WIRELESS ELECTRICAL APPARATUS CONTROLLING SYSTEM WITH SPEED CONTROL OF AC MOTOR IN A PLANT USING RF-COMMUNICATION

Title of the project : Wireless electrical apparatus Controlling System With Speed Control of AC Motor in a Plant Using RF Communication.

Software : Embedded C, Keil, Proload
Microcontroller : AT89S52
Power Supply : +5V, 750mA Regulated Power Supply
Display : a) LCD
b) LED
LCD : HD44780 16-character, 2-line (16X2)
Crystal : 11.0592MHz
Communication Device : RF Module
Transmitter : STT – 433MHz
Receiver : STR – 433MHz
Applications : Home appliances, industries, manufacturing Companies, shopping malls etc.

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ABSTRACT:

It is one of real time applications in industry. Now a days all electrical devices in Industry controlled by manually, But in industry so many electrical devices is there. To control all electrical devices we need lot of ‘MAN POWER’ if manpower increases Maintenance cost also increases; this is one of the drawbacks of industry, So to avoid such type of drawback we should need some WIRELESS controlling systems, One of wireless communication system is RF (Radio frequency) communication system, it is very cheap and very easy to implement,

That is why we have selected RF- Technology, This is not only used in industry but also used in Domestic Purpose as home appliances controlling using RF remote, some persons who are unable to walk to switch board such type of persons need this type of project and also Who are old persons, why because you can switch ON/OFF load with remote, without moving away from your place,

In this project we have SIX on/off loads and ONE variable load. In Industry we have different types of loads at different locations. We can control all loads at a time from one place(control room) without connecting any physical wire between loads and control room, In this project we are using RF transmitter, RF receiver, AT89S52 microcontroller, 16X2 LCD, BT136 Triac and some discrete components.
In this project we have two main sections one is transmitter and Receiver let us explain about transmitter (TX), TX contain one RF Tx, HT640 (encoder) and 8 ON/OFF switches, when we are press one switch, the data from switch taken by encoder (HT640) which is given to Tx, the Tx simple transmitter it at RF frequency range (433MHz),

At receiver side we are receiving data from Tx which is given to decoder (HT 648L) the decoder decodes the data which has received from RF receiver, the decoded data is given to AT89S52, Inside controller there is a S/W Program according to that program, AT89S52 controls all electrical loads.

The loads we are using in this project is AC which should not be directly connected to microcontroller it may be destroyed. To avoid such type of drawback we need some drivers, In this project we are using TRAIC as load controller (as a switch) so we need TRAIC drivers. To drive these AC loads, we are using a combination of (BT136, Moc 3021)

This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.
BLOCK DIAGRAM: Transmitter

- **Power System**
- **Control Switch Array**
- **AT89S52**
- **RF Encoder HT640**
- **16X2 LCD**
- **RF Transmitter STT - 433**
- **Reset**
- **Buzzer**
- **Power on Reset**

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**Step down T/F** → **Bridge Rectifier** → **Filter Circuit** → **Regulator**
Block Diagram: Receiver

RF Receiver -> RF Decoder -> AT89S52

Voltage regulator

Bridge Rectifier

18V AC

230V/50Hz

Traic Driver

Traic Driver

Traic Driver

Traic Driver

Traic Driver

Traic Driver

230V /50Hz


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