Motor/Stepper Driver Board - 5108
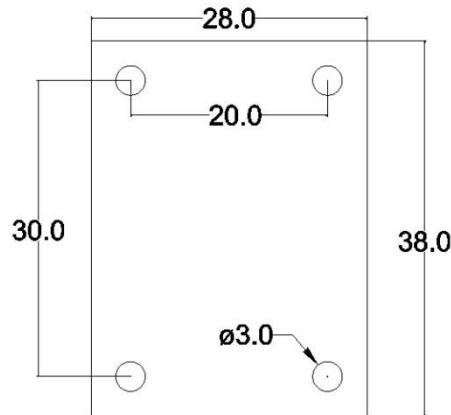

(Dimensions in mm Tolerance +/- 0.1)

Board Overview

This circuit uses the DRV8833 and allows up to 2 DC motors or 1 stepper motor to be controlled by a microprocessor. This is useful as a microcontroller cannot, on its own, output enough power to drive most motors. Using this board you can control a motor with the digital outputs from your microcontroller while powering it separately from a suitable power source.

The motor driver operates from a 2.7-10.8V supply, connected to the Vcc Pin and can provide up to 1.5A per output or 3A if the motor is connected to both outputs in parallel. Exceeding these max current values will destroy the chip. **IF THIS BOARD SHARES A POWER SUPPLY WITH THE MICROPROCESSOR, ENSURE IT IS SUITABLE RATED. I.E. DON'T RUN OFF THE ARDUINO 5V OUT LINE.**

Each output pin has a corresponding input pin. The table below shows the input/output truth table. The **nSLEEP** pin will put the device into a low power state when brought low to help save power. **If you are tying this high make sure you do it through a 20k to 75k resistor to limit the current into the pin**, if the voltage to this pin spikes above 6.5V then too much current will flow into it and damage the structure of the IC. The resistor limits the current to the pin, preventing this problem from occurring.

xIN1	xIN2	xOUT1	xOUT2	FUNCTION (DC MOTOR)
0	0	Z	Z	Coast
0	1	L	H	Reverse
1	0	H	L	Forward
1	1	L	L	Brake

Functional Block Diagram
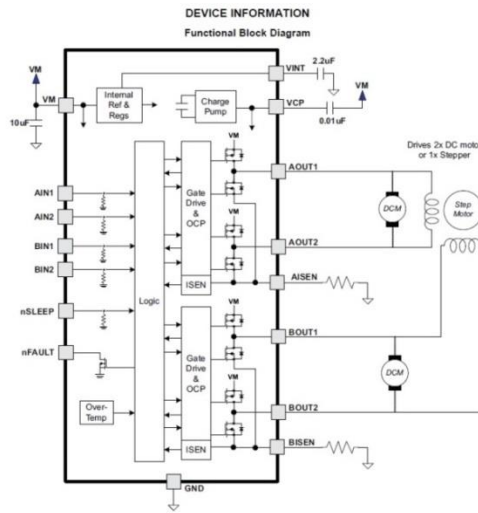
Please note: The decoupling capacitor shown is included on the breakout board.
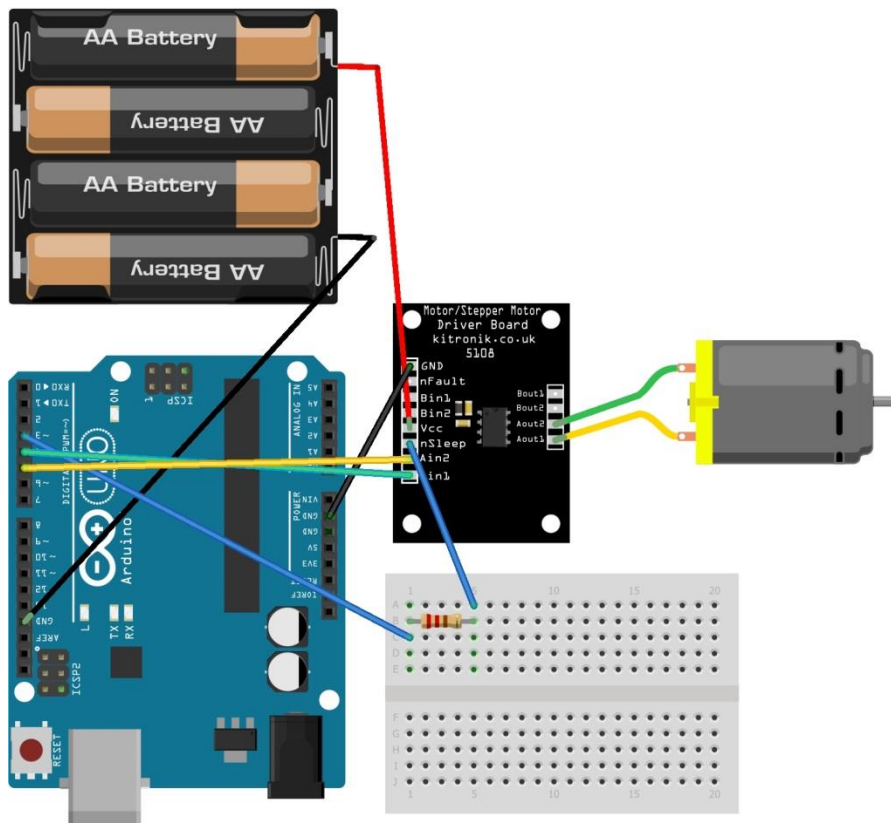
Electrical Characteristics

		Min	Max	Unit
V_{cc}	Device Power supply voltage range	2.7	10.8	V
I_{out}	H-bridge output current (continuous)		1.5	A
I_{out}	H-bridge output current (peak)		2.0	A
f_{pwm}	Externally applied PWM frequency	0	250	kHz
V_{in}	Logic level input voltage	-0.3	5.75	V

Pinout

Pin Name	Description
Vcc	Vcc (0-7V)
GND	Ground
nSLEEP	Bringing this low enters the device into sleep mode. **If you are tying this high make sure you do it through a 20k to 75k resistor to limit the current into the pin.**
xinx	Logic input
xoutx	Motor output

Using the board with an Arduino

Arduino Connections for Single DC Motor

Made with Fritzing.org

Motor Driver Board	Arduino
Vcc	**NO CONNECTION – Vcc must not be connected to a microprocessor! Use an alternative power supply!**
GND	GND + GND of your motor power supply
nSLEEP	Pin 3 (through a 22k resistor)
Ain1	Pin 4
Ain2	Pin 5

1) Connect the outputs- 3, 4 and 5 of your Arduino to the pins, nSLEEP, Ain1 and Ain2 respectively.
2) Connect Vcc to your motor power supply **(NOT THE MICROCONTROLLER, THIS WILL DRAW TOO MUCH CURRENT AND POTENTIALLY DESTROY IT).** The power supply must be 2.7-10.8V DC.
3) Connect GND to the ground terminal on your power source and also to the GND pin on your Arduino.
4) Wire Aout1 and Aout2 to your DC motor terminals.
5) Upload the sample sketch on the next page. The motor should turn on for 5 seconds then reverse for 5 seconds and repeat.

Arduino Sketch – Single DC Motor

```
/*
  Motor Test
  Sets the motor to forward for 5 seconds then to reverse for 5 seconds, repeats
  forever.
*/
 // name the pins you will use:
int nSleep = 3;
int ain1 = 4;
int ain2 = 5;

// the setup routine runs once when you press reset:
void setup() {
  // set the pins you are using to output mode
  pinMode(nSleep, OUTPUT);
  pinMode(ain1, OUTPUT);
  pinMode(ain2, OUTPUT);

// Set sleep high to wake the chip
digitalWrite(nSleep,HIGH);

}

// the loop routine runs over and over again forever:
void loop() {
  digitalWrite(ain1, HIGH);     // Set the motor to forward
  digitalWrite(ain2, LOW);

  delay(5000);                  // wait for 5 seconds

  digitalWrite(ain1, LOW);      // Set the motor to reverse
  digitalWrite(ain2, HIGH);

  delay(5000);                  // wait for 5 seconds
}
```
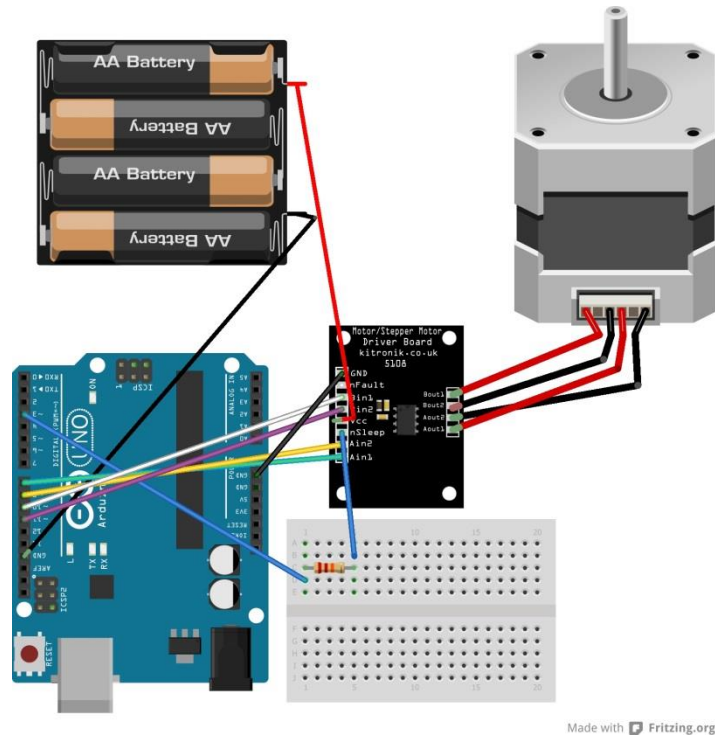
Arduino Connections for Stepper Motor

Made with **Fritzing.org**

Motor Driver Board	Arduino
Vcc	**NO CONNECTION – Vcc must not be connected to a microprocessor! Use an alternative power supply!**
GND	GND + GND of your motor power supply
nSLEEP	Pin 3 (through a 22k resistor)
Ain1	Pin 8
Ain2	Pin 9
Bin1	Pin 10
Bin2	Pin 11

1) Connect the outputs- 3, 8, 9, 10 and 11 of your Arduino to the pins; nSLEEP, AIN1, AIN2,BIN1 and BIN2 respectively.
2) Connect Vcc to your motor power supply **(NOT THE MICROCONTROLLER, THIS WILL DRAW TOO MUCH CURRENT AND POTENTIALLY DESTROY IT).** The power supply must be 2.7-10.8V DC.
3) Connect GND to the ground terminal on your power source and also to the GND pin on your Arduino.
4) Wire AOUT1 and AOUT2 to across one coil of the stepper and BOUT1 and BOUT2 to the other coil of your stepper motor.
5) Upload the sample sketch on the next page. The stepper motor should move through 100 steps. Remember to change the value of the definition 'STEPS' to the number of steps your stepper motor has.

Arduino Sketch – Stepper Motor

```
/*
  Stepper Motor Test
  Motor moves through 100 steps then waits a second and moves again.
*/

#include <Stepper.h> //Default library included with Arduino
#define STEPS 200 //Change 200 to the number of steps your stepper motor has

Stepper stepper(STEPS, 8, 9, 10, 11); // 8,9,10,11 are the pins we will be using

void setup()
{
 stepper.setSpeed(120);   //setSpeed values are in RPM
}

void loop()
{
  stepper.step(100); //Tell the stepper how many steps to move through.
  delay(1000);
}
```