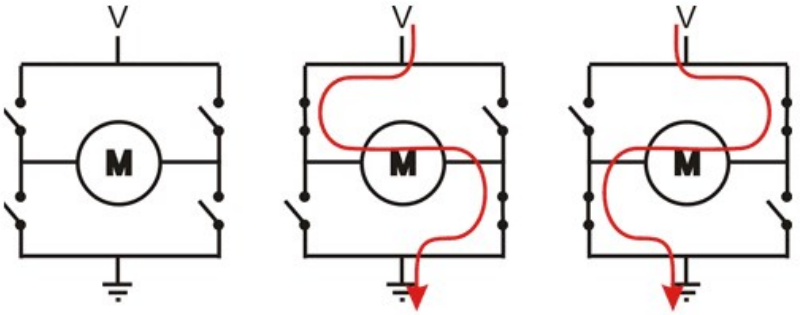


Code

← Arduino + Stepper (L298N)

Description

Bipolar stepper motors always have only 4 wires. Bipolar stepper motors always have 2 coils. By driving the current in seperate directions through each of the coils, we can have a total of 4 different states:

- Coil A current flowing ‘left to right’.
- Coil A current flowing ‘right to left’.
- Coil B current flowing ‘left to right’.
- Coil B current flowing ‘right to left’.

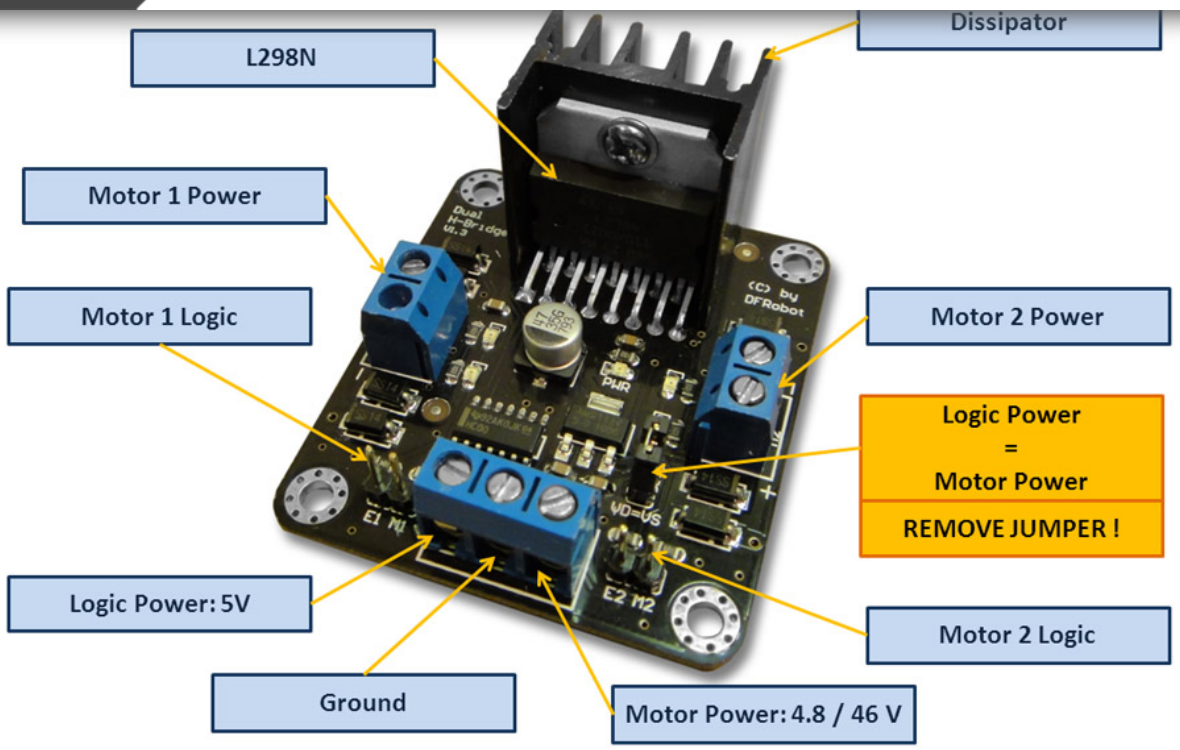
Note that the number of poles *inside* a stepper motor is often greater than just 2; individual physical poles inside the stepper motor are wired in series to create 2 coils / 4 wires you see in schematics.

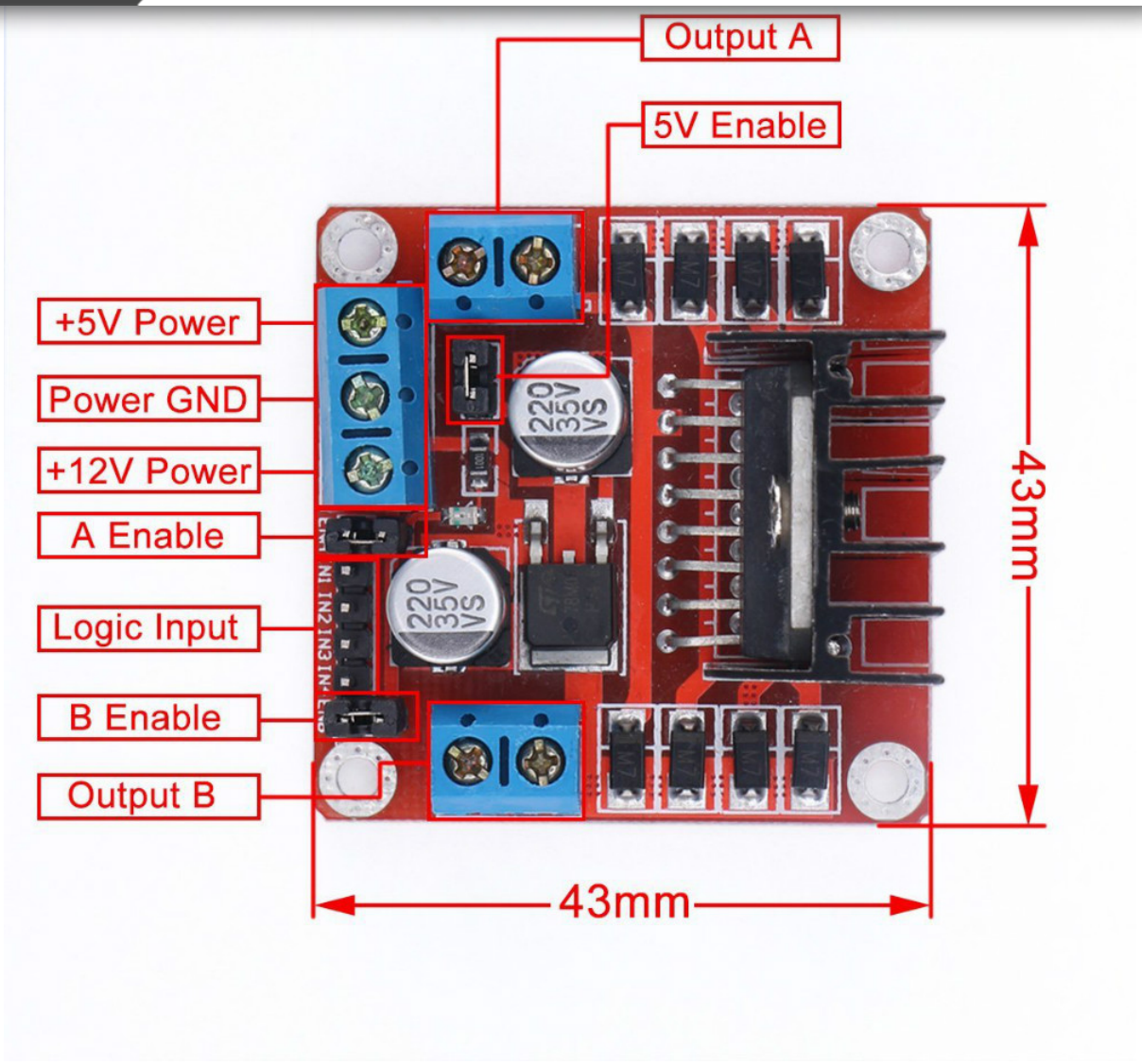
Bipolar stepper motors require a dual H-bridge to drive them; one H-bridge for each coil. Bipolar motors offer increased torque compared to unipolar motors. Flyback diodes are required to prevent voltage spikes when the power to the coil is turned off and the stepper motor acts like a generator briefly (back-emf).

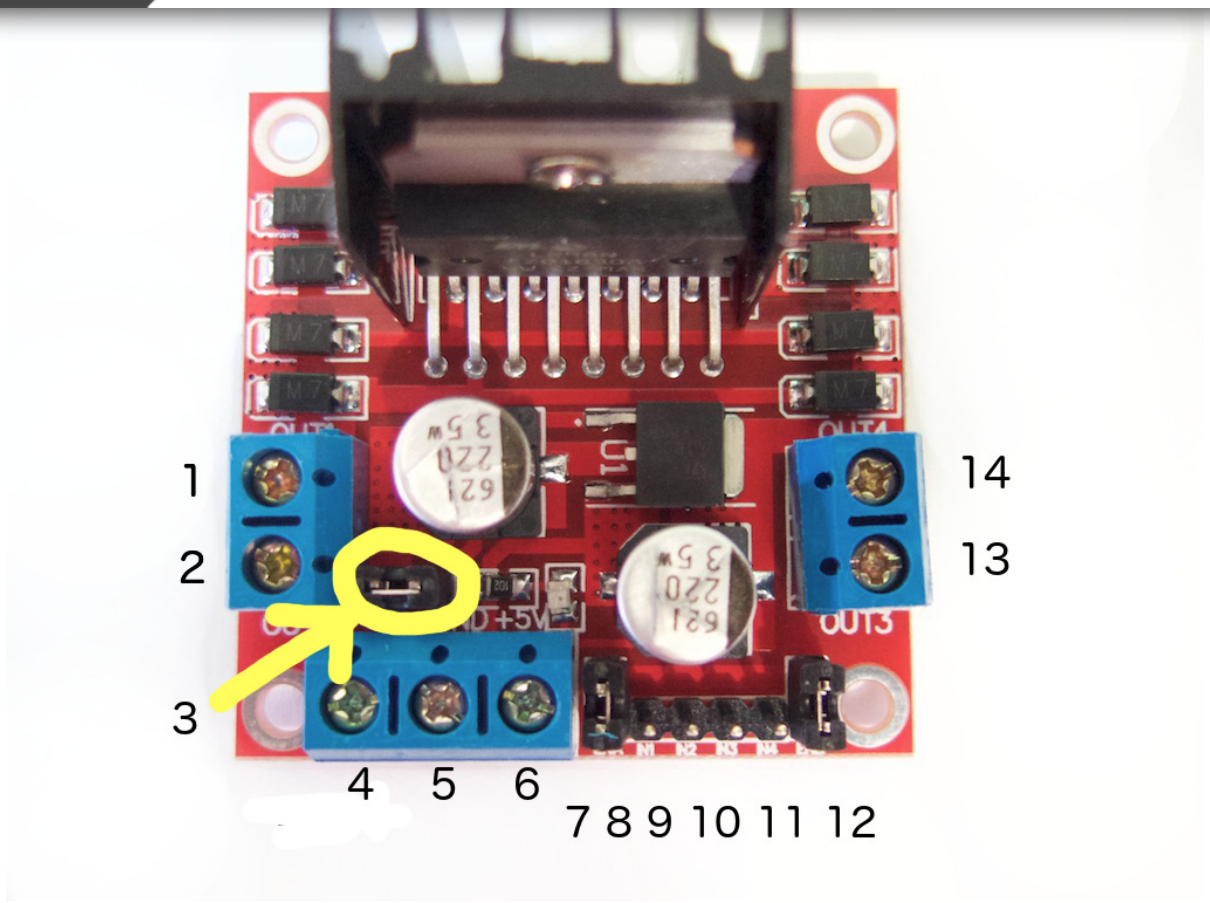
Note: You can also connect 5,6 or 8 wire unipolar motors and connect them as bipolar motors by not connecting the common lead(s). They will not have as much torque as bipolar motors due to thinner wire with a higher electrical resistance used in the coils (bifilar windings).

Hardware Required

- Arduino Board
- L298N stepper driver board
- Bipolar stepper motor (i.e. NEMA17)


L298N
Dissipator
Motor 1 Power
Motor 1 Logic
Motor 2 Power
Logic Power
=
Motor Power
REMOVE JUMPER !
Logic Power: 5V
Motor 2 Logic
Ground
Motor Power: 4.8 / 46 V


Output A
5V Enable
+5V Power
Power GND
+12V Power
A Enable
Logic Input
B Enable
Output B
43mm
43mm



Pinout

1. DC motor 1 “+” or stepper motor A+
2. DC motor 1 “-” or stepper motor A-
3. 12V jumper – remove this if using a supply voltage greater than 12V DC. When the jumper is in place, the onboard voltage regulator is active (12V max to 5V).
4. Connect your motor supply voltage here, maximum of 35V DC. Remove 12V jumper if >12V DC
5. GND
6. 5V output if the 12V jumper at #3 is in place. This is ideal for powering your Arduino.
7. DC motor 1 enable jumper. Leave this in place when using a stepper motor. Connect to PWM output for DC motor speed control.
8. IN1
9. IN2
10. IN3
11. IN4
12. DC motor 2 enable jumper. Leave this in place when using a stepper motor. Connect to PWM output for DC motor speed control.
13. DC motor 2 “+” or stepper motor B+
14. DC motor 2 “-” or stepper motor B-

Connect the L298N stepper driver board to a 9V…12V power supply using pin #4 (+12V) and #5 (GND). Leave the jumper in #3 in place. You can now use the +5V pin at #6 (and the GND pin at #5) to power your