INTERFACING WITH PIC MICROCONTROLLER

DC MOTOR INTERFACING AND PWM

A DC motor in simple words is a device that converts electrical energy (direct current system) into mechanical energy. It is of vital importance for the industry today.

The maximum output current of the microcontroller pin is 15mA at 3.3V. But the power requirements of most DC motors are out of reach of the microcontroller and even the back emf (electromotive force) which is produced by the motor may damage the microcontroller. Hence it is not good to interface the DC motor directly to the controller. So use a motor driver circuit in between of DC motor and controller.

Circuit Diagram

- Input 1 – Port B.0 (RB0)
- Input 2 – Port B.1 (RB1)
- Enable 1 – Directly giving 5v
- Button – Port B.2 (RB2)

Working Algorithm

Forward

- EN Pin High (En1 = 1 or En2 = 1)
- Input 1 or Input 3 Pin High (In1 = 1 or In3=1)

- Input 2 or Input 4 Pin Low (In2 = 0 or In4 = 0)

Reverse

- EN Pin High (En1 = 1 or En2 = 1)
- Input 1 or Input 3 Pin Low (In1 = 0 or In3=0)
- Input 2 or Input 4 Pin Low (In2 = 1 or In4 = 1)

Code:

```c
#include<pic.h>
#define in1 RB0
#define in2 RB1
#define sw RB2
void main()
{
TRISB0=0;
TRISB1=0;
TRISB2=1;
while(1) {
if(sw==1) {
in1=1;
in2=0;
} else {
in1=in2=0;
}
}
}
```

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- The maximum current capacity of L293 is 600mA/channel. So do not use a motor that consumes more than that.
- The supply voltage range of L293 is between 4.5 and 36V DC. So you can use a motor falling in that range.
- Mostly in Robotic application, we will use DC gear Motor. So the same logic is used for that Gear motor also.