

INSTALLING YOUR GECKODRIVE

Right, so now we come to the interesting part, we know about the current control, we understand micro stepping; we know why we overdrive the motor but how about some action. This section will assist you in making a motor turn, very exciting!

FUSE

Firstly, and most important, FUSE, no kidding! I know we are men and we don't listen to advice but believe me on this one, a 10c fuse has saved many \$100 Gecko drives! If you are new to this and even some who are not, mistakes can happen and if you have a fuse you will probably get away with it. Install the fuse right before the drive, not before the smoothing capacitor as there will probably be enough energy available in the capacitor to destroy your drive and yes, it can be quite spectacular. Rather save your money for fireworks and install a fuse. Does it seem that I am labouring this point? I hope so!

POWER CONNECTIONS

It seems odd, in my mind anyway that the first terminal is GND and not +VE supply, I don't know why but it just seems odd. Check the polarity of your supply before switching on; don't test it by powering up the drive.

MOTOR CONNECTIONS

When connecting an 8 wire motor be sure that you have not 'anti-phased' the pairs of coils, to be really sure you need the manufacturers data sheet. DO NOT TRY AND GUESS! There is a 50% chance you have it wrong! And no, that won't cost half to fix! Anti phase means that you have the correct pairs of coils connected but have connected one end with the 'opposite' end of the other, the mutual inductance will be zero and the results are not pretty. If you have access to an inductance meter the inductance will be near zero if the coil pairs are anti-phased"

If you have an 8 wire motor and wish to connect the coils in series, the same applies. Be careful of the polarity of the coils. This is important and trial and error will not work here.

If your motor is a 6 wire type, do not flip the second pair back and think you are connecting them in parallel, this will definitely smoke your drive and we don't want to rely on the generosity of the people at Geckodrive for a 'warranty claim'. Geckodrive have seen them all, perhaps they will be nice to you.

Should your motor be a 4 wire type, don't think this will be easiest. This is where you are most likely to make a mistake as you will be complacent. A 4 wire can still be connected incorrectly by wiring the end of one coil to the opposite side of the 'H-bridge' and you will have created a virtual short, the life of such a drive is measured in milliseconds! Really. Be sure that the wires are connected as pairs.

A 5 wire motor CANNOT be used with a Geckodrive.

DO NOT CONNECT OR DISCONNECT THE MOTOR WHILE POWERED

Do you know how the ignition in your motor vehicle works? Energy is stored in a coil and when the contact is opened all that energy flows out and the voltage generated can be very high, about 10 000V in your ignition system. The same will happen when you 'unplug' or even if you have a switch on the motor connections of your Geckodrive. The spark generated will destroy the output device. Guaranteed.

BECAUSE THE SWITCH IS OFF DOESN'T MEAN IT'S SAFE

We have put a great big capacitor on the supply side to smooth out the ripple, make sure that the capacitor has discharged before connecting or disconnecting the motor, it is good practice to put a resistor across the capacitor terminals to provide a discharge path. Put the FUSE after the capacitor. Remember there is still some energy in the capacitor after the little light on your drive has gone out.

STEP AND DIRECTION

These signals will connect to your controller, remember that they are 5V, if you wish to use a higher voltage, probably 12V or 24V, use the appropriate resistor, 460 ohms and 1.2K respectively. These inputs are optically isolated and there is little chance that you could mess anything up here.

HEAT SINK

Geckodrives require a heatsink for currents of 3A and more. The heatsink design is quite complex, for instance if the motor only moves occasionally then one with a high thermal mass but low dissipation is sufficient, if the motor draws high currents constantly then you require dissipation (big fins) that can match the wasted energy. There is **NO** over temperature protection on the Geckodrive, heat is your enemy! "Is the enemy of my enemy..."

OPEN CIRCUIT VOLTAGE

Check the open circuit voltage of your power supply before you connect the power, it should not exceed 80V and to be honest, about 10% less will allow a margin of error. This margin of error will allow for the capacitor charging up when your load decelerates. It is possible that the open circuit voltage can be higher when:

- If you specify 80V AC for your transformer, this will equal 112V DC when rectified and smoothed, specify a 56V AC transformer as a maximum.
- Don't forget that your mains voltage has a tolerance of + or - 10%.
- You are using an auto transformer. This has a single coil and the primary and secondary winding is the same thing. This transformer offers no isolation. Do not use this kind of transformer.
- You have confused the primary and secondary windings of your transformer, I know this is unlikely but it could happen, chances are the transformer will smoke before you get to connect your expensive Gecko's.

- If you have a big inductive load on your mains supply side this can cause a spike when switched, a transformer can absorb some of this energy but some might make it to your Gecko. Be careful.

CURRENT SET RESISTOR

It is easy to forget this when trying out the drive for the first time. There will be no immediate damage but chances are the life of the drive will be perhaps 10s to a few minutes until it overheats (or the motor smokes). This is a small but important point.

470uF CAPACITOR

This is also a small point but significant, if there is more than 300mm (12") between your drive and the smoothing capacitor, install a 470uF capacitor right at the drive, I am sure that the little MOSFETs in the output stage will be grateful for your indulgence.

This may seem like an arbitrary manual of information but I can assure you that every hint here was written in blood, Gecko blood!