collapse of the magnetic field is induces large voltage onto the secondary coil. This voltage is then routed to the spark plug. Because of the large voltage on secondary coil, all of the tests are made on the primary coil. During the switching moment the heating will occur from spark, and then will cause the transistor blow.

BLOCK DIAGRAM:-



WORKING

To control AC power to a load by using firing angle control of thyristor. Efficiency of such power control is very high compared to any other method.

Remote operation is achieved by any smart-phone/Tablet etc., with Android OS, upon a GUI (Graphical User Interface) based touch screen operation. The project uses zero crossing point of the waveform which is detected by a comparator whose output is then fed to the microcontroller. The microcontroller provides required delayed triggering control to a pair of SCRs through opto isolator interface. Finally the power is applied to the load through the SCRs in series. This project uses a microcontroller from 8051 family which is interfaced through a Bluetooth device, which receives signal from Android application device for increasing or decreasing the AC power to the load. A lamp is used in place of an induction motor whose varying intensity demonstrates the varying power to the motor. The varying power results in variation in speed of the motor.

The project can be further enhanced by using direct 230 volt supply instead of 12 volt AC to the bridge rectifier for achieving higher voltage control for charging number of batteries in series.

METHODOLOGY

In this project firstly we prepared PCB Layout by using eagle software. Here we have used lamp as a load instead of AC motor so, opto oscillator is used as a light sensitive device. Embedded C programming for LCD display is burned on microcontroller 8051.We are using blue control v2.0 android app to control intensity of light.

CONCLUSION

A lamp is used in place of an induction motor whose varying intensity demonstrates the varying power to the motor. The varying power results in variation in speed of the motor.The project can be further enhanced by using direct 230 volt supply instead of 12 volt AC to the bridge rectifier for achieving higher voltage control for charging number of batteries in series.

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