



## G540 4-AXIS DRIVE USERS MANUAL REV-1 August 5, 2008

GECKODRIVE INC.  
14662 FRANKLIN AVE.  
SUITE# E  
TUSTIN, CALIFORNIA 92780  
1-714-832-8874

**GENERAL:** Thank you for choosing to purchase the G540 4-Axis Drive system. If you are dissatisfied with it for any reason at all within two weeks of its purchase date, you may return it for a full refund provided it is cosmetically unmarred and undamaged electrically in any way. Otherwise Geckodrive Inc. fully warrants it against workmanship defects for 1 year after its purchase date.

The G540 is very easy to use. All it requires is:

**1) MOTORS:** One to four step motors are required. All NEMA-17, many NEMA-23 and a few NEMA-34 motors are acceptable. The motors preferably should be square in cross-section, not round. The motors can be 4, 6 or 8-wire motors. 5-wire motors cannot be used with the G540. Choose a motor that has a rated current of 3.5A or less. Choose a motor that has a rated winding inductance of 2.5mH to 3mH if maximum power output (>100W mechanical) is a requirement. Never use a power supply voltage greater than 32 times the square-root of the motor inductance expressed in milli-Henries (mH).

**2) MOTOR CABLES:** The motors connect to the G540 via male DB9 connectors. The four motor wires connect to pins 6 and 7 for one motor winding, pins 8 and 9 for the other motor winding. The current set resistor connects to pins 1 and 5. The motor cable should be a 4-conductor cable and it can be shielded or unshielded. If a shielded cable is used, connect the shield to either pin 2, 3 or 4. Pins 2, 3 and 4 connect to ground inside the G540.

**3) CURRENT SET RESISTORS:** The current set resistor programs the axis drive current (0 to 3.5A) to match the rated phase current of the motor being used with the axis. Each axis requires a current set resistor. The resistor can be from 1/10 W to 1/2 W in size and 1% to 5% tolerance. The current set equals 1,000 Ohms per Amp of motor current. Example: A 3.3A per phase motor requires a 3.3K resistor, a 1.5A per phase motor requires a 1.5K resistor.

**4) POWER SUPPLY:** Connect a DC power supply to the MAIN TERMINAL BLOCK, the positive supply wire to Pos 11 and the negative (ground return) wire to Pos 12. The power supply voltage must be between +18VDC and +50VDC. The power supply voltage determines how fast your motors can go. Supply voltage has no effect on the motor's low-speed torque. The power supply can be regulated or unregulated. The power supply current will depend on the number of motors used and the motors rated phase currents. The power supply current also depends on motor speed and applied load. A rule of thumb estimate is add up all the motor phase currents and multiply the result by 0.6 to get the required power supply current.

**5) PARALLEL PORT CABLE:** Use a parallel port cable to connect the G540 to the PC. The G540 end of the cable must be a male DB25 connector.

The following items are optional, based on how the G540 is to be used:

**6) +5VDC:** The PC 5VDC must be supplied to Pos 1 on the MAIN TERMINAL BLOCK if the G540 inputs are going to be used. 5VDC is available from any USB port, the mouse connector or the keyboard connector.

**7) E-STOP SWITCH:** Connect a single pole, single throw (SPST) switch to the DISABLE input Pos 6 on the MAIN TERMINAL BLOCK. The other end of the switch goes to Pos 12 on the terminal block. Closing the switch disables the G540 and opening the switch enables it. While disabled, the motors freewheel (zero torque) and the OUTPUT terminals shut off.

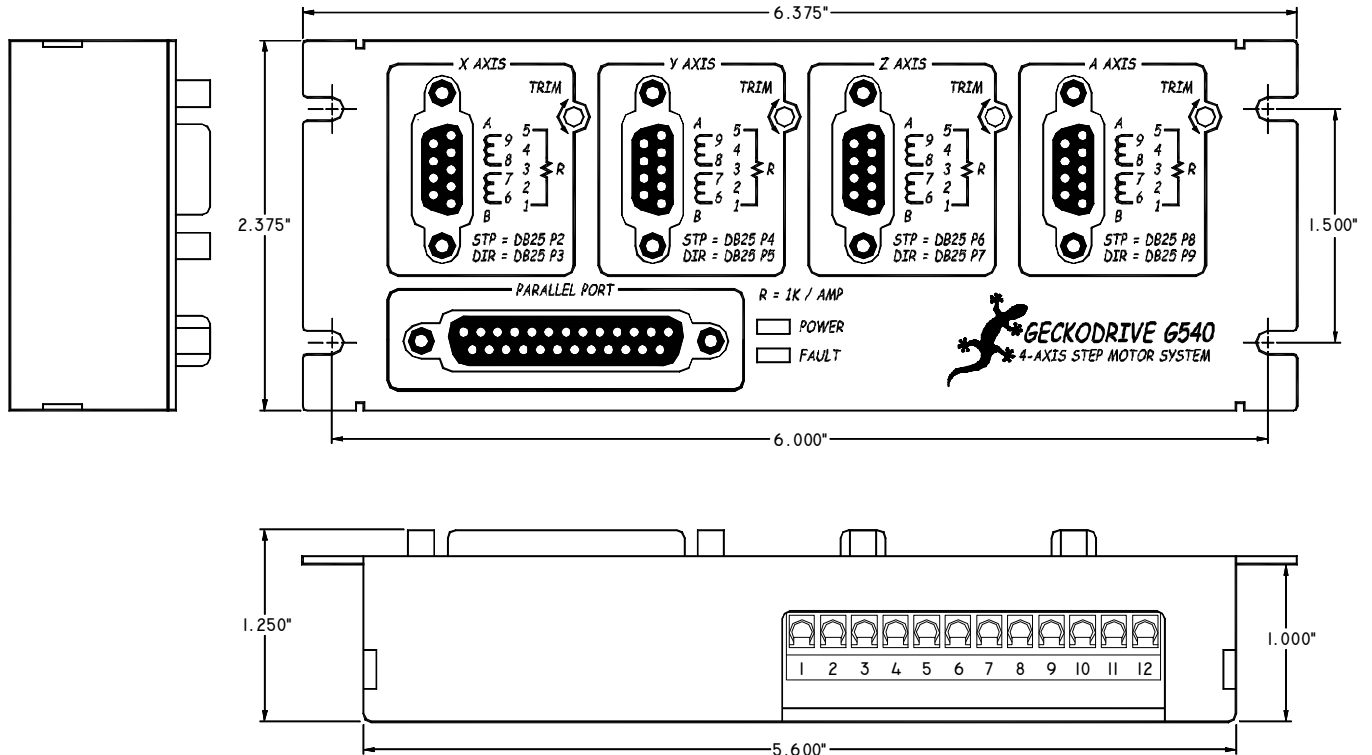
**8) INPUTS:** The G540 has four general purpose inputs called INPUT 0, INPUT 1, INPUT 2 and INPUT 3 on the MAIN TERMINAL BLOCK. They are at Pos 2, Pos 3, Pos 4 and Pos 5 respectively on the terminal block. These inputs may be used as limit switches or for any other purpose. SPST switches can be used with these inputs; one end of the switch goes to the input, the other end of the switch goes to ground (Pos 12).

**9) OUTPUTS:** The G540 has four general purpose outputs called OUTPUT 0, OUTPUT 1, OUTPUT 2 and OUTPUT 3 on the MAIN TERMINAL BLOCK. They are at Pos 7, Pos 8, Pos 9 and Pos 10 respectively on the terminal block. These outputs may be used to drive relay coils or for any other purpose. The outputs are rated at 1A and 50VDC maximum. Connect one end of the load to the output and connect the other end of the load to a positive DC voltage. This voltage may be the G540 power supply or it may be a separate power supply having a different voltage.



## G540 4-AXIS DRIVE SPECIFICATIONS, PINOUT AND DIMENSIONS

GECKODRIVE INC.  
 14662 FRANKLIN AVE.  
 SUITE# E  
 TUSTIN, CALIFORNIA 92780  
 1-714-832-8874



### DB9 MOTOR CONNECTORS:

Pin 1	CURRENT SET resistor
Pin 2	GND
Pin 3	GND
Pin 4	GND
Pin 5	CURRENT SET resistor
Pin 6	PHASE B motor wire
Pin 7	PHASE /B motor wire
Pin 8	PHASE A motor wire
Pin 9	PHASE /A motor wire

### MAIN TERMINAL BLOCK:

Pos 1	5VDC from PC
Pos 2	INPUT 0 (DB25 pin 10)
Pos 3	INPUT 1 (DB25 pin 11)
Pos 4	INPUT 2 (DB25 pin 12)
Pos 5	INPUT 3 (DB25 pin 13)
Pos 6	DISABLE input (E-STOP)
Pos 7	OUTPUT 0 (DB25 pin 14)
Pos 8	OUTPUT 1 (DB25 pin 1)
Pos 9	OUTPUT 2 (DB25 pin 17)
Pos 10	OUTPUT 3 (DB25 pin 16)
Pos 11	SUPPLY +18 to +50VDC
Pos 12	POWER SUPPLY GROUND

### DB25 LPT CONNECTOR:

Pin 1	OUTPUT 1
Pin 2	A-AXIS DIRECTION
Pin 3	A-AXIS STEP
Pin 4	Z-AXIS DIRECTION
Pin 5	Z-AXIS STEP
Pin 6	Y-AXIS DIRECTION
Pin 7	Y-AXIS STEP
Pin 8	X-AXIS STEP
Pin 9	X-AXIS DIRECTION
Pin 10	INPUT 0
Pin 11	INPUT 1
Pin 12	INPUT 2
Pin 13	INPUT 3
Pin 14	OUTPUT 0
Pin 15	FAULT (input to PC)
Pin 16	OUTPUT 3
Pin 17	OUTPUT 2
Pin 18	GND
Pin 19	GND
Pin 20	GND
Pin 21	GND
Pin 22	GND
Pin 23	GND
Pin 24	GND
Pin 25	GND

### SPECIFICATIONS:

Four 10-microstep motor drives  
 0 to 3.5A rated phase current  
 18VDC to 50VDC supply voltage  
 Mid-band resonance compensation  
 Auto standby current (70% current)  
 Short-circuit protected  
 Opto-isolation on all LPT signal pins  
 Four 1A at 0 to 50VDC rated outputs  
 Four SPST to GND inputs (TTL)  
 FAULT indicator LED, signal to PC  
 POWER indicator LED  
 I-SET resistor on motor connector  
 TRIM adjust for motor smoothness  
 Panel mount (5.7" by 2.4" hole dim.)  
 Anodized aluminum package  
 No heatsink needed below 40C ambient  
 Easy to service removable drives  
 Modular PCB design with no internal wires  
 Conservative ratings, premium components



# G540 4-AXIS DRIVE SUGGESTED WIRING DIAGRAM

GECKODRIVE INC.  
14662 FRANKLIN AVE.  
SUITE# E  
TUSTIN, CALIFORNIA 92780  
1-714-832-8874

