Motor Driver
(Technical Note)

ZERO2MAKER

Introduction

Motor drivers acts as an interface between motors and control circuits. Motors require high amount of current while controller circuits require low amount of current. Motor drivers thus take the low-current control signal and turn it into high-current signal to drive the motor. With two driver chips, L9110s motor drivers allows you to control the working speed and direction of two motors independently at the same time.

L9110 has four switches in the form of letter H as in figure below, where the switches on the sides may be turned on and off to apply voltage to the motor in forward and reverse polarity.
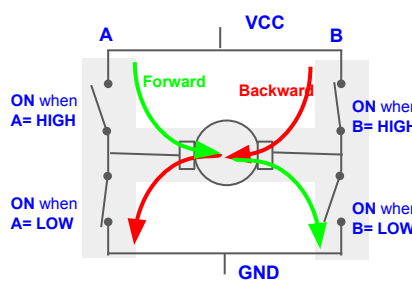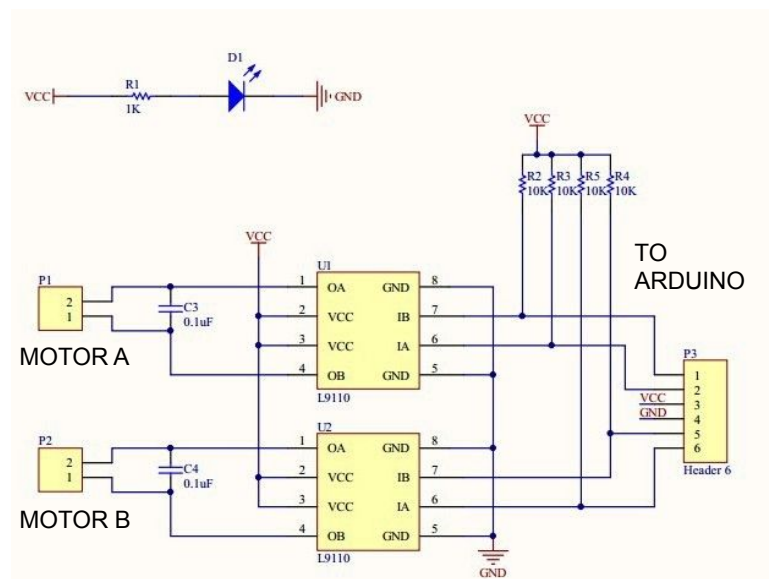
Scientific Fact and Applications

This module supports a voltage range from 2.5-12V at 800mA of continuous current. They have built-in output clamp diodes to protect sensitive microcontroller electronics and are suitable for very small robot projects.

The semiconductor switches on the H-bridge are controlled by IA and IB inputs from the Arduino. By changing these signals the motor can be made to run in forward and backward directions, or be stopped as shown in the table.

This driver can be used to run two DC motors or one Stepper motor.

Application

In an RC controlled car the left and right wheel motors could be driven by this device and the directions may be changed.

MOTOR STATUS	1A	1B
Forward	HIGH	LOW
Backward	LOW	HIGH
Stopped	HIGH	HIGH
Stopped	LOW	LOW

References:

1. https://howtomechatronics.com/tutorials/arduino/arduino-dc-motor-control-tutorial-l298n-pwm-h-bridge/
2. https://www.bananarobotics.com/shop/How-to-use-the-HG7881-(L9110)-Dual-Channel-Motor-Driver-Module
3. https://sproboticworks.com/blog/choosing-the-right-motor-driver#:~:text=Motor%20drivers%20acts%20as%20an,that%20can%20drive%20a%20motor
4. https://electronics.stackexchange.com/questions/321170/using-l9110-or-hg7881-with-external-power-supply
5. https://datasheetspdf.com/pdf-file/839657/ASIC/L9110/1

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## (Application Note)

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Project

To control dc motor rotation by using L9110s Motor Driver.

Procedure

L9110s Motor Driver

- Connect **VCC** of the driver to **5V** of Arduino
- Connect **GND** of the driver to **GND** of Arduino
- Connect **pin A-1A** of the driver to **pin 4** of Arduino
- Connect **pin A-1B** of the driver to **pin 5** of Arduino
- Connect **pin B-1A** of the driver to **pin 6** of Arduino
- Connect **pin B-1B** of the driver to **pin 7** of Arduino
- Connect two wires from **Motor A** of the driver to **DC Motor A (Check polarity of rotation)**
- Connect two wires from **Motor B** of the driver to **DC Motor B (Check polarity of rotation)**

Schematic

DC Motor A

DC Motor B

fritzing
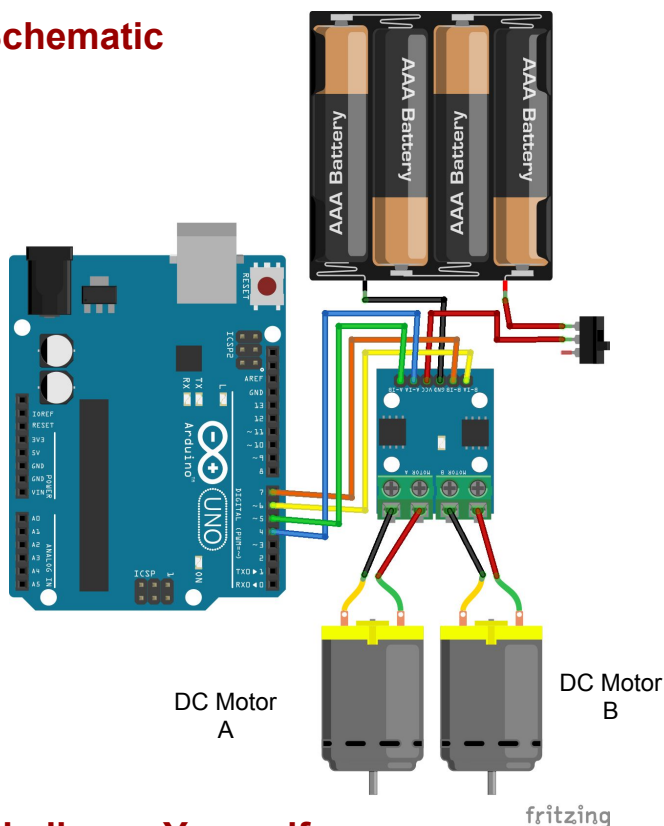
Challenge Yourself

1. Stop the rotation of a dc motor when it detects an object in front by using infrared sensor. (eg. Smart Car)

Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
L9110s Motor Driver	EMA-00010-B	1
DC Motor	MMD-00001-A	2
Power switch (on/off)	EDM-00002-A	4
Battery, AA	COE-00001-A	4

Code

```
/*
 * Set Motor Driver pins:
 * A_1A->Left Forward;
 * A_1B->Left Backward
 * B_1A->Right Forward;
 * B_1B->Right Backward
 */
const int A_1A=4;
const int A_1B=5;
const int B_1A=6;
const int B_1B=7;

void setup() {
  /*Set Motor Driver pins as Output*/
  pinMode(A_1A,OUTPUT);
/*left motors forward*/
  pinMode(A_1B,OUTPUT);
/*left motors reverse*/
  pinMode(B_1A,OUTPUT);
/*right motors forward*/
  pinMode(B_1B,OUTPUT);
/*right motors reverse*/
}

void loop() {
  /*Move Forward for 1 seconds*/
  digitalWrite(A_1A, HIGH);
  digitalWrite(A_1B, LOW);
  digitalWrite(B_1A, HIGH);
  digitalWrite(B_1B, LOW);
  delay(1000);
  /*Move Backward for 1 seconds*/
  digitalWrite(A_1A, LOW);
  digitalWrite(A_1B, HIGH);
  digitalWrite(B_1A, LOW);
  digitalWrite(B_1B, HIGH);
  delay(1000);
}
```