

4 Axis (X, Y, Z,A) Stepping Motor Controller (Rev 1.0 Dec09)

Presents by

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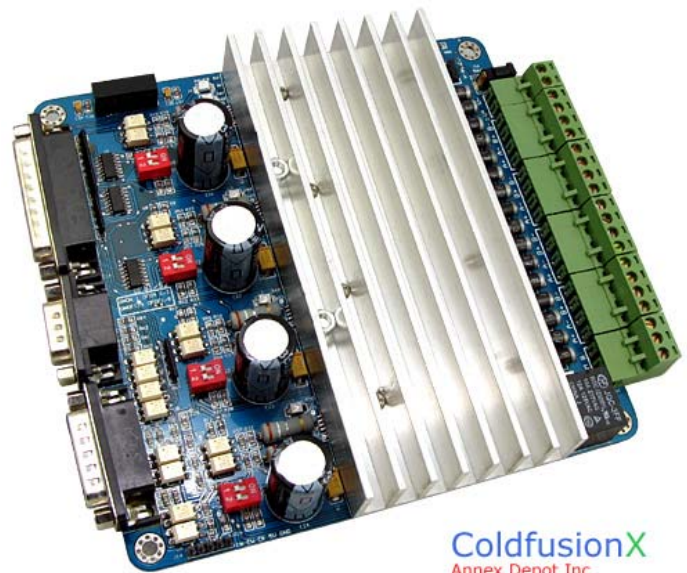
This is a 4 Axis (X,Y,Z,A) CNC stepping motor controller/Driver. It built-in a spindle relay and all input is optical isolated from the outside providing safe (no feedback to your PC) and better response time. Support Mach2, Mach3, ArtCam, KCam. You can apply this card to a CNC machine or upgrade your old CNC machine to take advantage of new technology. It works for CO2 laser machine as well

Features:

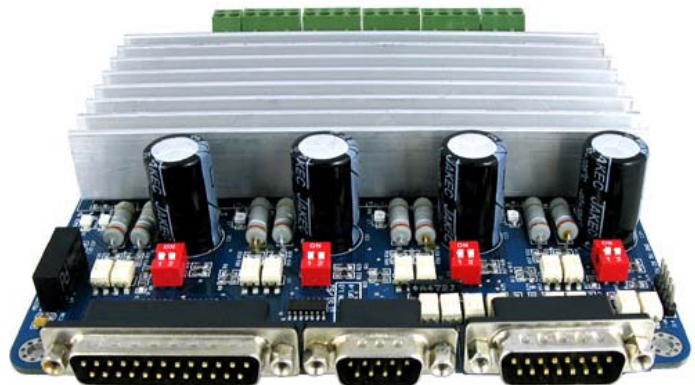
- * Optical isolation for data In/Out
- * Relay control for spindle (or laser)
- * Four step speed setting
- * High current Output
- * Big Heat sink support up to 3.5A

Specification:

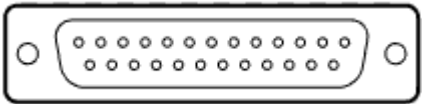
- * In/Out Interface port: Parallel
- * Built in Relay control for spindle
- * Support 2/4 phases 4, 6, 8 wires stepping motor
- * High speed optical isolation coupling
- * LED indicators for each Axis & Relay
- * Current: 1.5A default (2.5A max)
- * Resolution: 1/8, 1/4, 1/2, 1
- * Power: DC 12 ~ 24V (separated 5V needed)
- * Control port: DB manual control interface
- * CAD system support: March2, Mach3, ArtCam, KCam



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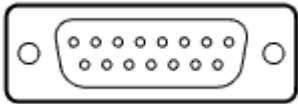


DB 25 Connector Pinout



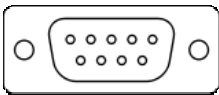
| PIN1 | PIN2 | PIN3 | PIN3 | PIN5 | PIN6 | PIN7 | PIN8 | PIN9 | PIN10 |
|--------|--------|--------|--------|--------|--------|----------|--------|-------|--------|
| CKE | CKA | CWA | CKB | CWB | CKC | CWC | CKD | CWD | DIN1 |
| E STEP | A STEP | A DIR | B STEP | B DIR | C STEP | C DIR | D STEP | D DIR | Limit1 |
| PIN11 | PIN12 | PIN13 | PIN14 | PIN16 | PIN17 | PIN18-25 | | | |
| DIN2 | DIN3 | DIN4 | CWE | EN | RLY | GND | | | |
| Limit2 | Limit3 | Limit4 | E DIR | Enable | Relay | Ground | | | |

DB 15 Connector Pinout



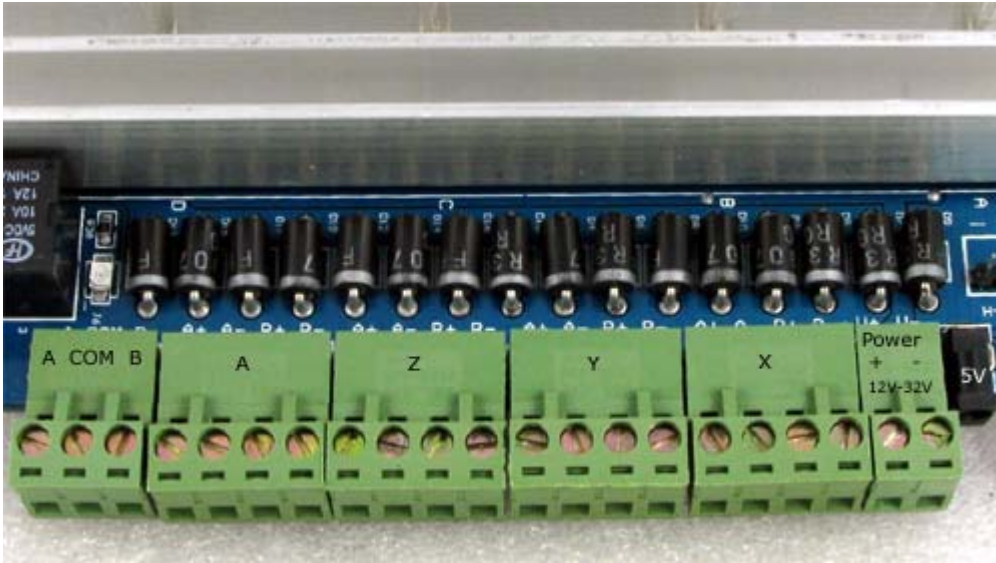
| P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 |
|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|---------|-------|-----|-----|-----|
| CKA | CWA | CKB | CWB | CKC | CWC | CKD | CWD | CKE | CWE | EN | MOT | VCC | | GND |
| A STEP | A DIR | B STEP | B DIR | C STEP | C DIR | D STEP | D DIR | E STEP | E DIR | En-able | Motor | Pwr | | Gnd |

DB 9 Connector Pinout

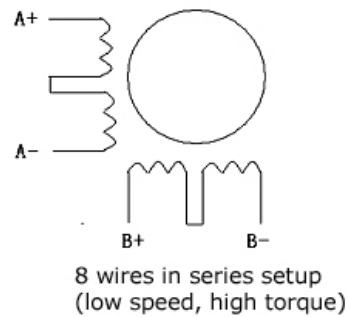
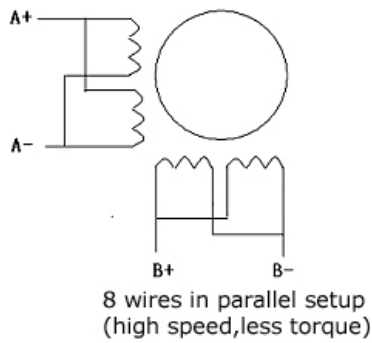
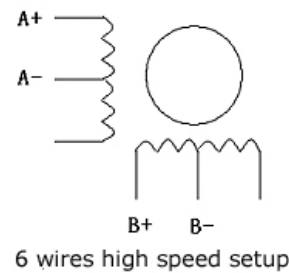
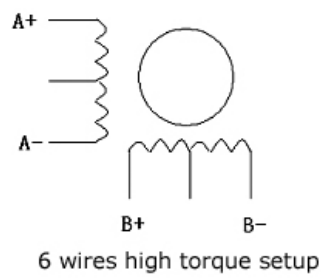
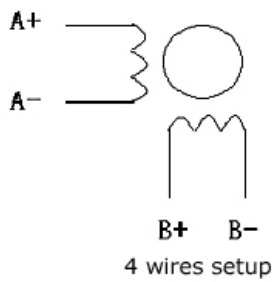


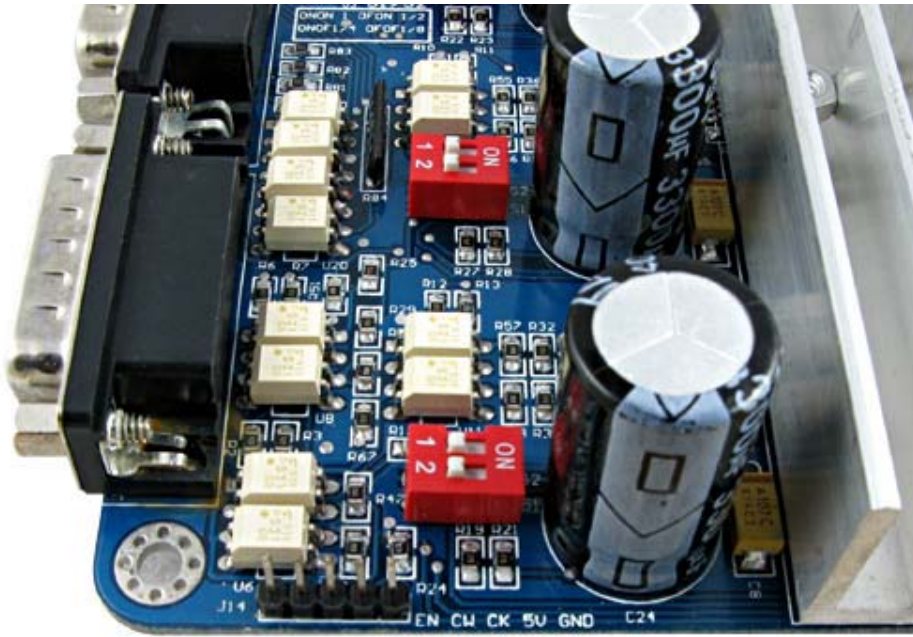
| P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | |
|--------|--------|--------|--------|--------|-------|-------|-------|-------|--|
| GND | GND | GND | GND | GND | X | Y | Z | A | |
| Ground | Ground | Ground | Ground | Ground | Limit | Limit | Limit | Limit | |

Connection Blocks: Relay, axis A, axis Z, axis Y, axis Z, Main Power, Board power

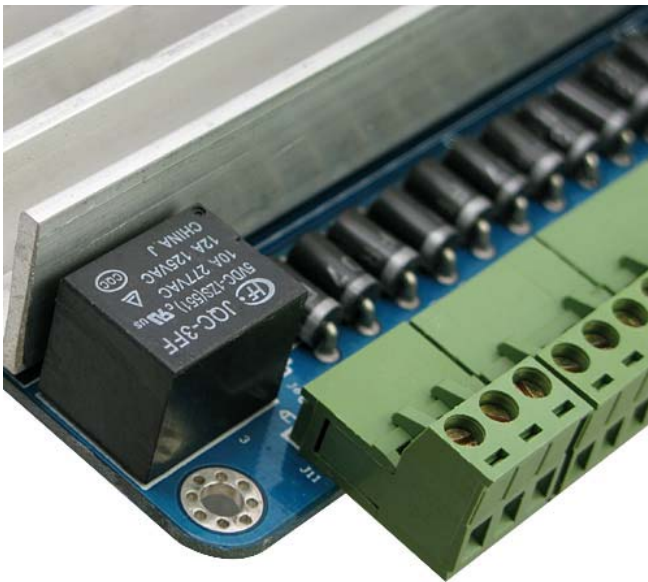


2 phases,4 phases stepping motor connection diagram (current 2A max)





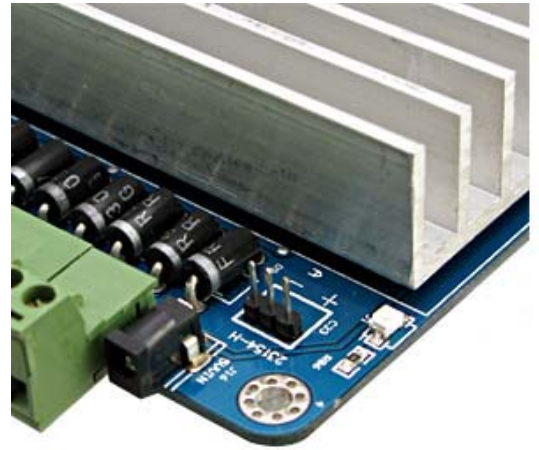
Fifth expansion (also serves PWM output)



Relay: A=Normally Opened B=Normally Closed COM=Common

Power

This card needs two power to function, 12~32 main power and a 5V. The main power supply should be able to provide at least 5A current while the 5V power should be able to provide at least 500mA current.



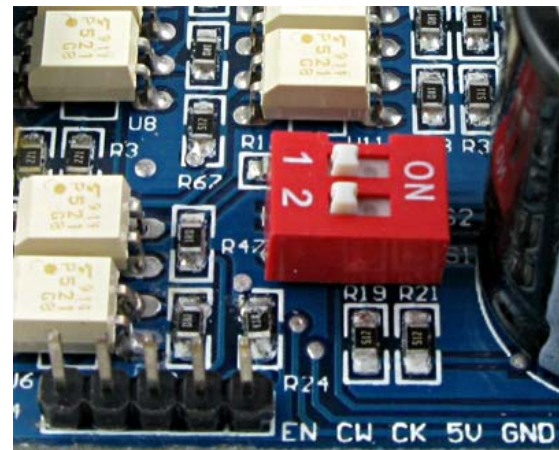
Home Limit Input pin

All home limit sensor are handled by a DB9 connector.

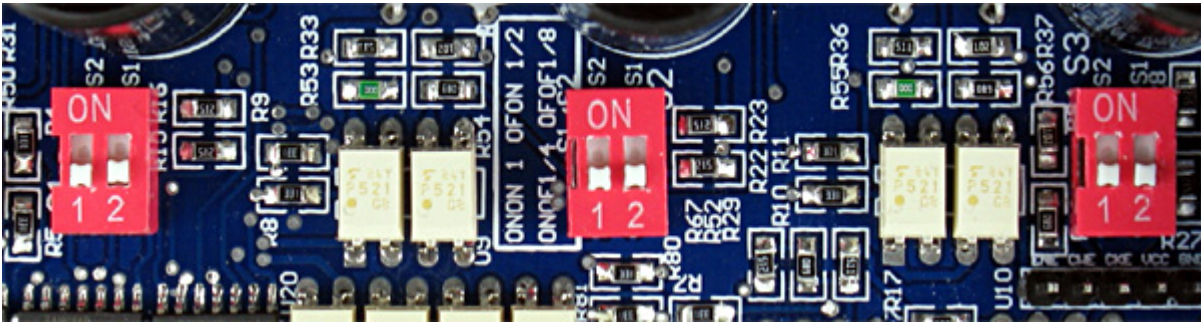
Note: All Limit Input are Active Low *

5th Axis Expansion Output pin

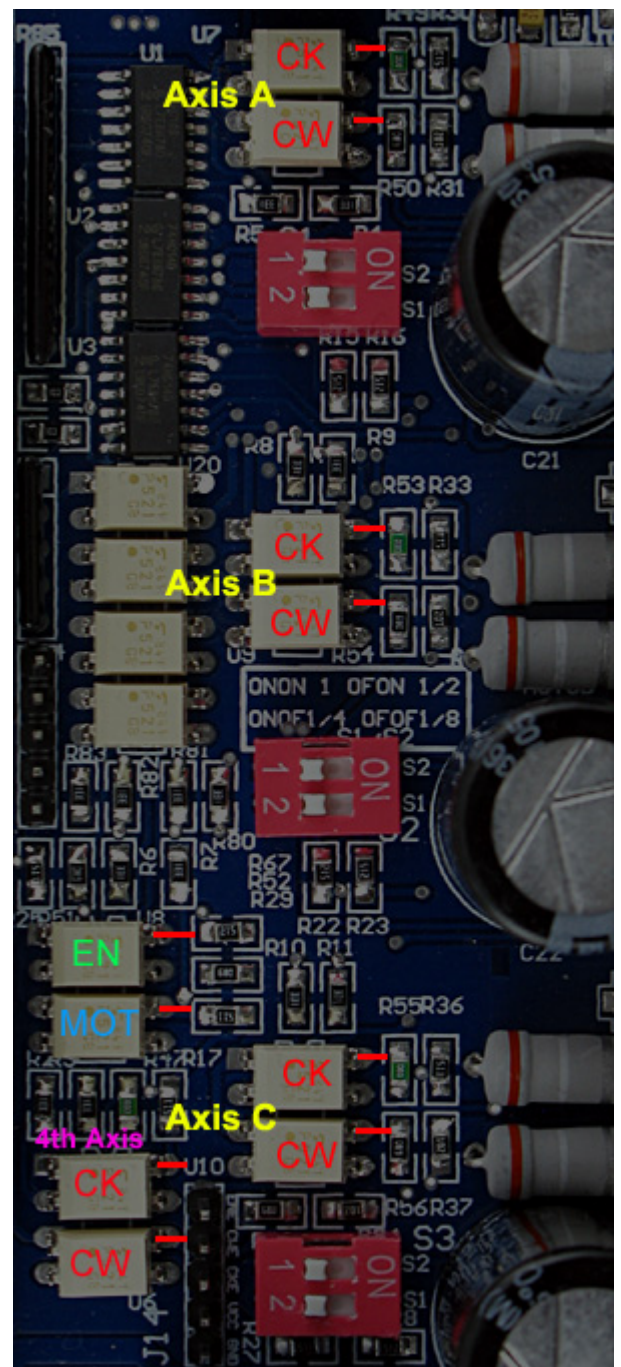
CW = PIN #14. It's used to output PWM signal as well. Or, you can use the output from #14 to trigger a 'Fire' signal for CO2 laser. The output level is +5 pulse so the CO2 power supply must support +5V triggering!



Resolution/ Speed Setting for X,Y,Z,A Stepping Motor

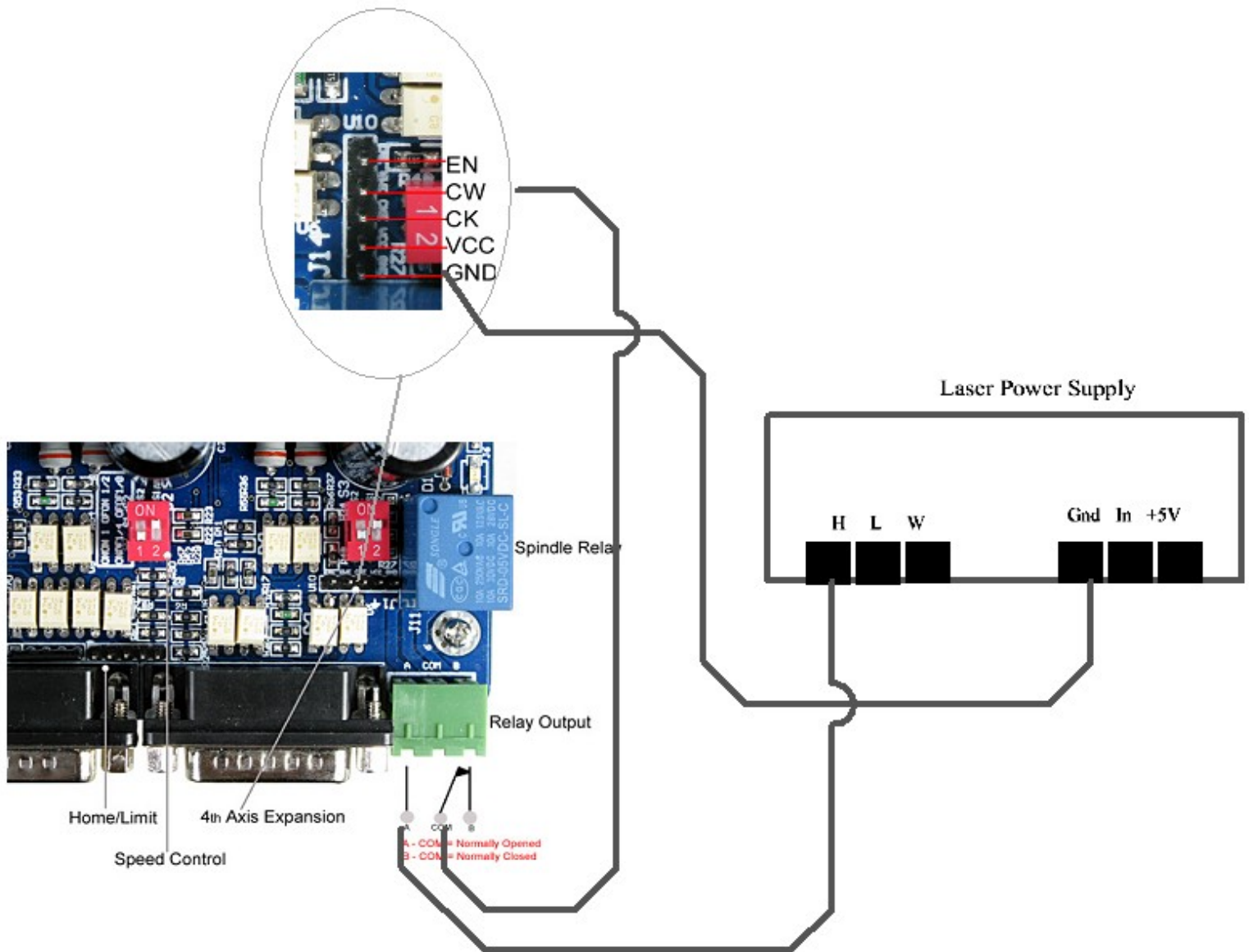


Note: Signal Ground and the Output ground are totally isolated, no physical connection. But all grounds from the optical isolation module share the same ground.

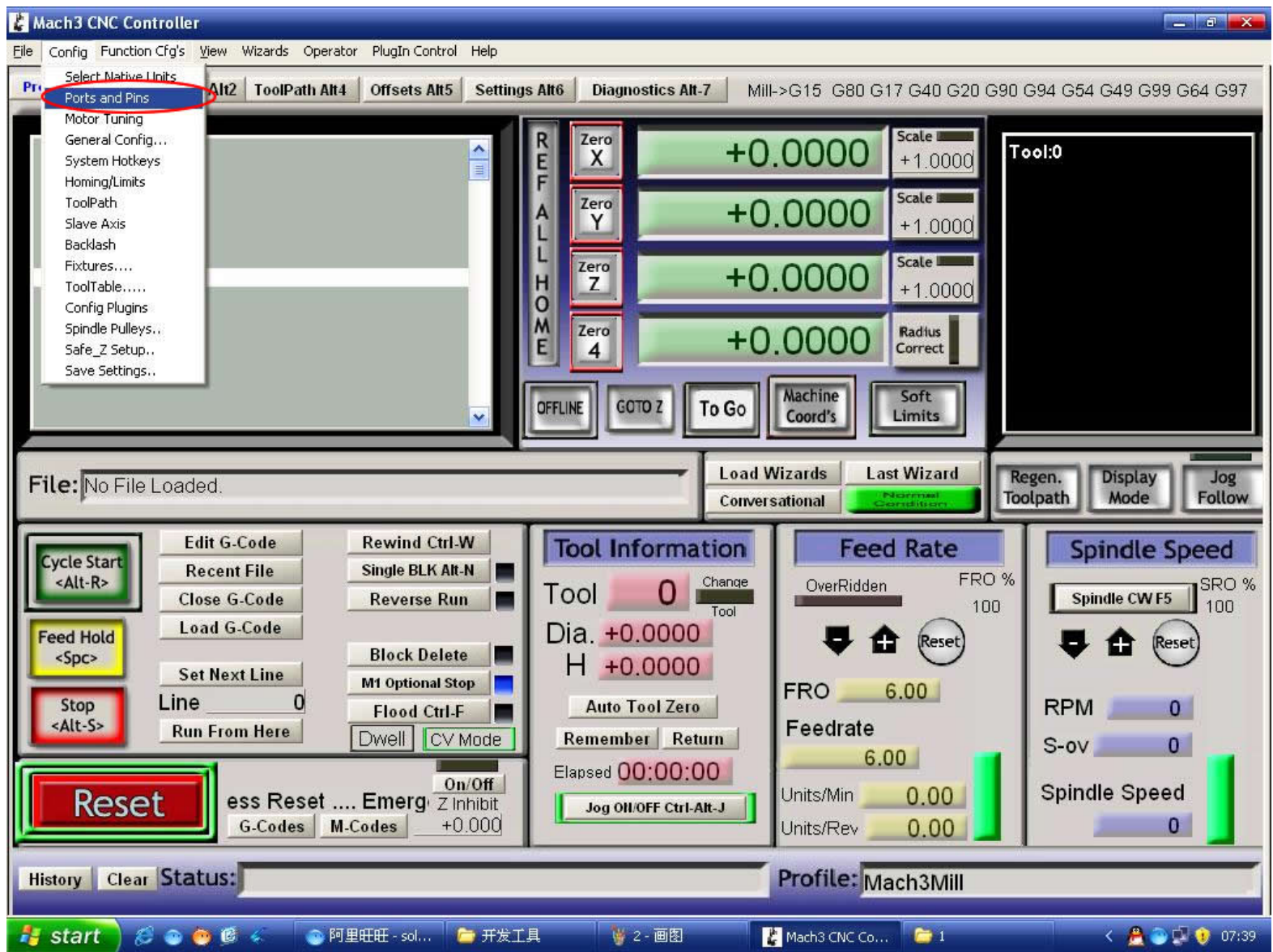


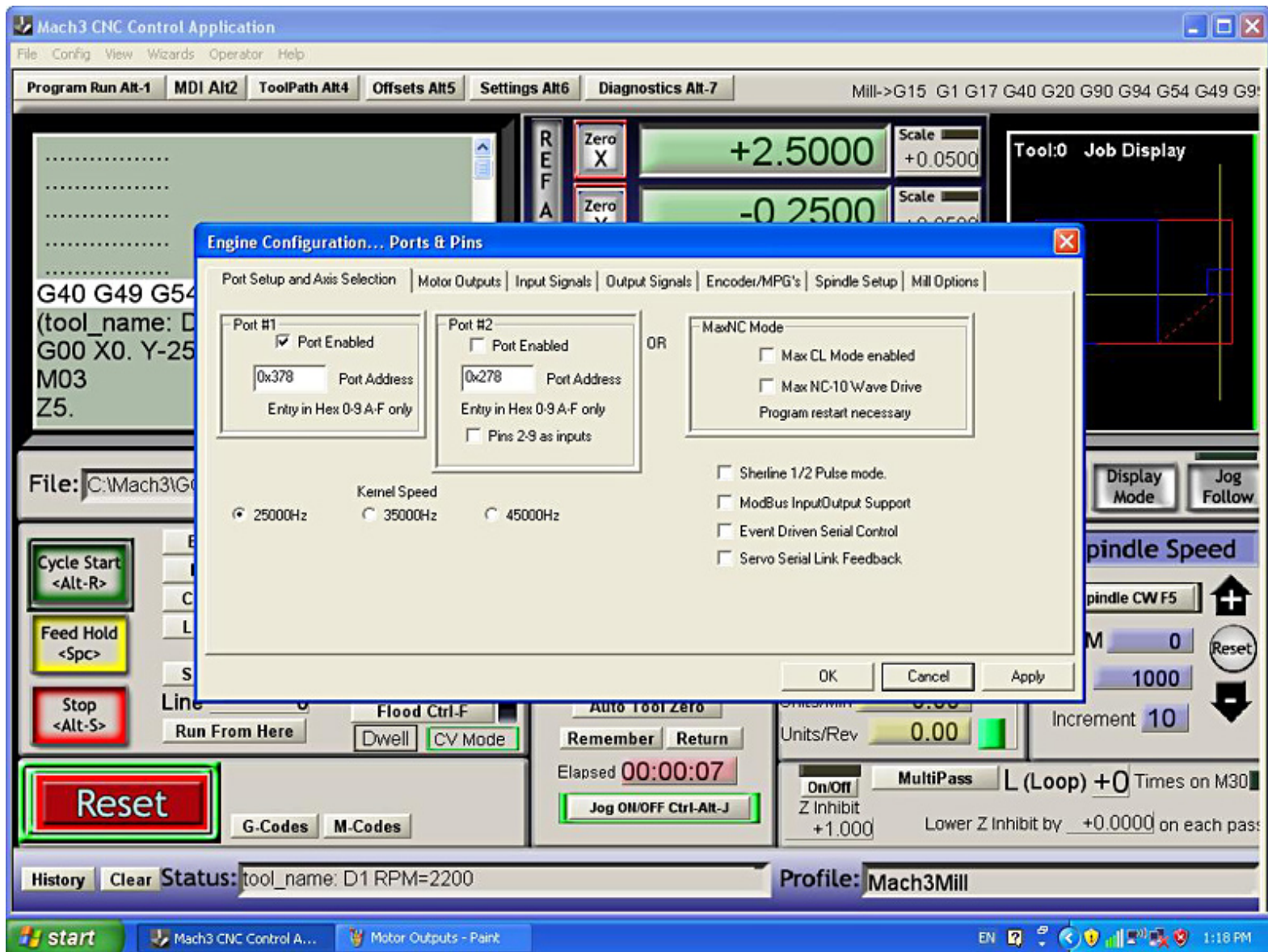
CO2 laser engraving machine 'Firing' setup (note: picture refers to the 3axis card)

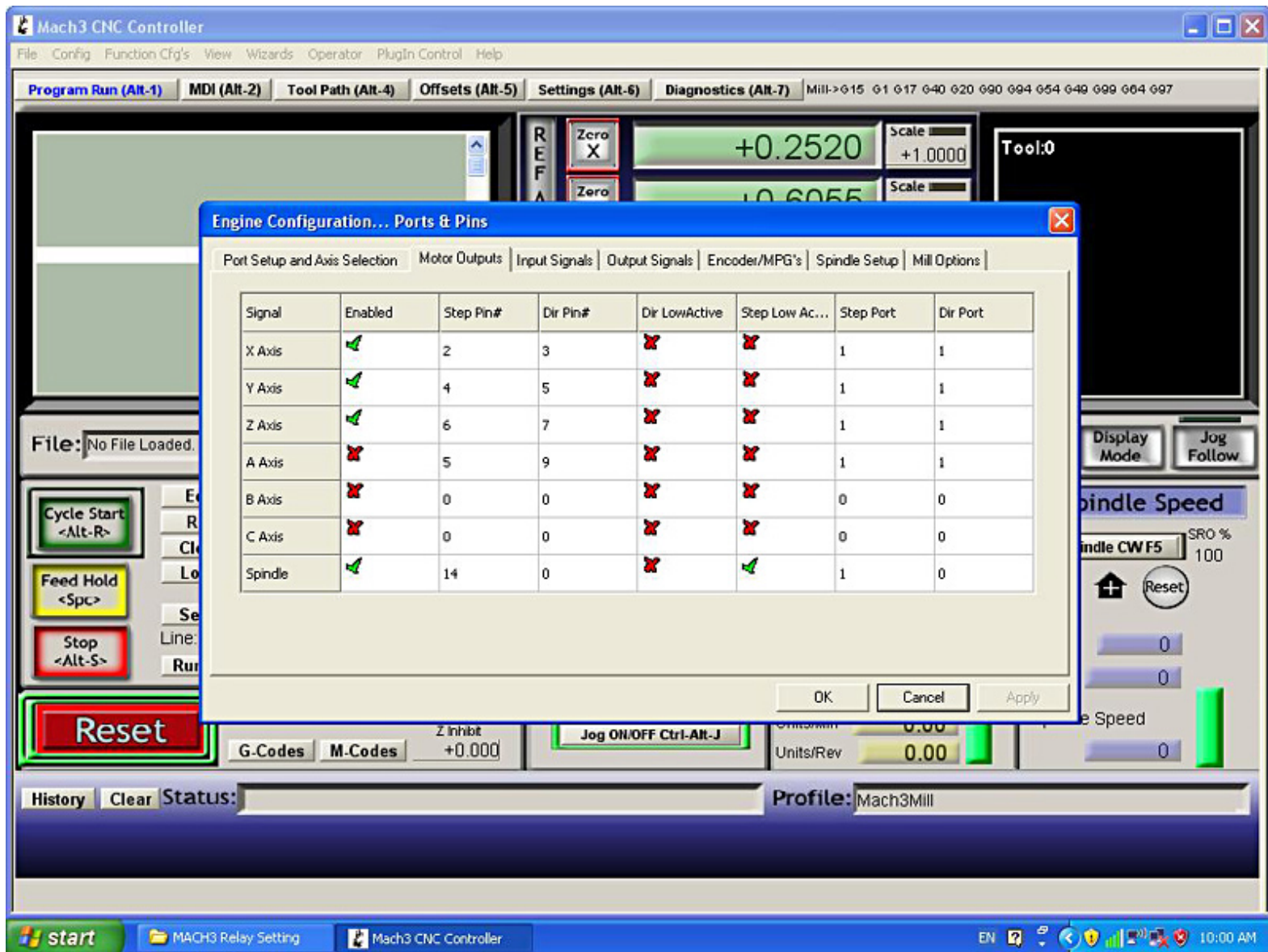
CW – the direction output of Z stepping motor send +5V when Z value change in positive direction (user configuration). It's connected to the COM port of the relay and the GND is connected to the Gnd(ground) of the CO2 power supply. Note, the power supply must support 5V triggering as the 'CW' output signal is TTL level, either in 0V or in 5V.

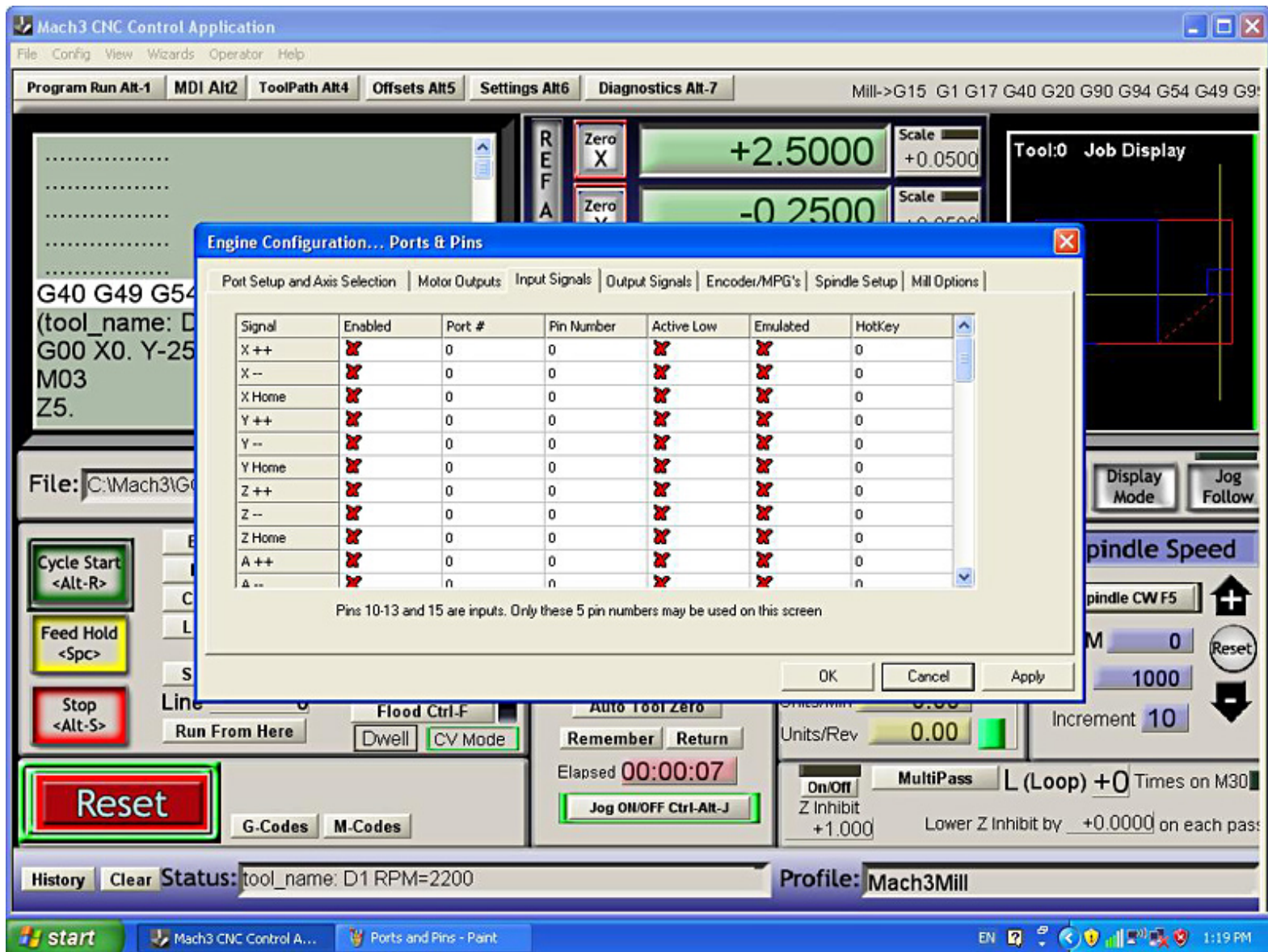


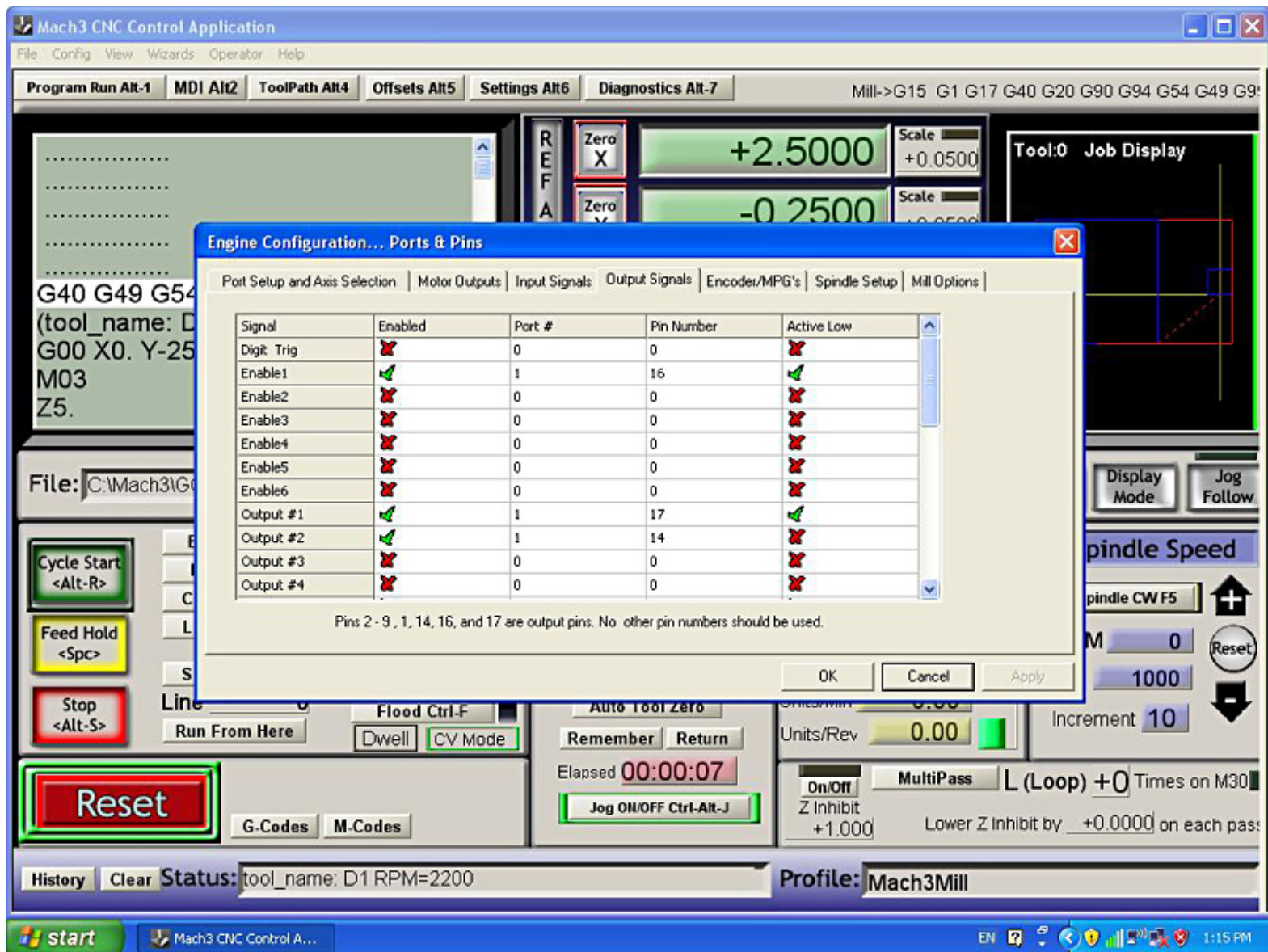
MACH3 Setup. Note: some parameters is in default setting

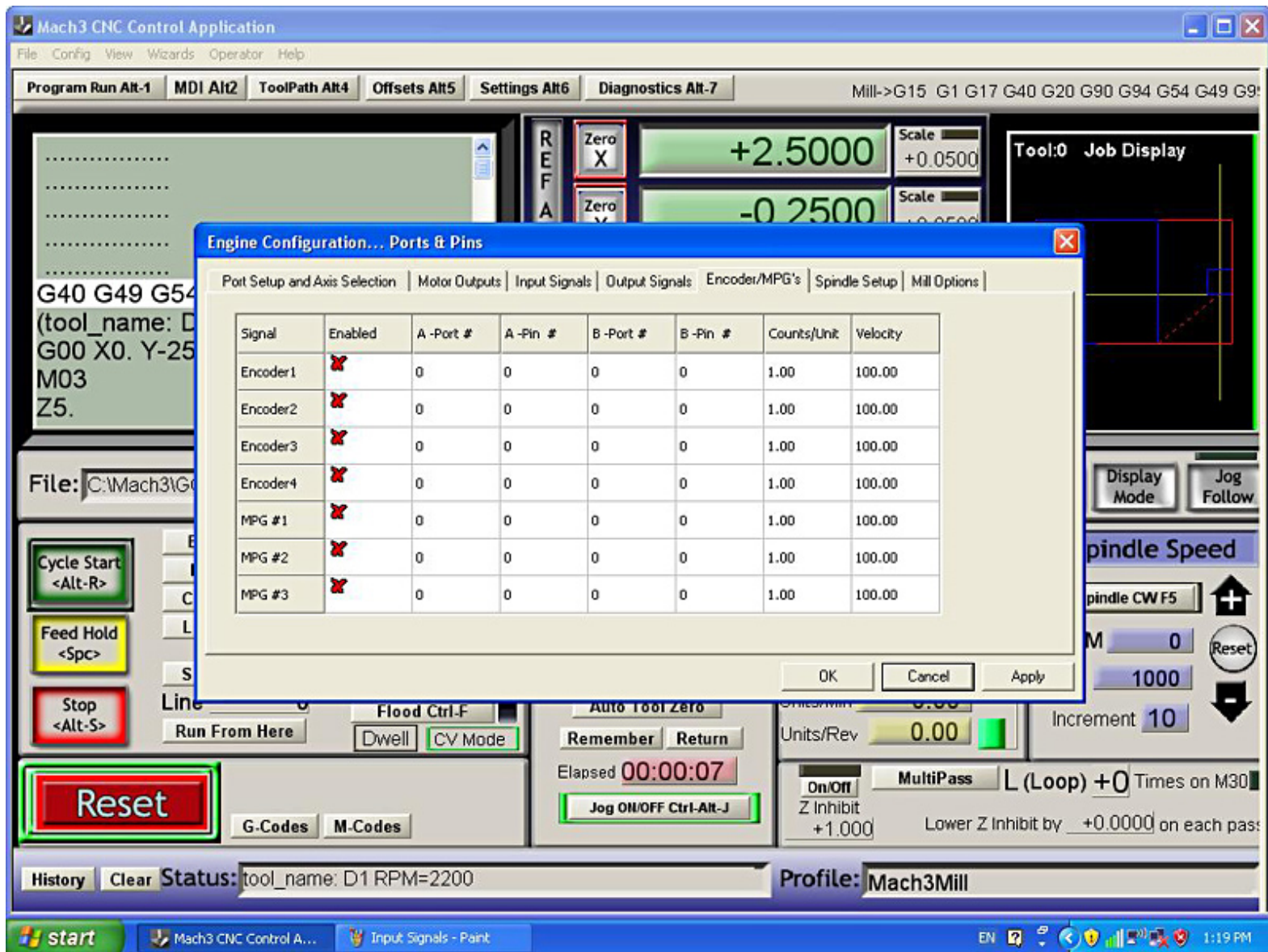


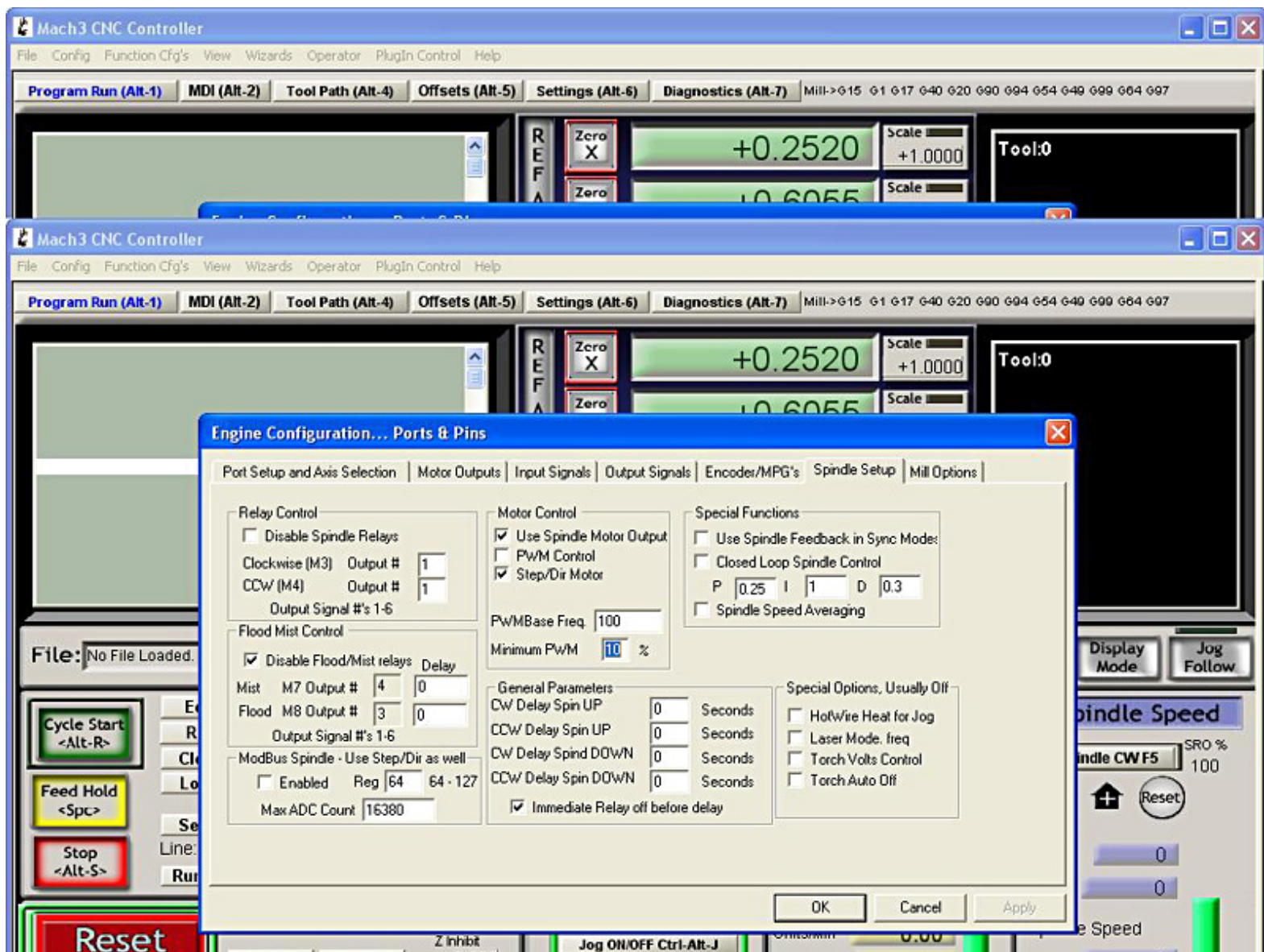


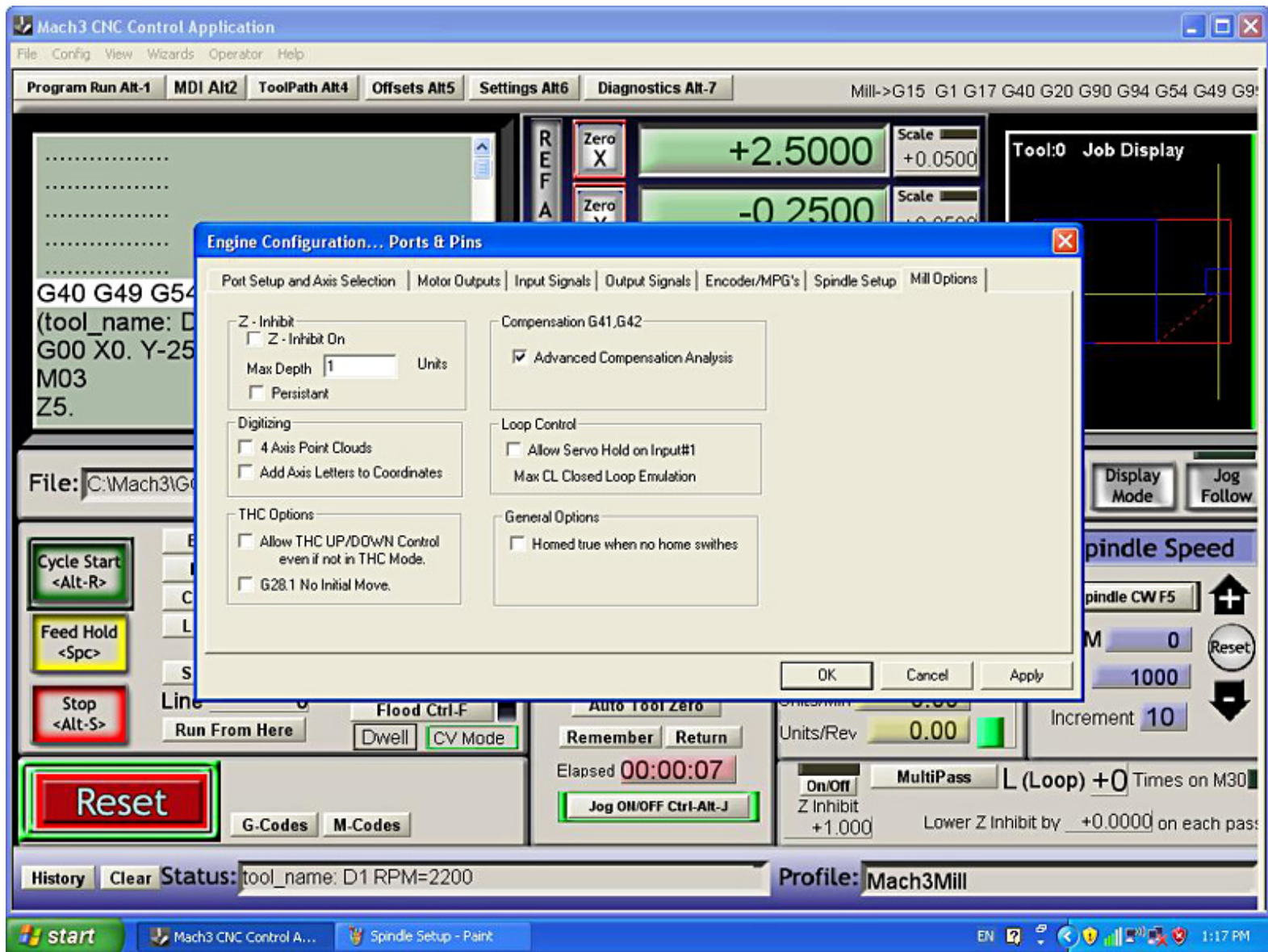












Please go to Mach3 website <http://www.machsupport.com/> to get more update information. We don't support Mach3 or other 3rd software.

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