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Introduction

L293D breakout enables you to control two low power DC motors. With this breakout we can control the direction as well as the speed of the DC motor. This breakout has a separate ports for connecting Motors and drive supply. This breakout can be mounted anywhere using screws.

Specification

- Operating voltage: 5V
- Drive Supply Voltage: 4.5 - 36 V
- Continuous Output Current: 600 mA or 0.6 A (per channel)

Variants

- None
Supported cables:

- None

Details

L293D DC motor driver is a dual H-bridge motor driver IC. It can drive two motors simultaneously in both directions. It can also be used to control the speed of the motors in both the directions. L293D IC is a current enhancing IC. Since the digital output signals from the controller board are not capable of driving DC motors directly, L293D IC is used as a driver circuit which convert low power signals to high power signals to drive the motors.

It has slide switch which is used to select Auto or Manual mode. In the Auto mode Enable pins of the IC is directly connected to the VCC that means both the motor channels are always enabled. In the manual mode the enable pins of the IC are connected to EN pin of the breakout so that the user can enable or disable the motor channels by controlling the voltage at the EN pin of the breakout. In the Manual mode, if the user provide HIGH signal to EN pin then both the motor channels are enabled and if the user provide LOW signal to EN pin then both the motor channels are disabled.

It has three 2 pin screw terminal ports out of which one port is named as ‘drive supply’ and the other two ports are named as ‘Load A’ and ‘Load B’. Drive supply port is connected with power source which is required to drive the motors. Load A and Load B ports can be connected to separate DC motors.

It has a interfacing port with 7 pins named as G, V, EN, A1, A2, B1, B2. Here G represents Ground, V represents VCC, EN represents enable and A1 & A2, B1 & B2 represents the data pins. A1 & A2 controls the motor at load A and B1 & B2 controls the motor at load B.
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X - HIGH or LOW
M - Manual
A - Auto
L - LOW
H - HIGH
NC - Not Connected

How to interface?

We don’t have any supported cables to interface L293D motor driver to the controller board, so we have used single female to female wires to interface L293D motor driver breakout to the controller board. Always ensure that G pin is connected to the G pin. And V pin has to be supplied with 5V.

For demonstrating the working of L293D motor driver breakout we have connected a DC geared motor to Load A port. The data pins A1 & A2 of the L293D motor driver breakout is connected to the 11th & 12th GPIO pins on the controller board respectively.

We are not connecting EN pin because we have used AUTO mode in L293D motor driver breakout. By controlling the voltage at the 11th and 12th GPIO pins of the controller one can control the direction as well as speed of the motor. In the following pictures we are connected DC gear motor to load A.
In the above picture we have connected the DC jack breakout to drive supply port of L293D motor driver breakout to directly plug in the adaptor.
In the above picture we have connected the L293D motor driver breakout pins using female-female wires to controller board.
In this picture we have connected the 11th & 12th pins of pluguino board to the L293D motor driver data pins A1 & A2, and also G pin to the G pin and V pin to the V pin.
Objective: In this example, we are going to control the motor which is connected to Load A. Initially the motor runs at full speed in clockwise direction for 5 sec, after that the motor runs at full speed in anti-clockwise direction for 5sec and then the motor halts for 3sec. After that the motor runs at 25% of speed in clockwise direction for 5sec, then the motor runs with 50% of speed in clockwise direction for 5 seconds and after that the motor stops for 3sec.

**Example Codes**

**Arduino**

```
#define motor_Pin1   11 // 11th pin is connected to A1 pin of
#define motor_Pin2   12 // 12th pin is connected to A2 pin of
  the L293D breakout
  the L293D breakout
```
```c
void setup()
{
  pinMode(motor_Pin1, OUTPUT);  // define 11th pin as an output pin
  pinMode(motor_Pin2, OUTPUT);  // define 12th pin as an output pin
}
void loop()
{
  // to rotate the motor in clockwise direction at full speed
  analogWrite(motor_Pin1, 255);
  analogWrite(motor_Pin2, 0);
  delay(5000);

  // to rotate the motor in anti-clockwise direction at full speed
  analogWrite(motor_Pin1, 0);
  analogWrite(motor_Pin2, 255);
  delay(5000);

  // to halt the motor
  analogWrite(motor_Pin1, 0);
  analogWrite(motor_Pin2, 0);
  delay(3000);

  // to rotate the motor in clockwise direction at 25% of speed
  analogWrite(motor_Pin1, 64);
  analogWrite(motor_Pin2, 0);
  delay(5000);

  // to rotate the motor in clockwise direction at 50% of speed
  analogWrite(motor_Pin1, 127);
  analogWrite(motor_Pin2, 0);
  delay(5000);

  // to halt the motor
  analogWrite(motor_Pin1, 0);
  analogWrite(motor_Pin2, 0);
  delay(3000);
}
```

Output video: [https://youtu.be/TMkjY4YTX34](https://youtu.be/TMkjY4YTX34)
Contributors

List of interns & other contributors who have worked for developing this manual

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