

AC TO DC WITH FOUR QUADRANT MOTOR OPERATION

ABSTRACT

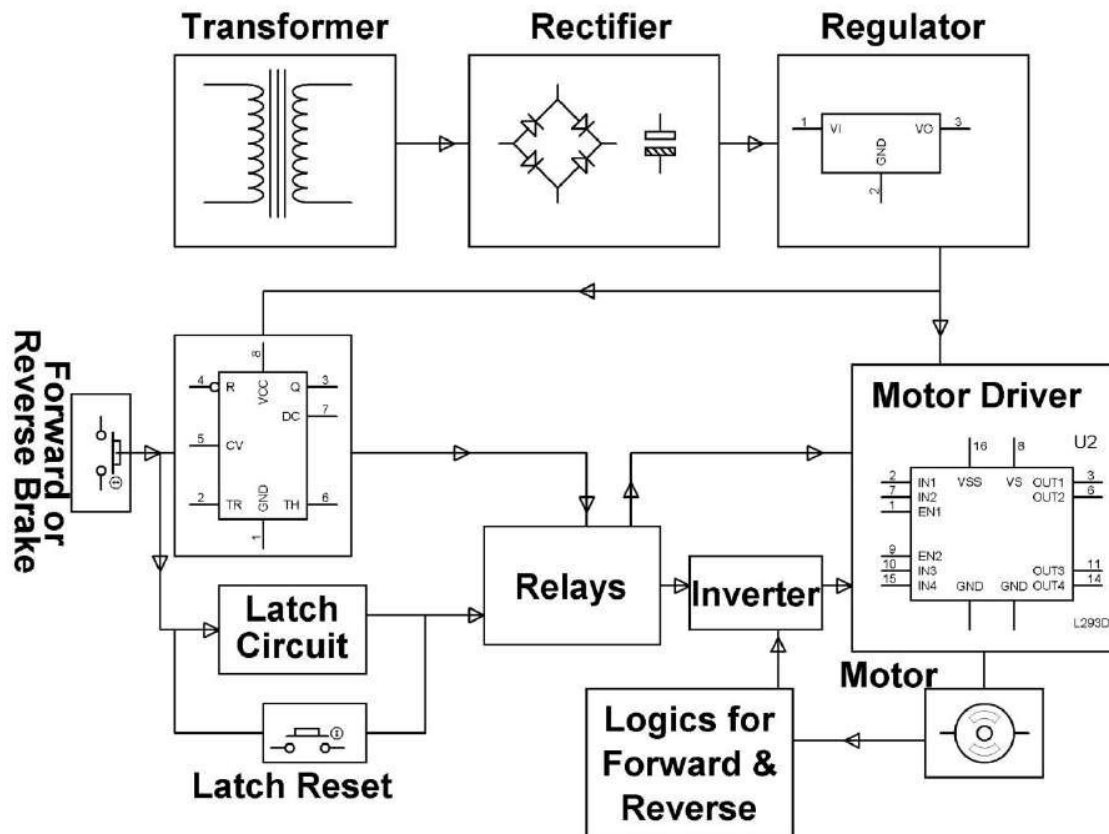
The project is designed to develop a four-quadrant control system for a DC motor being fed from AC supply. Motor is operated in four quadrants: clockwise; counter clock-wise, forward brake and reverse brake.

The four-quadrant operation of a DC motor is best suited for industries wherein motors are needed to be stopped immediately as the time arises; and, this proposed system is very appropriate as forward brake and reverse brake are its integral features.

Instantaneous brake in both the directions happens as a result of applying a reverse voltage across the running motor for a brief period. A 555 timer used in the project develops required pulses. Push buttons are provided for the operation of motor which are interfaced to the circuit that provides an input signal to it and, in turn, controls the motor through a driver IC. Optionally, the speed control feature can be achieved (but not provided in this project) by push-button operation.

This project can be enhanced by using higher power electronic devices to operate high capacity DC motors. Regenerative braking for optimizing the power consumption can also be incorporated.

BLOCK DIAGRAM:



HARDWARE REQUIREMENTS:
 Diodes, 555Timer, Relays, Transistors, Motor Driver IC, DC motor, Inverter IC, Push Buttons, Voltage Regulator, and Transformer.