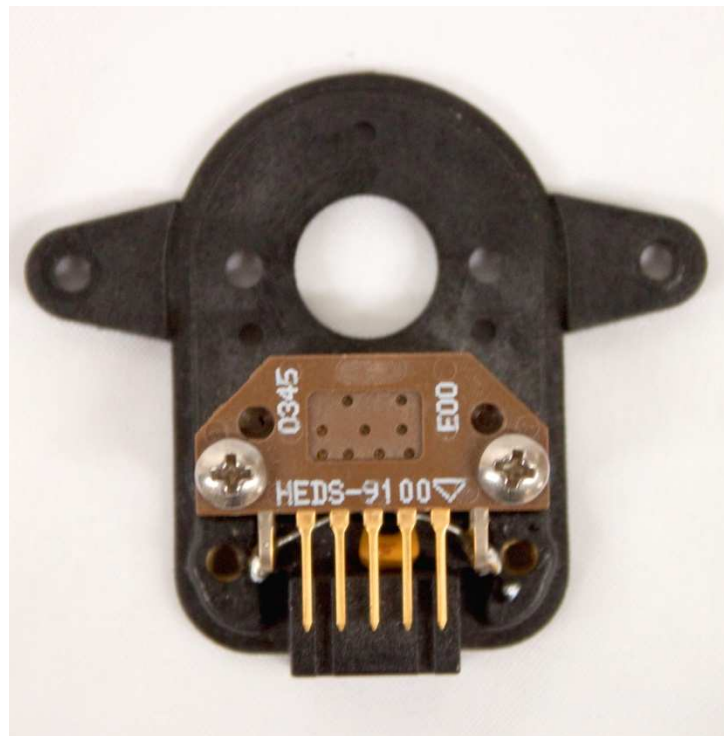


With the latest iteration in the Geckodrive servo line, the G320X, comes many advanced features. Some of these, however, are not entirely backwards compatible with certain encoders that the G320 and G340 could run (namely those with an HEDS optical head). The reasons behind this lie in the “Encoder Fail Detect” portion of the circuit as well as the minimum Logic 1 and Logic 0 voltage requirements. The G320X requires Logic 0 to be below 1V and Logic 1 must be above 4V; the G320 and G340 had no such requirement and would accept unsuitable encoders in addition to not being able to detect a failed encoder. HEDS optical heads range from a Logic 1 voltage of 2.4V to 3.6V, which are far below the minimum voltage requirement. On top of this, they lack a power supply bypass capacitor and produce a tremendous amount of noise. What follows is a means to eliminate the encoder fail detection on the G320X and provide a line driver for the optical head.

**Step 1: Solder a 1uF 25V capacitor between the +5V and GND pins on the encoder body.**

Do not put this on the drive itself or you will continue to have noise problems!

Make sure that the capacitor does not make contact with any other pins and will not interfere with any wiring. The DigiKey part number for this component is **BC1151CT-ND**.



**Step 2: Put a 1K 1/4W or 1/2W resistor from CH\_A to +5V and from CH\_B to +5V.**

To retain the encoder fail detect on the drive you can do this on the encoder body itself, but the pins are fairly small and you may not be capable of closing the case again. Be sure that the resistor leads do not make contact with each other.



**Step 3: Wire up the G320X as per the manual.**

**Materials and Component Sources:**

1uF 25V capacitor

[www.digikey.com](http://www.digikey.com)

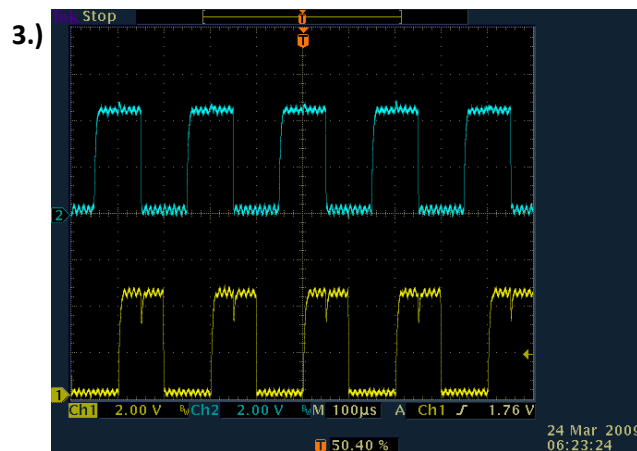
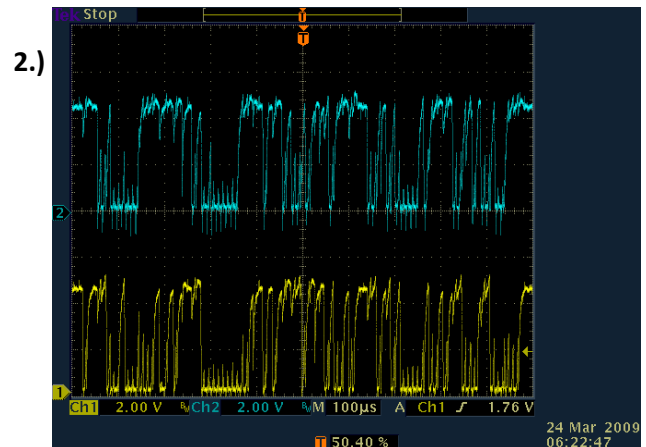
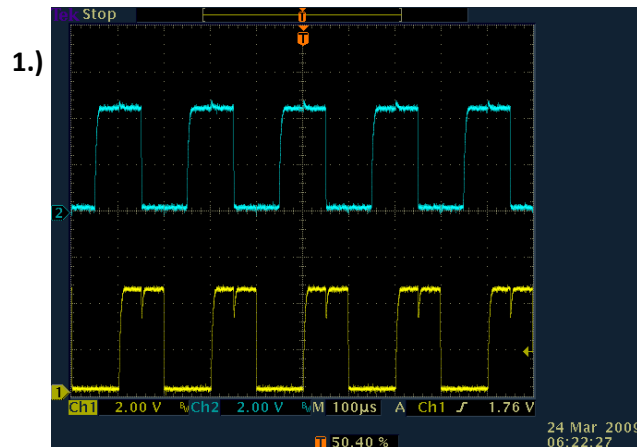
Part Number: BC1151CT-ND

1K pullup resistor

[www.digikey.com](http://www.digikey.com)

Part Number: 1.0KQBK-ND

#### Experiment Oscilloscope Readings



**Picture 1:** This shows an encoder with an HEDS optical head at standstill while the motor is being operated by a DC power supply and not a motor control. This signal is acceptable.

**Picture 2:** This picture shows the encoder being driven by the G320 and while under load.

**Picture 3:** This is an oscilloscope reading after a 1uF 25V capacitor has been attached to the encoder. This is an acceptable wave form.