
AC MOTOR SPEED CONTROL USING TRIAC

DESCRIPTION:

The main aim of the project is to design a versatile device that can control AC motor by using an 8 bit microcontroller 8051 and TRIAC.

The project is designed in such a way that three switches will be interfaced to the controller to control the speed of the motor. These three switches are dedicated to increase and decrease the speed of the motor and to stop the motor. And an induction motor will also be interfaced to the controller through a TRIAC. TRIAC reduces the energy flow to the motor and works very well for alternating currents. Now, it is the job of the controller to monitor the input switches and to perform the predefined task of controlling i.e. increasing or decreasing the speed of the induction motor or stop the motor. Here the speed of the motor will be controlled by using PWM technique. The average voltage supplied to the load should be varied to obtain different speeds, which can be achieved by setting an appropriate duty cycle. The term duty cycle describes the proportion of 'ON' time to the regular interval or 'period' of time. A low duty cycle corresponds to low power, because the power is OFF for most of the time. Duty cycle is expressed in percent, 100% being fully ON. The main advantage of PWM is that power loss in the switching devices is very low. When a switch is off there is practically no current, and when it is on, there is almost no voltage drop across the switch. Power loss, being the product of voltage and current, is thus in both cases close to zero. Here an LCD will also be provided to display the status of motor.

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

TECHNICAL SPECIFICATIONS:

HARDWARE:

Micro controller	:	AT89S52
Crystal	:	11.0592 MHz
LCD	:	HD44780
AC motor		
TRIAC		
Switches		
Power supply		
Transformer	:	12V step down
Filter	:	1000uf/25V
Voltage Regulator	:	7805

SOFTWARE :

Keilmicrovision

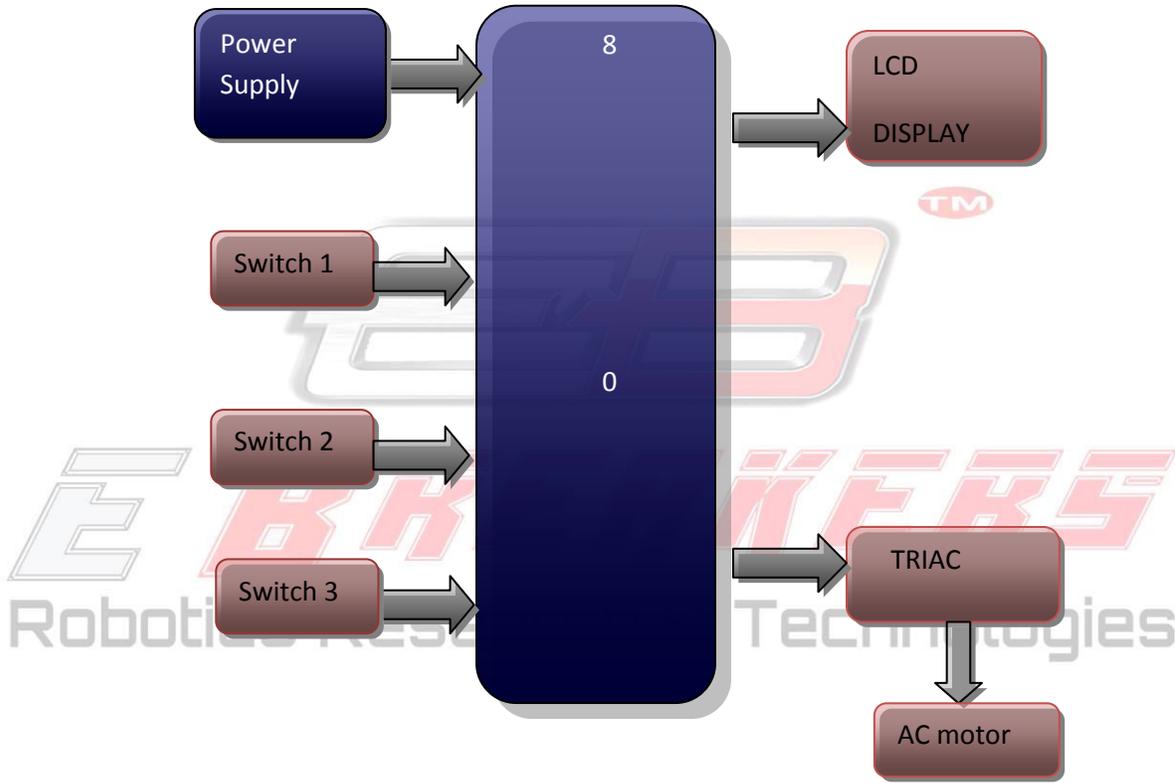
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UC flash

APPLICATIONS:

- Industrial applications

BLOCK DIAGRAM:



POWER SUPPLY BLOCK DIAGRAM:

