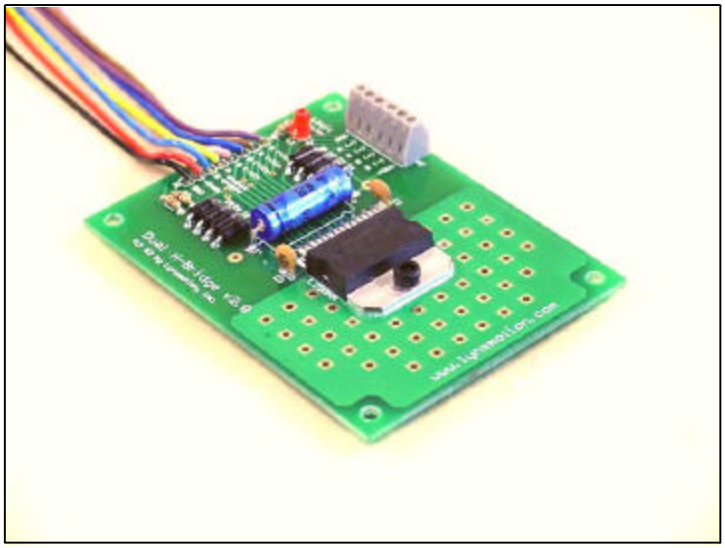
Dual H-Bridge
DC Motor Driver



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Assembly Manual DHB-01 Ver 2.0

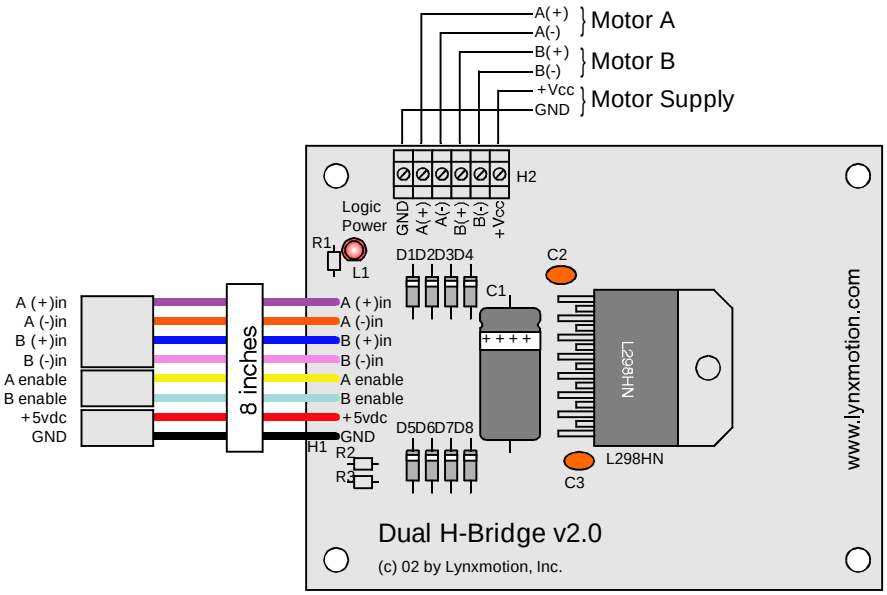
Dual H-Bridge Ver 2.0

Caution! Read the manual completely before wiring and applying power to the board! Errors in wiring can damage the H-Bridge or the host microcontroller.

Caution! The wires for microcontroller I/O and power can break off if wires are bent back and forth repetitively. Mount the board and terminate the wires as soon as possible.

Caution! Do not reverse the power plug as damage to the H-Bridge board will occur. These boards are fully tested before they leave the factory. If the board is damaged by reverse power the warranty is void.

Caution! Do not short the motors wires together. Damage to the H-Bridge will occur. These boards are fully tested before they leave the factory. If the board is damaged by shorting the motor wires together the warranty is void.



Using the Dual H-Bridge Kit

Mounting

Mount the circuit board onto the robot using standard 4-40 hardware. Page 5 illustrates that the H-Bridge can be stacked with the Next Step or OOPic-R microcontrollers.

Wiring Options

The device simply plugs into the I/O header posts of most microcontrollers. The enable lines are pulled high with 10k resistors, and have been put on their own connector. So - if you would like to have the outputs enabled at all times for circuit simplicity, or if you are using a microcontroller with a limited number of I/O lines, then just leave that connector off.

Device Specifications

The L298N is capable of delivering 46 volts at up to 2 amps per channel, but the Dual H-Bridge Kit was designed to control motors in the range of 6 to 12 volts. Even at 12 volts the power can be 48 watts, so a cooling fan will be required. If using the device for higher powered motors it is strongly recommended that you add inline fuses to the power supply and motor leads. A typical application might be to retrofit a two motor differential steering "toy" such as the Dino Trax or the Scorcher with a Next Step or OOPic-R controller, a Dual H-Bridge and an IRPD to make a complete autonomous robot. Replace the IRPD with the Tracker to build a very fast line follower.

Electrical Noise

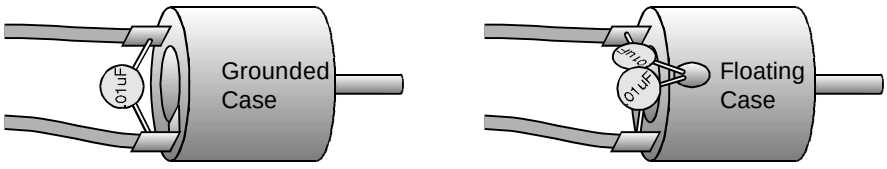
Inexpensive DC motors can generate a lot of electrical noise. Sometimes, in extreme cases, this noise will interfere with the operation of electronic circuitry, such as causing a microcontroller to reset. Below are some tips to help reduce the amount and the effect of the radiated electrical noise.

1) Keep the motor power and wiring separate from the logic. A common ground will be necessary.

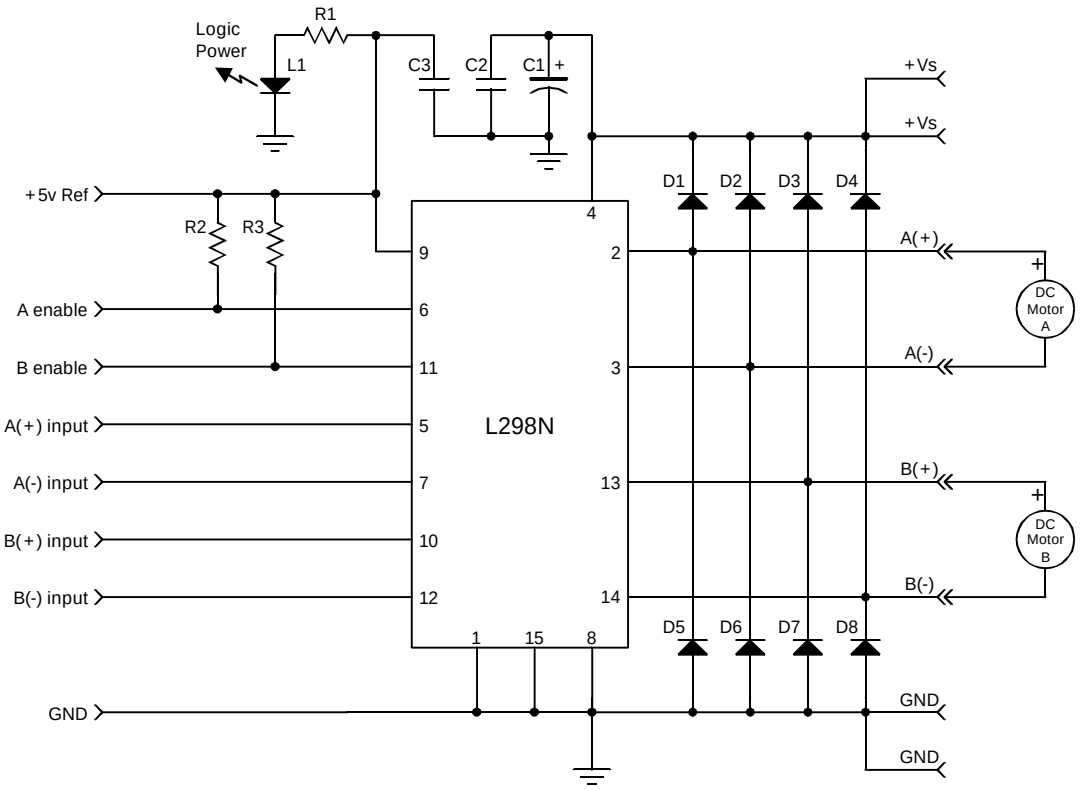
2) Make sure the wiring is kept short, neat and the connections are solid, not flaky.

3) Mount the microcontroller and associated circuitry away from the DC motors.

4) As illustrated below, bypass capacitors can be added to reduce the amount of emitted noise.



Schematic Diagram

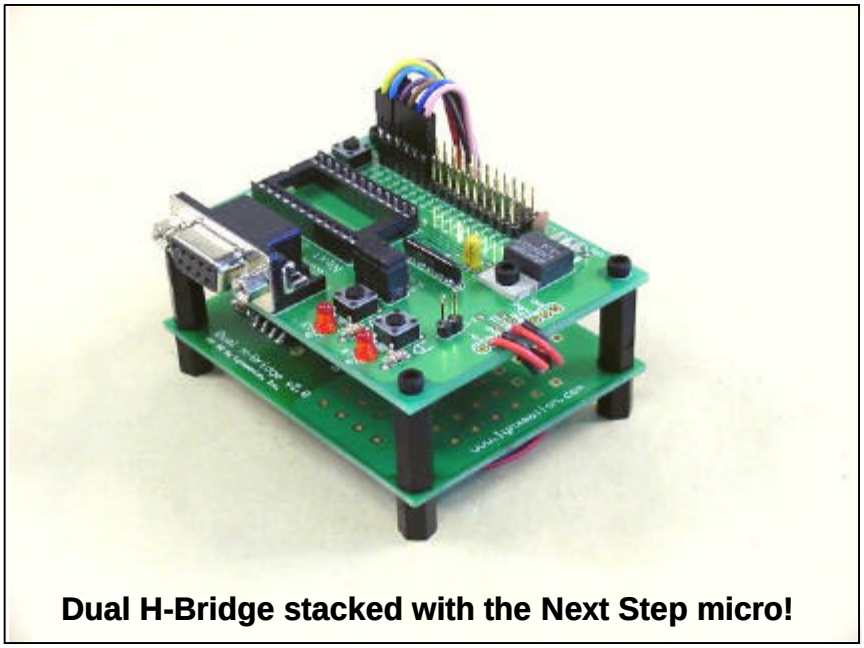


Truth Table for one motor

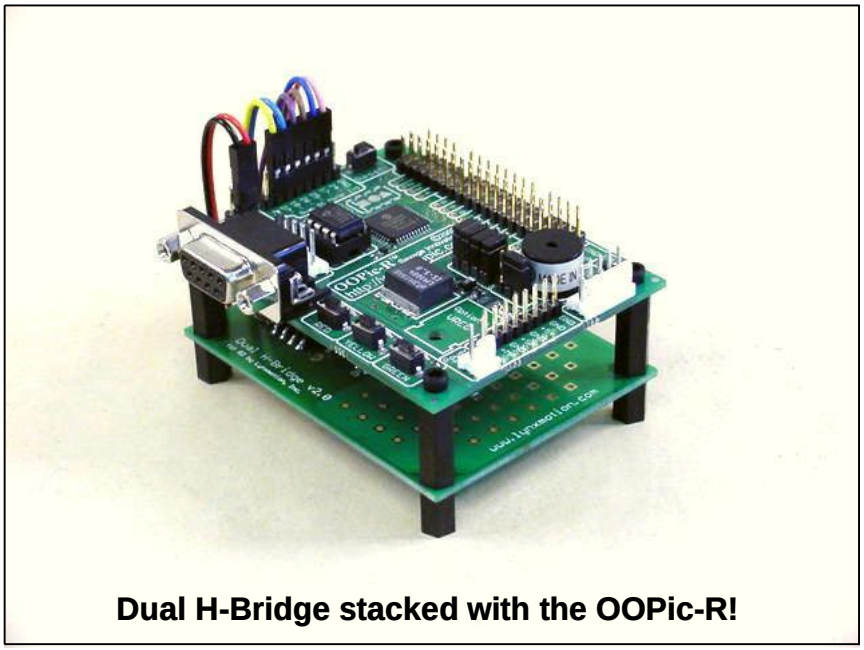
A enable	A (+) input	A (-) input	Motor Power Status
L	X	X	Power Off
H	L	L	Stop (Brake)
H	H	L	Rotate CW (Fast)
H	L	H	Rotate CCW (Fast)
H	H	H	Stop (Brake)
P	H	L	Rotate CW (Slow)
P	L	H	Rotate CCW (Slow)

H = High L = Low P = Pulse X = Don't Care

It Stacks!



Dual H-Bridge stacked with the Next Step micro!



Dual H-Bridge stacked with the OOPic-R!

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