Gecko G320 Reset Circuit for Campbell Breakouts
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Gecko G320
Pin 7
Encoder +5V

1N914

1.5M

4.7uF

555 Timer

1	GND	VCC	8
2	Trigger	Dischg	7
3	Out	Threshold	6
4	Reset	CTL	5

Campbell Breakout Board

+12V Limit supply

Limit Sensor Input

2N2222

10K   1K   100K   2.7K

Red LED

2N3906

Pin 6
Encoder GND

Limit GND

Pin 5
Fault / Reset

1N914   Signal diodes drop excess voltage to protect Gecko G320   1N914

Gecko G320   Pin 5 Fault / Reset

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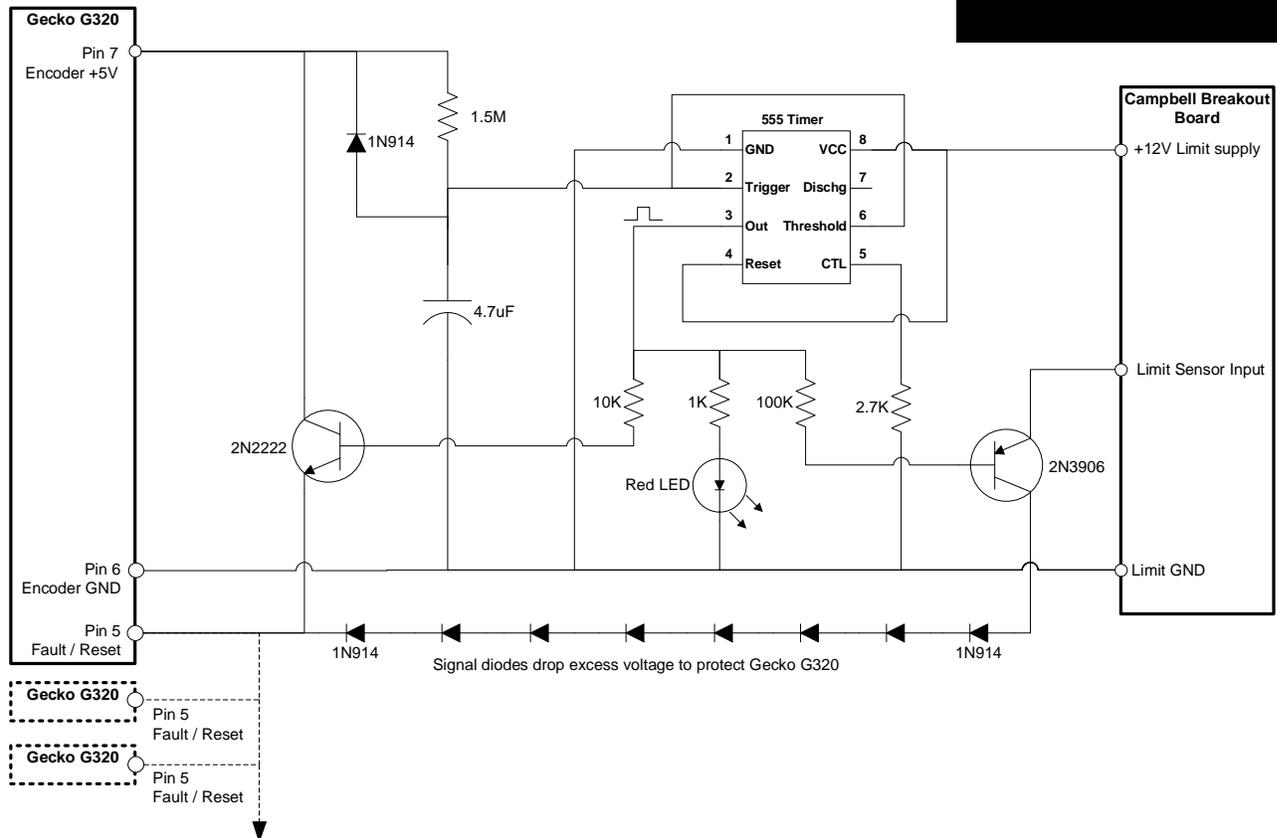
In a system where:

1. servo fault detection is desired and a
2. Campbell Breakout Board or Combo Board is used, and
3. Gecko G320 Servo drivers are powered down during an EMERGENCY STOP (ESTOP) condition by the breakout board.

When the computer milling program RESET button is pressed and power is applied to Gecko servo drivers, this circuit;
1. Prevents the normal Gecko power-up fault condition from triggering ESTOP immediately due to the power-on fault state.
2. Provides an automatic 7-second reset for the Gecko drivers momentarily to activate them.
3. Provides servo fault detection through a breakout board limit switch sensor input.

With this circuit, an operator merely needs to press the computer RESET button and begin milling. Fault conditions will be sensed and Gecko servo drivers will be shut down. The breakout board can control the Gecko G320 servo drivers power supply (I feel safer if power is completely removed from the servos when the system is in ESTOP mode).

Circuit operation: When Gecko G320 servos are powered down such as during initial power up and during an ESTOP condition, the 555 timer output is held high. This shorts the 2N2222 transistor and effectively ties the Gecko +5V (now in un-powered 0V condition) to the Gecko's Fault / Reset pin 5. The red LED is also on, and the 2N3906 transistor is turned off preventing Gecko fault detection.
   When a RESET occurs and power is applied to the Gecko drivers, the fault / reset pins are pulled up to 5V thus resetting the Gecko drivers for operation. At the same time, the 555 timer circuit begins timing through the RC network. After 7 seconds, the 555 pulls its output low which enables Gecko faults to be sensed on a Limit pin. The LED is also extinguished and the 5V reset on the Gecko fault / reset pin 5 is removed, ready for normal operation.
   Now when a fault occurs, all Geckos are placed in fault condition (all fault pins are pulled down), and a fault indication is sent to a limit sensor pin for detection by the controlling program. In my system, this immediately triggers an ESTOP which powers down the Geckos, coolant and mist pumps, and spindle motor by means of the breakout board relays.
The 555 quickly resets to its start-up mode (LED on) by discharging the RC timing circuit through the bypass diode, ready for another operator-activated RESET to continue milling when desired.