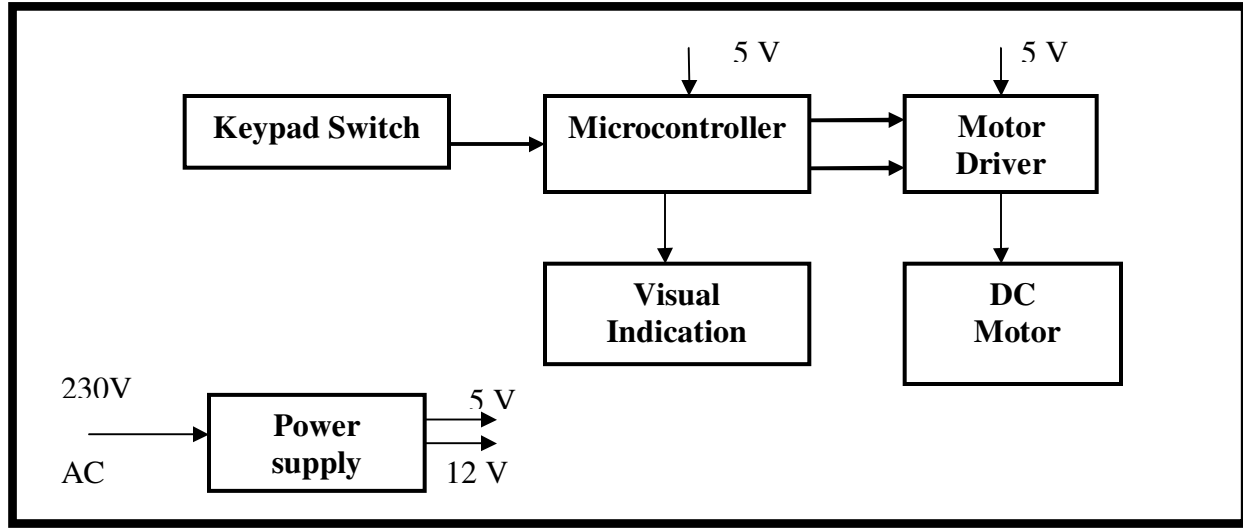


# Synopsis - DC Motor Speed and Direction Controller

## Features

1. Designed for controlling a DC Motor of 600mA load current.
2. PWM speed control from 0 to 100% Modulation.
3. Clock and anticlockwise rotation with speed control.
4. Compact design with microcontroller.
5. Simple and low cost design.

## Block Diagram



## Description

Keypad switches (push button switches) are used to detect the key press for direction and speed control and are inputs to microcontroller. These switches are connected directly to microcontroller I/O pins because the fact that microcontroller I/O ports has built in pull-up resistors.

Microcontroller is the central component which generates the required pulses to drive the motor and reads the keypad switches and control visual indication LED.

In order to do all the activities a program (sequence of instruction) must be written for the microcontroller. This program is called firmware. In order to execute the program, Microcontroller requires basic configuration like 5V regulated power supply, clock, and reset circuit.

Keypad switches are used to change the direction and speed, and to switch on and switch off the motor.

Since microcontroller does not have capability to drive the DC motor, motor driver is used.

A dual color LED is used for visual indication for the motor status. It indicates the speed and direction

Microcontroller and IC's requires 5V regulated power supply, which is obtained from 230V AC by using step down transformer , rectifier, filter and regulators.

### **Working Principle**

When the power is applied to microcontroller, it initializes keypad, LED, stepper motor and waits infinitely for key press.

When START/STOP button is pressed motor starts rotating in clockwise direction with low rpm. As the INC button is pressed the RPM increases by PWM technique and decreases RPM when DEC button is pressed. When the CLK/ANT is pressed, motor changes its direction. All the actions are visualized on LED.