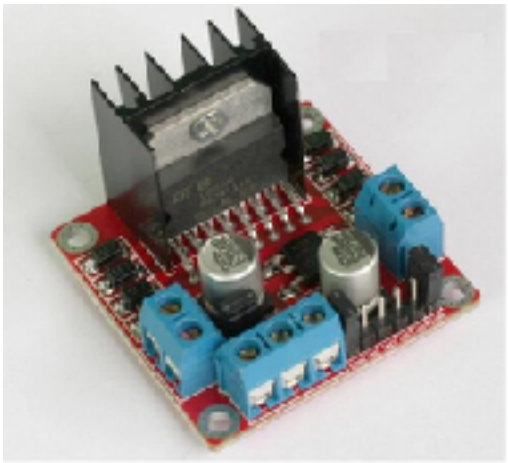
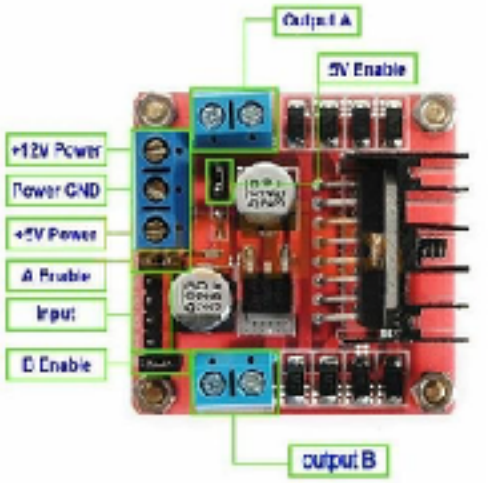
Motor Driver Controller





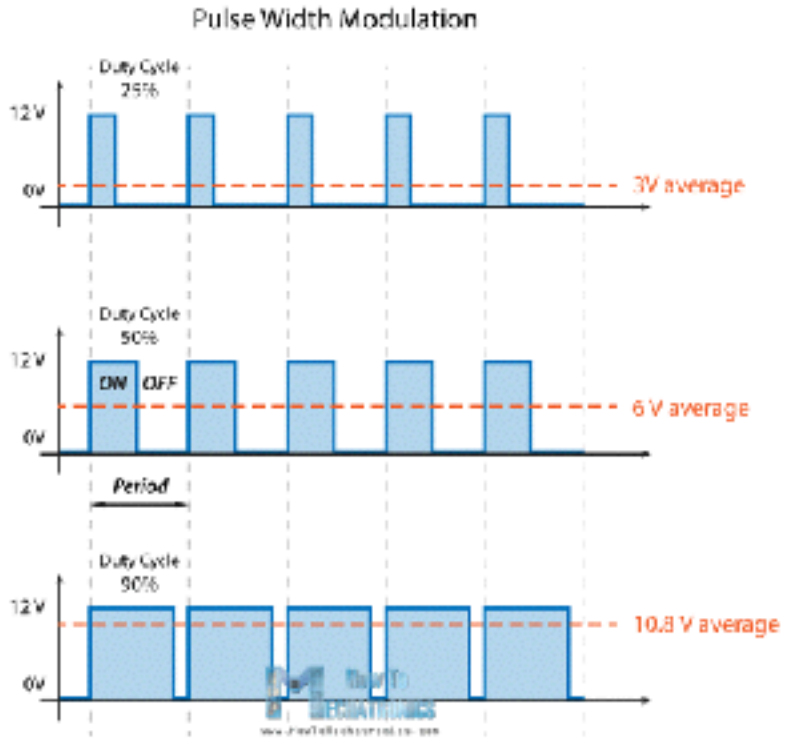
Motor Driver Controller is simply a little current amplifier; the function of motor drivers is to take a low-current control signal and then turn it into a higher-current signal that can drive a motor. The applications of motor driver controller includes, Relay and solenoid switching, Stepping motor, LED and incandescent displays, Automotive applications, Audio-visual equipment, PC Peripherals, and etc.

Normally, The wire from Digital output of a micro controller is not permitted to connect with DC motor. In this session, we are using L298N Dual Motor Controller Module 2A to control the motor DC Motor to rotate at a specified velocity. The reason we do not directly connect Digital output to the DC Motor is because the maximum current of a micro-controller output (typically 10-20mA) is not enough to drive motor coil. As a result, connecting motor directly to micro-controller will damage micro-controller output transistor. Thus, we require motor driver to amplify the current flow through a device. Moreover, drivers are not used only for motors. They are used for any device that usually draws more than 50-100 mA.

Apart from this, you are able control the speed and direction of two DC motors, or control one bipolar stepper motor with ease. The L298N H-bridge module can be used with motors that have a voltage of between 5 and 35V DC.

To control the speed of a DC Motor, you are supposed to understand the concept of input/output as well as the concept of Pulse Width Modulation(PWMs).

Additional Tips - Pulse Width Modulation(PWMs)



Pulse width modulation(PWMs) is a technique which allows us to adjust the average value of the voltage that is going to the electronic device by turning on and off the power at a fast rate. The average voltage depends on the duty cycle, or the amount of time the signal is ON versus the amount of time the signal is OFF in a single period of time.

You can control the PWMs or the average voltage flowing through the DC Motor using the following command

```
void setup() {
  pinMode(enA, OUTPUT);
  pinMode(in1, OUTPUT);
  pinMode(in2, OUTPUT);
  pinMode(button, INPUT);
```

```
void loop() {
  int potValue = analogRead(A0); // Read potentiometer value
  int pwmOutput = map(potValue, 0, 1023, 0 , 255); // Map the potentiometer value from 0 to 255
  analogWrite(enA, pwmOutput); // Send PWM signal to L298N Enable pin
```

```
analogWrite(enA, motorSpeedA); // Send PWM signal to motor A
analogWrite(enB, motorSpeedB); // Send PWM signal to motor B
```