

# StepStick A4988 Stepper Driver Module

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## Overview



This product is a breakout board for Allegro's A4988 DMOS Microstepping Driver with Translator and Overcurrent Protection; please read the A4988 datasheet carefully before using this product. This stepper motor driver lets you to operate bipolar stepper motors in full-, half-, quarter-, eighth-, and sixteenth-step modes, with an output drive capacity of up to 35 V and 2 A.

The translator is the key to the easy implementation of the A4988. Simply inputting one pulse on the STEP input drives the motor one microstep. There are no phase sequence tables, high frequency control lines, or complex interfaces to program. The A4988 interface is an ideal fit for applications where a complex microprocessor is unavailable or is overburdened.

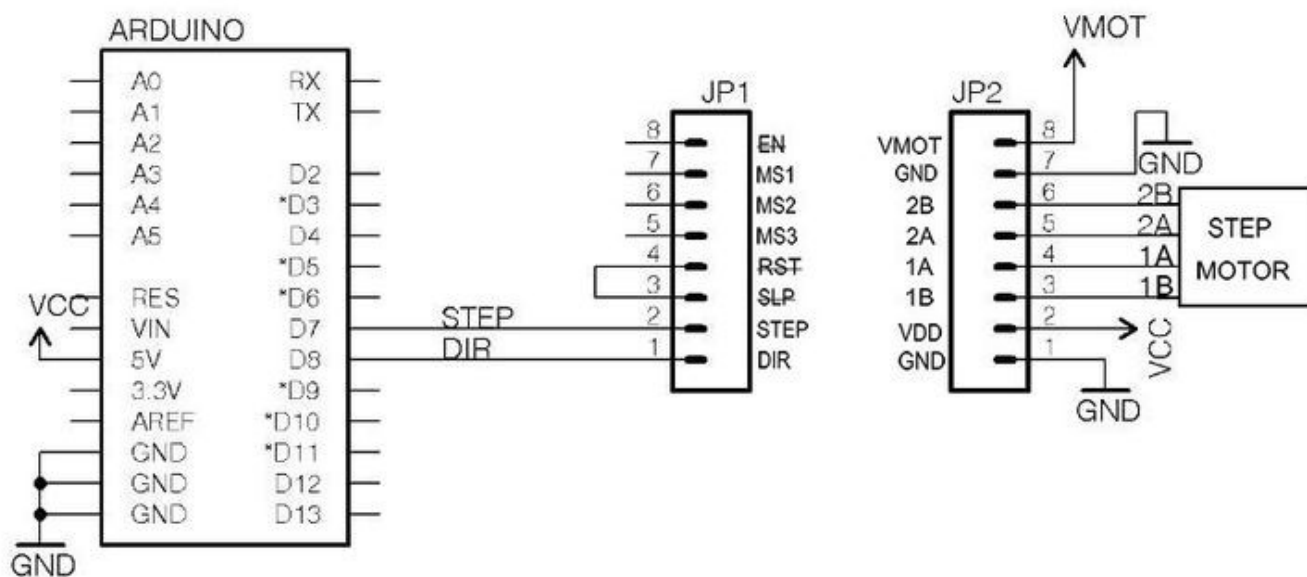
## Features

- Simple step and direction control interface
- Five different step resolutions: full-step, half-step, quarter-step, eighth-step, and sixteenth-step
- Adjustable current control lets you set the maximum current output with a potentiometer, which lets you use voltages above your stepper motor's rated voltage to achieve higher step rates
- Intelligent chopping control that automatically selects the correct current decay mode (fast decay or slow decay)
- Over-temperature thermal shutdown, under-voltage lockout, and crossover-current protection
- Short-to-ground and shorted-load protection

## Document

A4988 datasheet (<http://www.geeetech.com/Documents/A4988-Datasheet.pdf>)

## Usage



The driver requires a logic supply voltage (3 – 5.5 V) to be connected across the VDD and GND pins and a motor supply voltage of (8 – 35 V) to be connected across VMOT and GND. These supplies should have appropriate decoupling capacitors close to the board, and they should be capable of delivering the expected currents (peaks up to 4 A for the motor supply).

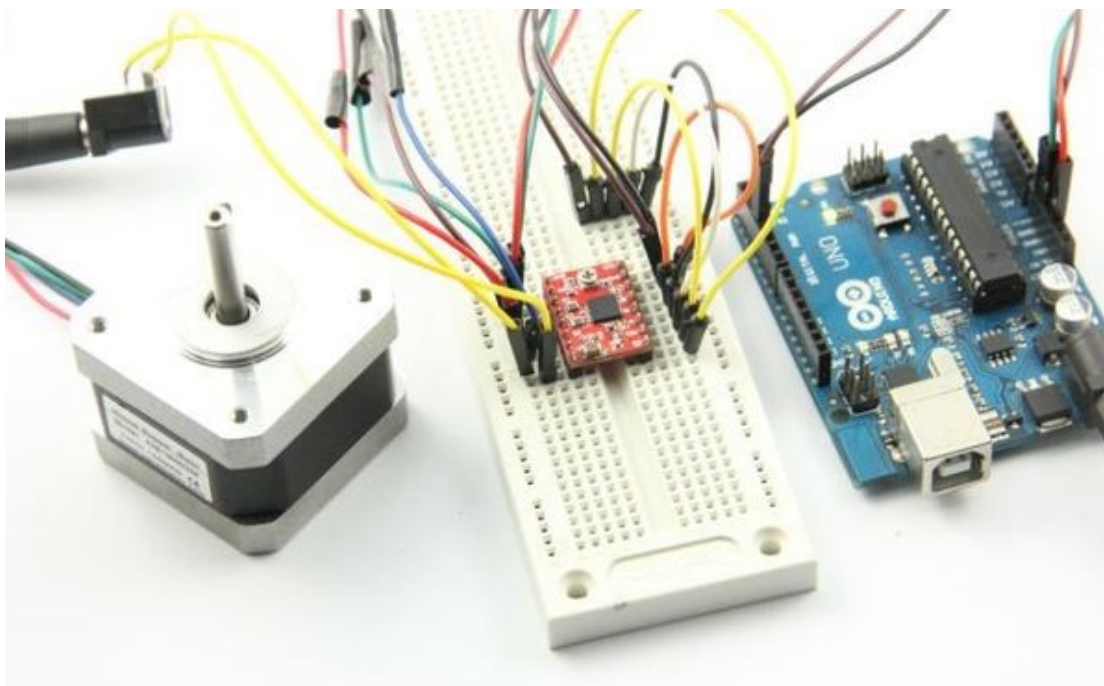
Stepper motors typically have a step size specification (e.g. 1.8° or 200 steps per revolution), which applies to full steps. A microstepping driver such as the A4988 allows higher resolutions by allowing intermediate step locations, which are achieved by energizing the coils with intermediate current levels. For instance, driving a motor in quarter-step mode will give the 200-step-per-revolution motor 800 microsteps per revolution by using four different current levels.

The resolution (step size) selector inputs (MS1, MS2, MS3) enable selection from the five step resolutions according to the table below.

MS1	MS2	MS3	Microstep Resolution	Excitation Mode
L	L	L	Full Step	2 Phase
H	L	L	Half Step	1-2 Phase
L	H	L	Quarter Step	W1-2 Phase
H	H	L	Eighth Step	2W1-2 Phase
H	H	H	Sixteenth Step	4W1-2 Phase

### Warning

**Connecting or disconnecting a stepper motor while the driver is powered can destroy the driver. (More generally, rewiring anything while it is powered is asking for trouble.)**



## Example code

```
int dirPin = 8;
int stepperPin = 7;
void setup() {
  pinMode(dirPin, OUTPUT);
  pinMode(stepperPin, OUTPUT);
}
void step(boolean dir,int steps){
  digitalWrite(dirPin,dir);
  delay(50);
  for(int i=0;i<steps;i++){
    digitalWrite(stepperPin, HIGH);
    delayMicroseconds(800);
    digitalWrite(stepperPin, LOW);
    delayMicroseconds(800);
  }
}
void loop(){
  step(true,1600);
  delay(500);
  step(false,1600*5);
  delay(500);
}
```

## How to buy

Click here to buy A4988 Stepper Driver Module (<http://www.geeetech.com/stepstick-a4988-stepper-driver-module-pololu-p-577.html>)

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