

CONTROL THE SPEED OF DC MOTOR

This experiment uses a DC Motor controller Interfacing modules which is connected to the BUS of the Kit through a 50 pin FRC cable. The experiment requires a DC Motor and a power supply for the DC Motor also.

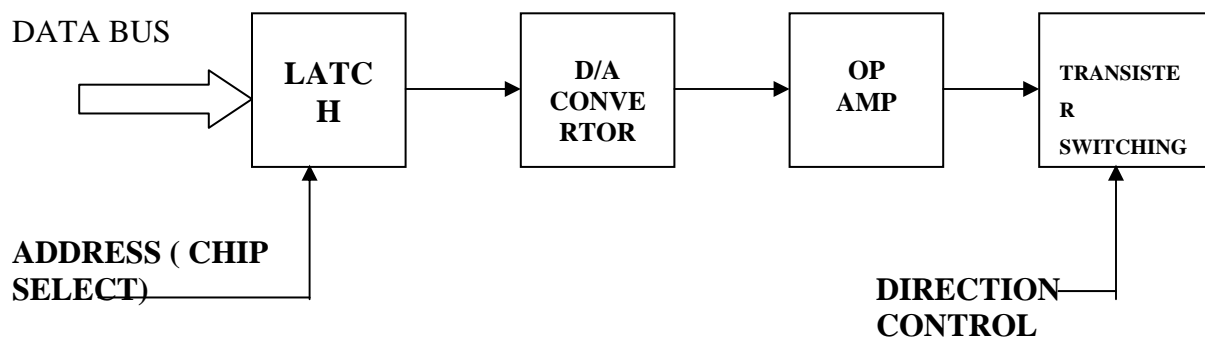
DESCRIPTION OF THE CARD

The card has been designed to allow the students to study as to how the speed and direction of rotation of the motor can be changed. The card uses a D/A converter DAC0800 to control the speed.

The higher the current which flow through the winding of the motor, the higher is the speed. The digital data is fed to the DAC 0800 through latch 74LS273. This data input to the DAC remains latched unless it is changed. The DAC outputs the current depending on the digital input. This outputted current is converted to voltage and is fed to the operational Amplifier. The output of the OP-Amp is reduced using a divider circuit. This reduced output drives a transistor with motor in series with the collector circuit. The higher the current flow through the winding, the higher is the speed of the motor.

The digital data outputted at address 40 is also displayed by 8 LED s as D0 to D7 through 74LS245.

The following block diagram explain the above process.



DIRECTION

The direction of the rotation can be changed by changing the direction of the current through the winding of the DC Motor. This is done by a switch SW1.

SETUP FOR THE EXPERIMENT:

- 1) Connect the dc Motor card to the BUS Connector **J3** of the kit using 50-pin flat FRC cable. The pin No.1 of the connector on the Card as well as the kit are marked. Please ensure that the pin no.1 of the connector on the Kit is connected to pin no. 1 of the connector on the module.
- 2) Also connect the +12V and +12V to the Card power connector. Make sure that the ground of the Power supply from where +12v and -12V are taken is made common with the **Gnd** of the card.
- 3) Enter the program given below from the memory location mentioned in the program ie 6000 using the Substitute Memory Command.
- 4) **Run the program in Burst mode using Go Command and observe that the motor is running in full speed.**
- 5) Change the contents of the program at location **6007 to 00** and again run the program using Go Command. You will observe that the motor stops running.
- 6) Now change this value to some other value in between say 88 and again run the program. You will observe that the motor runs at a speed in between the two speeds
- 7) Change the SW1 to UP position and again repeat the process. You will notice that the DC Motor now runs in other direction.

Address	Machine codes	Mnemonics	Comments
6000	75 81 68	MOV 81,#68	Initialize Stack pointer
6003	90 FF 40	MOV DPTR,#FF40	Load DPTR with the card address
6006	74 FF	MOV A,#FF	data table to be sent
6008	F0	MOVX @DPTR,A	Send the Data to card Address
6009	80 F5	SJMP 6000	Loop Back