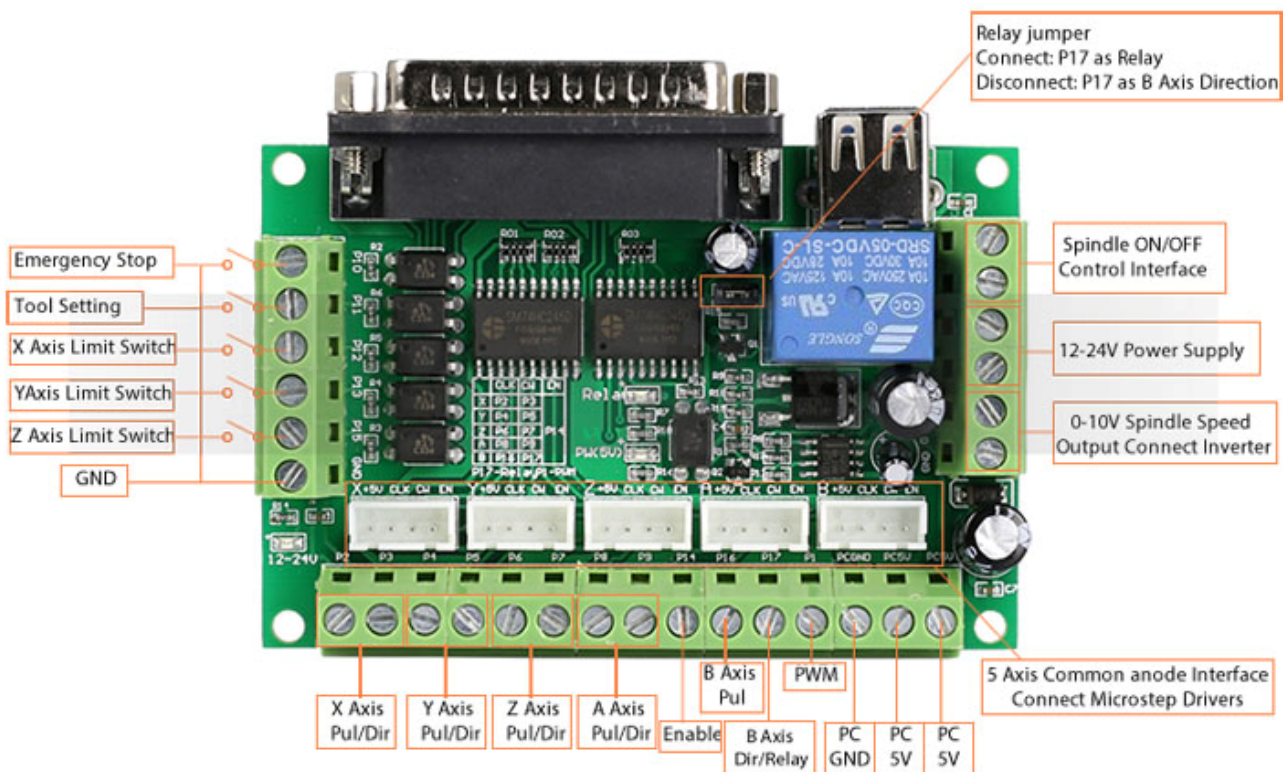


This document describes the basic functionality and the electrical specifications of StepperOnline's 5 Axis CNC Breakout Board Interface ST-V2.

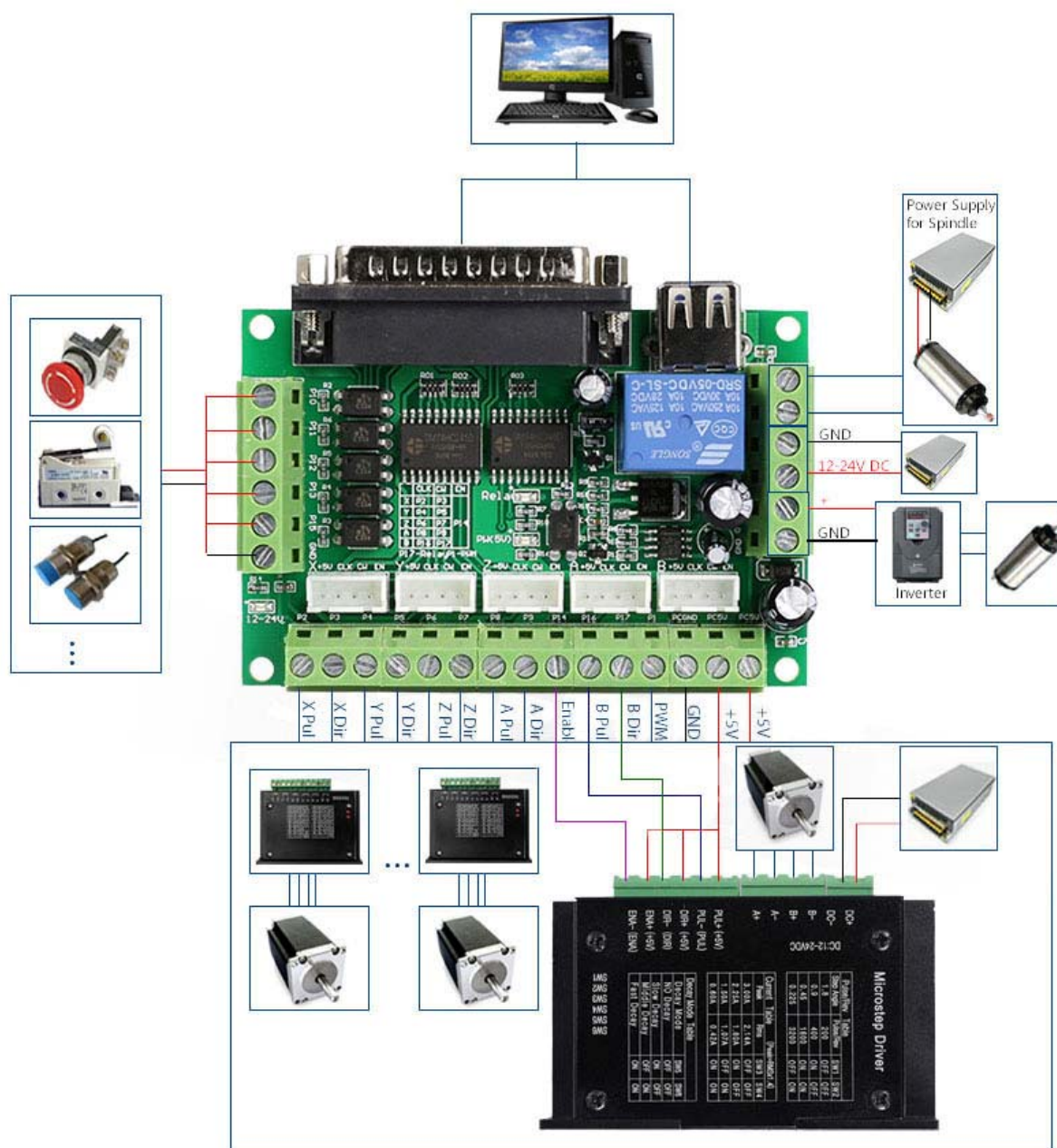
1. Functions and Features:

- High performance, cost-effective.
- Maximum support 5-axis stepper motor driver controllers.
- Compatible with MACH3, Linux CNC (EMC2) etc. parallel-control CNC software.
- USB power supply and peripherals powered phase are separated to protect computer security.
- All the signals are opto-isolated which can protect your computer security.
- 5-input interface to define the Limit, Emergence-Stop, Cutter alignment etc.
- Wide input voltage range: 12-24V, and with anti-reverse function.
- One relay output control interface, accessed by the spindle motor or the air pump, water pump, etc.
- Compatible with all the 2 phase microstep drivers in the market.
- Output 0-10V analog voltage for inverter to control the spindle speed.

2. Wiring diagram:



Note: all the setting below is for common anode connection between this interface board and the stepping motor drivers.



3. MACH3 Software Setting:

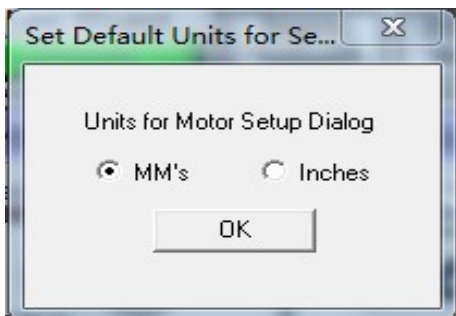
a. First check MACH3 driver is install set correct or not:



Note: "Mach3 Driver" can showing neither "!" nor "?".

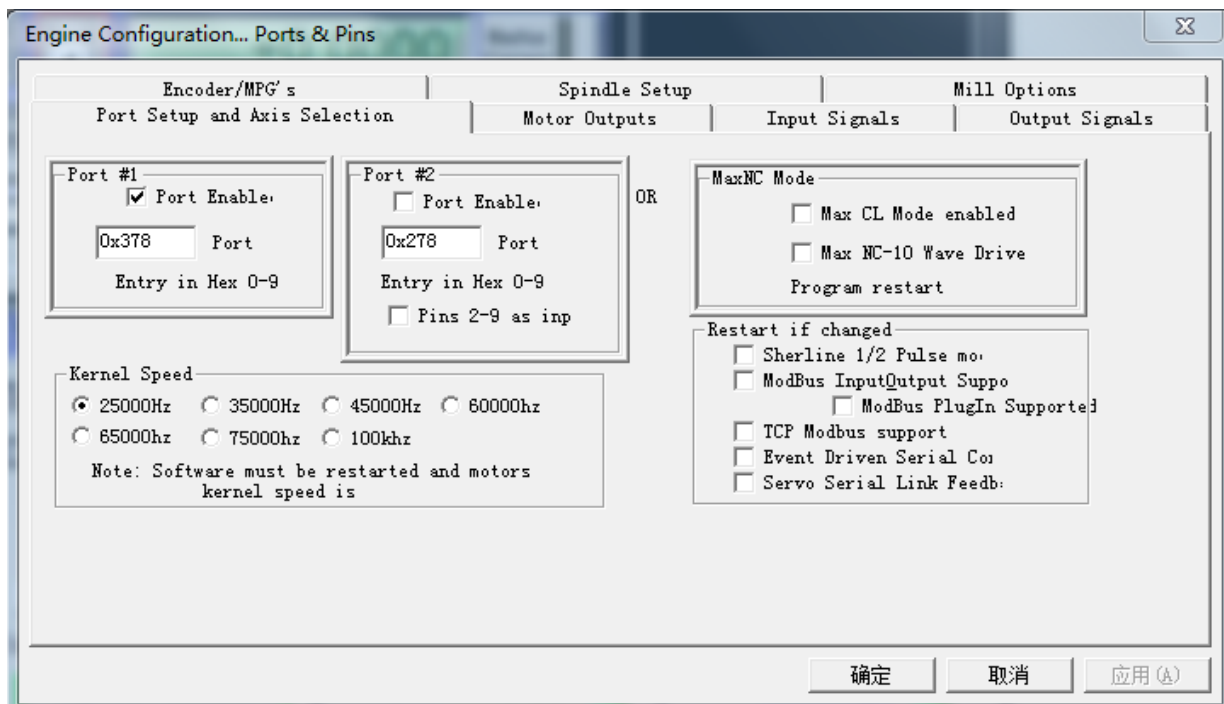
b. Software setting:

1. Unit select. Select unit: on menu "config" ---- select native units ---- mm.



2. Ports and pins:

(1). Port setup and axis selection:



(2). Motor outputs: set as per below

Engine Configuration... Ports & Pins

Encoder/MPG's			Spindle Setup		Mill Options		
Port Setup and Axis Selection			Motor Outputs		Input Signals		Output Signals
Signal	Enabled	Step Pin#	Dir Pin#	Dir LowAc...	Step Low ...	Step Port	Dir Port
X Axis		2	3			1	1
Y Axis		4	5			1	1
Z Axis		6	7			1	1
A Axis		8	9			1	1
B Axis		16	17			0	0
C Axis		0	0			0	0
Spindle		1	0			1	1

确定 取消 应用 (A)

Please note: motor turning direction is relevant to its connection method.
If the direction is not right, you can adjust "Dir LowActive" as on the diagram.

(3). input signals: set as below, then click the "confirm" button.

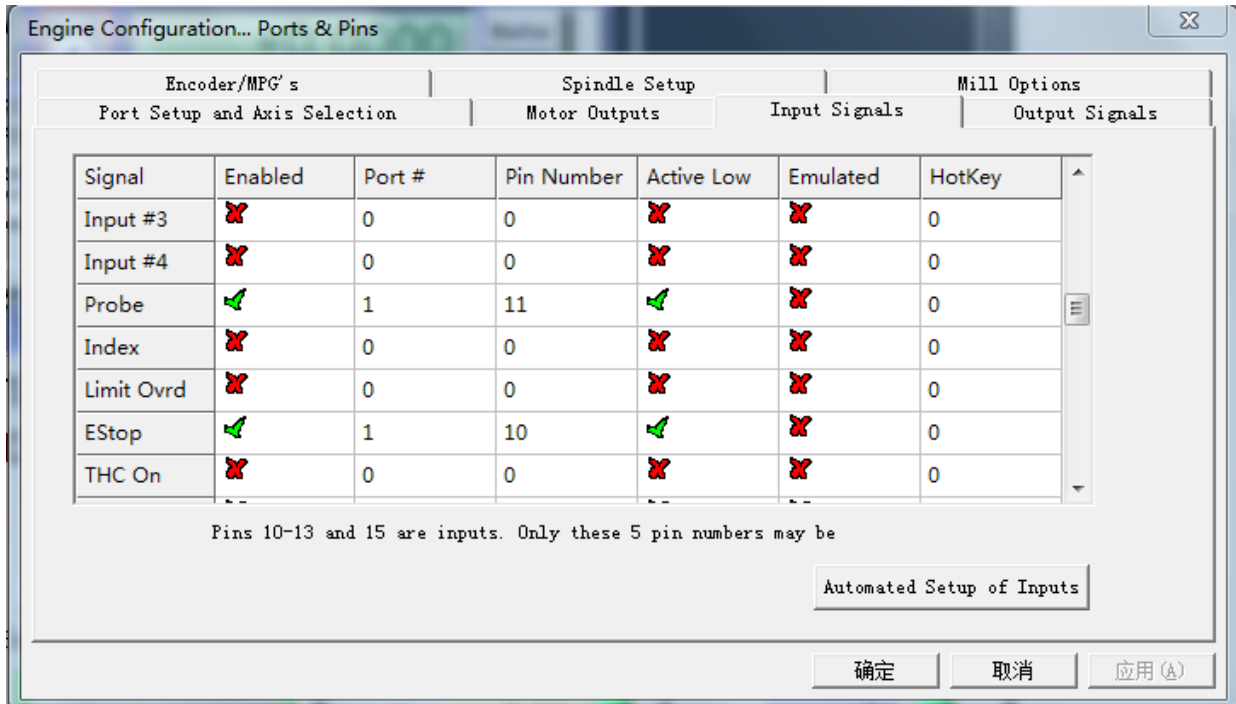
Engine Configuration... Ports & Pins

Encoder/MPG's			Spindle Setup		Mill Options		
Port Setup and Axis Selection			Motor Outputs		Input Signals		
Signal	Enabled	Port #	Pin Number	Active Low	Emulated	HotKey	
X ++		1	12			0	
X --		1	12			0	
X Home		0	0			0	
Y ++		1	13			0	
Y --		1	13			0	
Y Home		0	0			0	
Z ++		1	15			0	

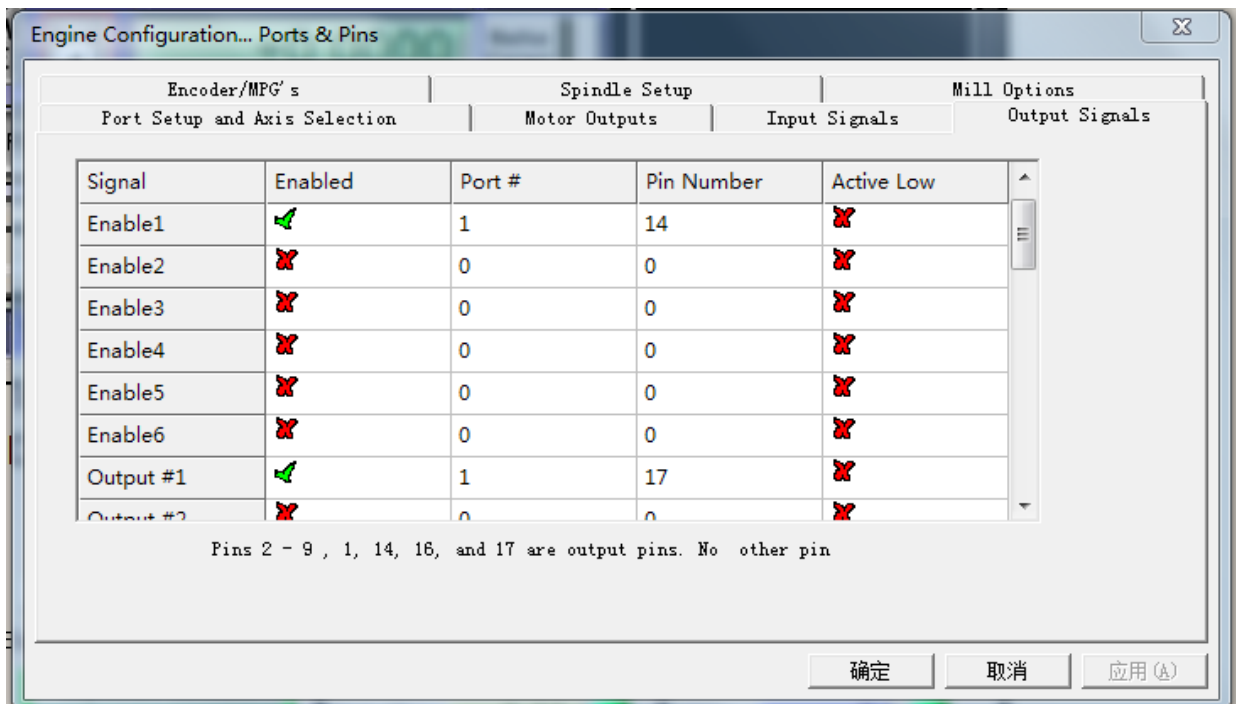
Pins 10-13 and 15 are inputs. Only these 5 pin numbers may be

Automated Setup of Inputs

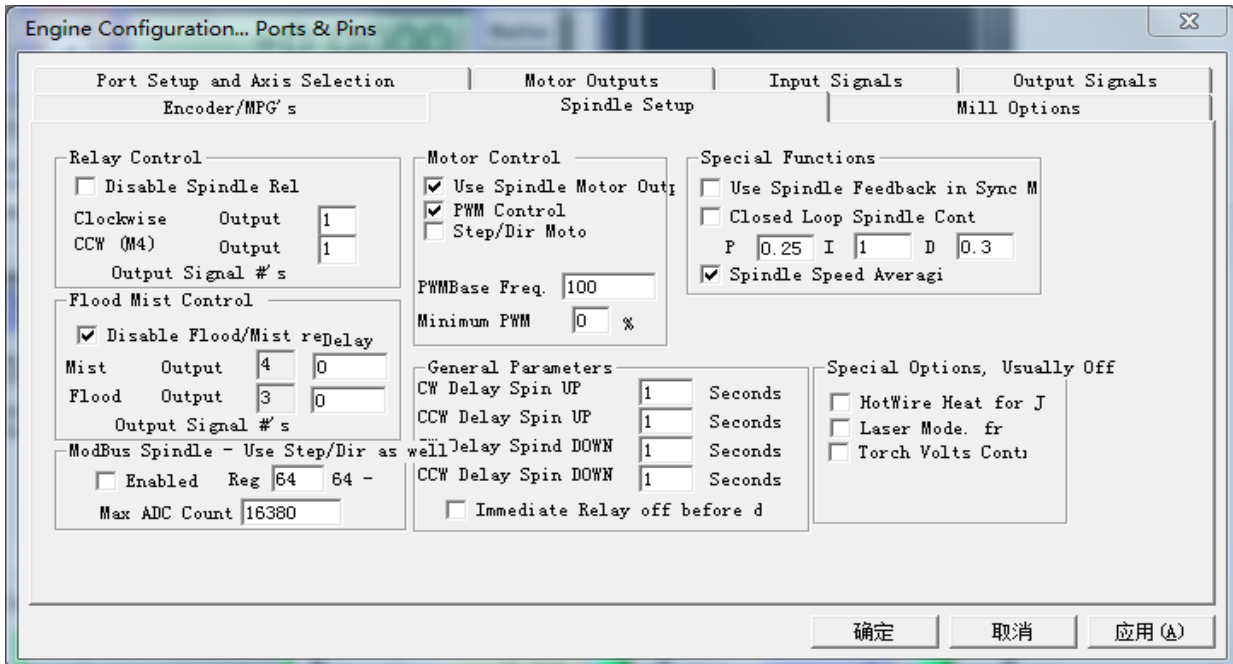
确定 取消 应用 (A)



(4). Output signals: set as below, then click the "confirm" button.

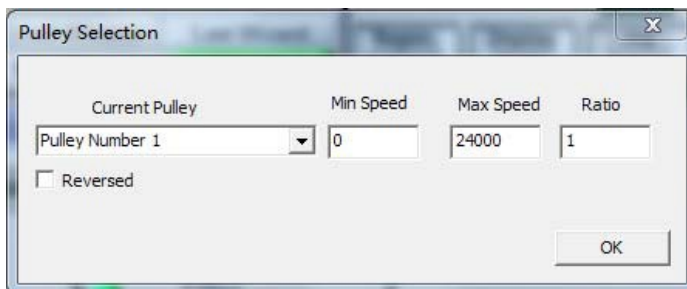


Enable1: stepper motor enable setting. --p14
Output #1: spindle relay switch setting. --P17



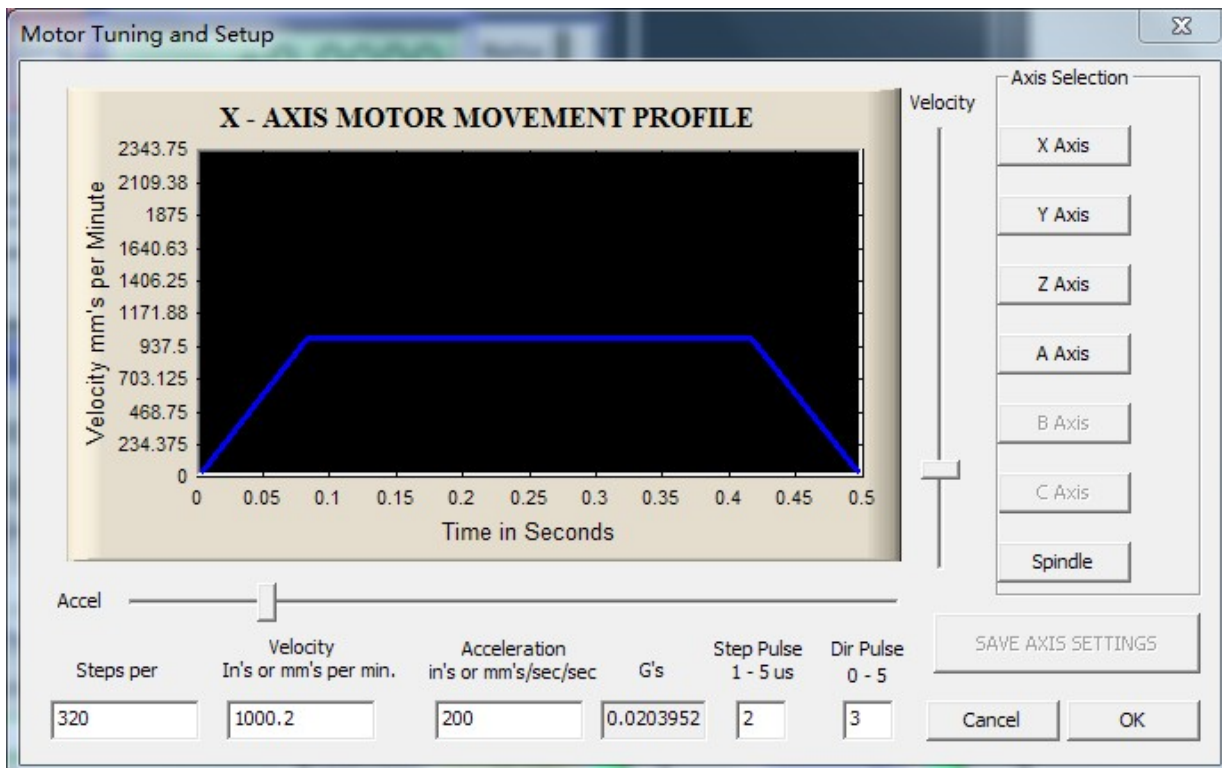
(5). Spindle setup:

Using PWM to control the spindle speed, also need to set "spindle pulleys" as below:



C. Motor turning:

Its relate to the screw pitch and the excitation mode of the motor driver. The below diagram setting is base on 5mm screw pitch and excitation mode is 1/8 mircostepping.

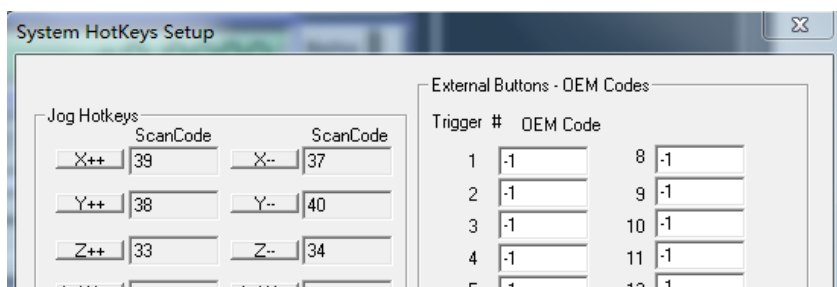


Steps per is means how many steps it need for moving 1 mm.

The seting of Y Z A axis is similar to X, and please save the settings after all.

Please set Step Pulse at least 5 us for driver M542T and M860H.

5. System hotkeys setup:



Set the hotkeys of X. Y. Z axis as this diagram, then you can control the motors by this hotkeys on the keyboard.