



G540 4-AXIS DRIVE

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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, most 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). Using a higher inductance motor will result in a loss of speed as a higher voltage will be required.

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 POSITION 11 and the negative (ground return) wire to POSITION 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. 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. **CAUTION:** Do not switch the DC supply voltage ON/OFF to the G540 or it will be damaged. Switch the AC side of the power supply for ON/OFF.

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.

6) ENABLE JUMPER: Jumper pins 10 and 12 on the 12-position terminal block to enable the drive and exit FAULT.

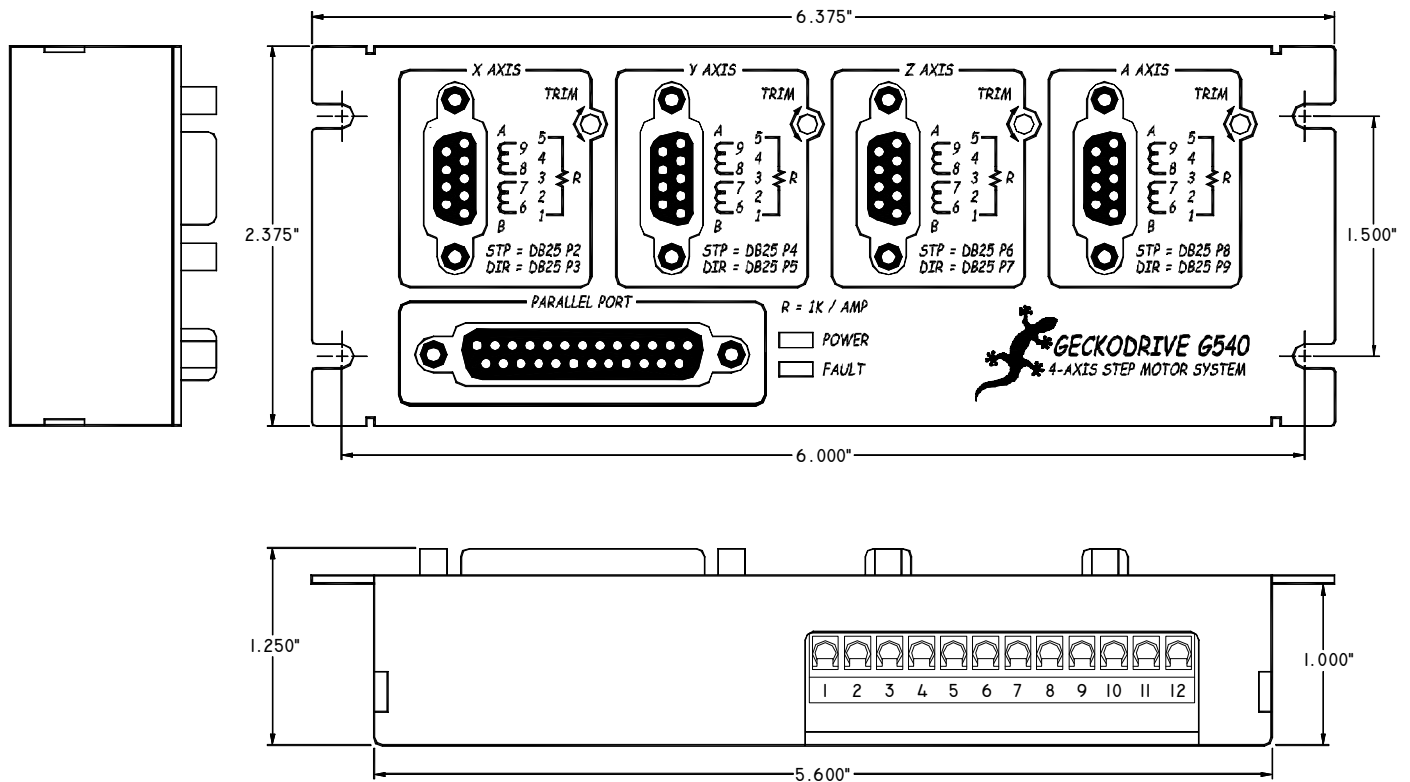
The following items are optional, based on how the G540 is to be used:

7) E-STOP SWITCH: Connect a single pole, single throw (SPST) normally closed switch to the DISABLE input POSITION 10 on the MAIN TERMINAL BLOCK. The other end of the switch goes to POSITION 12 on the terminal block. Opening the switch disables the G540 and closing 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 1, INPUT 2, INPUT 3 and INPUT 4 on the MAIN TERMINAL BLOCK. They are at POSITION 1, POSITION 2, POSITION 3 and POSITION 4 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 (POSITION 12).

9) OUTPUTS: The G540 has two general purpose outputs called OUTPUT 1 and OUTPUT 2 on the MAIN TERMINAL BLOCK. They are at POSITION 5 and POSITION 6 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.

10) ANALOG OUTPUT: This is a 0V to +10V opto-isolated analog output intended for use with VFD drives. VFD OUT goes to 0VDC while the G540 is disabled. Connect VFD GND, VFD OUT and VFD +10V to the VFD drive inputs. Make sure the VFD drive positive voltage does not exceed +12VDC. Do not short VFD OUT to any other terminal. Do not reverse polarity to VFD GND and VFD +10V or the G540 may be damaged.



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:

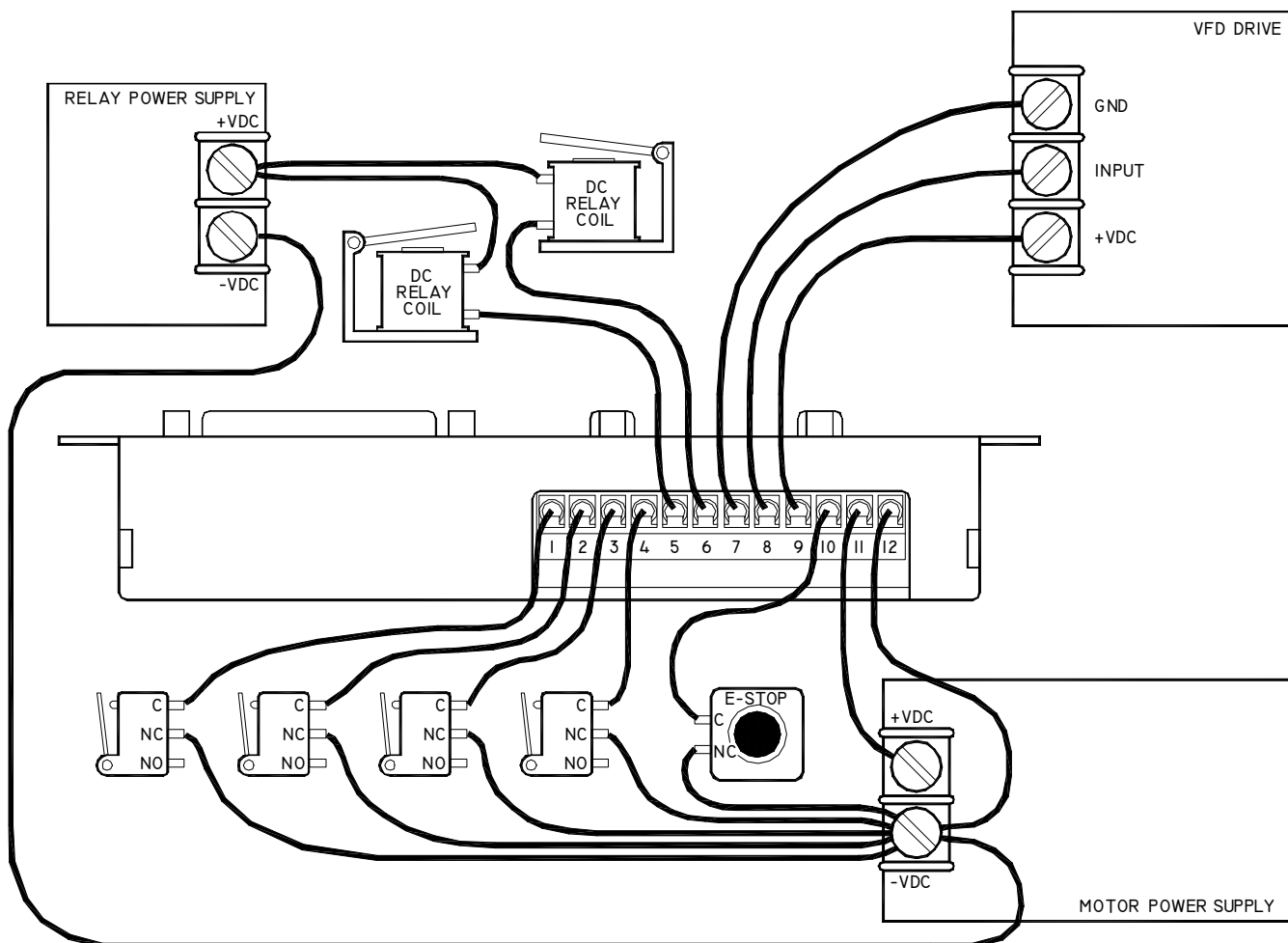
Pos 1	INPUT 1 (DB25 pin 10)
Pos 2	INPUT 2 (DB25 pin 11)
Pos 3	INPUT 3 (DB25 pin 12)
Pos 4	INPUT 4 (DB25 pin 13)
Pos 5	OUTPUT 1 (DB25 pin 17)
Pos 6	OUTPUT 2 (DB25 pin 1)
Pos 7	VFD GROUND
Pos 8	VFD OUTPUT
Pos 9	VFD +10VDC
Pos 10	DISABLE input (E-STOP)
Pos 11	SUPPLY +18 to +50VDC
Pos 12	POWER SUPPLY GROUND

DB25 LPT CONNECTOR:

Pin 1	OUTPUT 2
Pin 2	X-AXIS STEP
Pin 3	X-AXIS DIRECTION
Pin 4	Y-AXIS STEP
Pin 5	Y-AXIS DIRECTION
Pin 6	Z-AXIS STEP
Pin 7	Z-AXIS DIRECTION
Pin 8	A-AXIS STEP
Pin 9	A-AXIS DIRECTION
Pin 10	INPUT 1
Pin 11	INPUT 2
Pin 12	INPUT 3
Pin 13	INPUT 4
Pin 14	VFD PWM (50Hz)
Pin 15	FAULT (input to PC)
Pin 16	CHARGE PUMP (>10kHz)
Pin 17	OUTPUT 1
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
Two 1A at 0 to 50VDC rated outputs
Four SPST to GND inputs (TTL)
Opto-isolated analog output for VFD drive
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



Please reference "G540 Initial Setup Guide" when using your G540 for the first time.