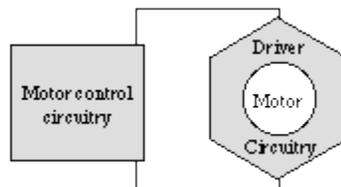


MOTOR DRIVERS

Motor drivers are essentially little current amplifiers; their function is to take a low-current control signal, and turn it into a proportionally higher-current signal that can drive a motor. Note here that the control signal is likely on the order of 10 mA, and the motor may require 100's of mA to make it turn.

You can think of motor drivers connecting control circuits and motors, very simply, as a "wrapper" around the motor. Schematically, the arrangement looks like this:



There are a whole slew of motor driver designs available to meet most any robotic need -- they all vary in the requirements they try to meet (so read their descriptions very closely).

There are some things to look for in a driver design, based on your requirements (bear in mind that there are always trade-offs):

- **Output power** capability -- as a rule you don't want overkill here; higher-gain drivers generally also have higher power consumption, among other costs
- **Number of circuit connections** -- this is a good indication of how difficult it will be to build the circuit. This is particularly important if you're making your own PCB, since drilling lots of holes can be a pain if you don't have a drill press (and honestly, it gets to be a pain even with one).
- **"Smoke proof"** (or not) design -- unless you're amplifying a signal from a bicore, your bridge design needs to be "smoke proof". Drivers generally have two control inputs; "smoke proof" designs won't self-destruct if both control inputs are "low", or if both inputs are "high".
- **Cost and availability of parts**
- **Size** -- more-compact designs are easier to fit into an arbitrary BEAMbot design
- **Reversability** -- most (but not all) motor driver designs allow your motor to run in both forward and reverse
- **Output voltage** -- some drivers provide (or at least allow for) output voltages higher than the input (control signal) voltage

- **Braking circuitry** -- if you are using really good motors, you'll need to provide an electronic motor brake to keep the motors from moving around when no control signal is being applied.

Along with a quick primer on H-bridges, I have pages on the following 6 driver designs for DC motors:

- Tilden's 6-transistor H-bridge
- Bruce Robinson's "full-featured" H-bridge
- Wilf's reversing H-bridge (built from 4 transistors and a mux)
- Steve Bolt's 4-transistor H-bridge
- A.A. van Zoelen's Z-bridge
- A simple 74*245-based motor driver

Additionally, I have a page on other interesting circuits:

- Stepper motor control -- these circuits allow you to drive a bipolar or unipolar stepper motor.

Source: <http://www.solarbotics.net/library/circuits/driver.html>