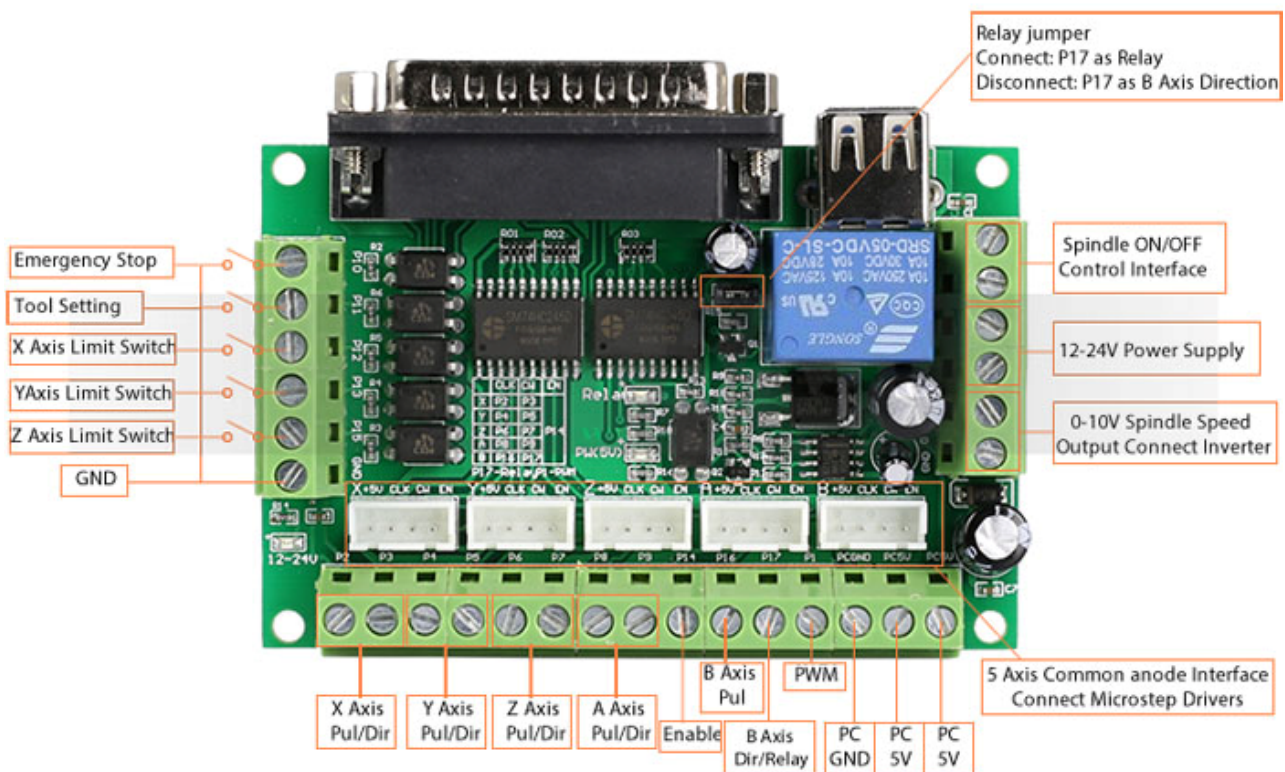


This document describes the basic functionality and the electrical specifications of SKYSMOTOR's 5 Axis CNC Breakout Board Interface ST-V2.

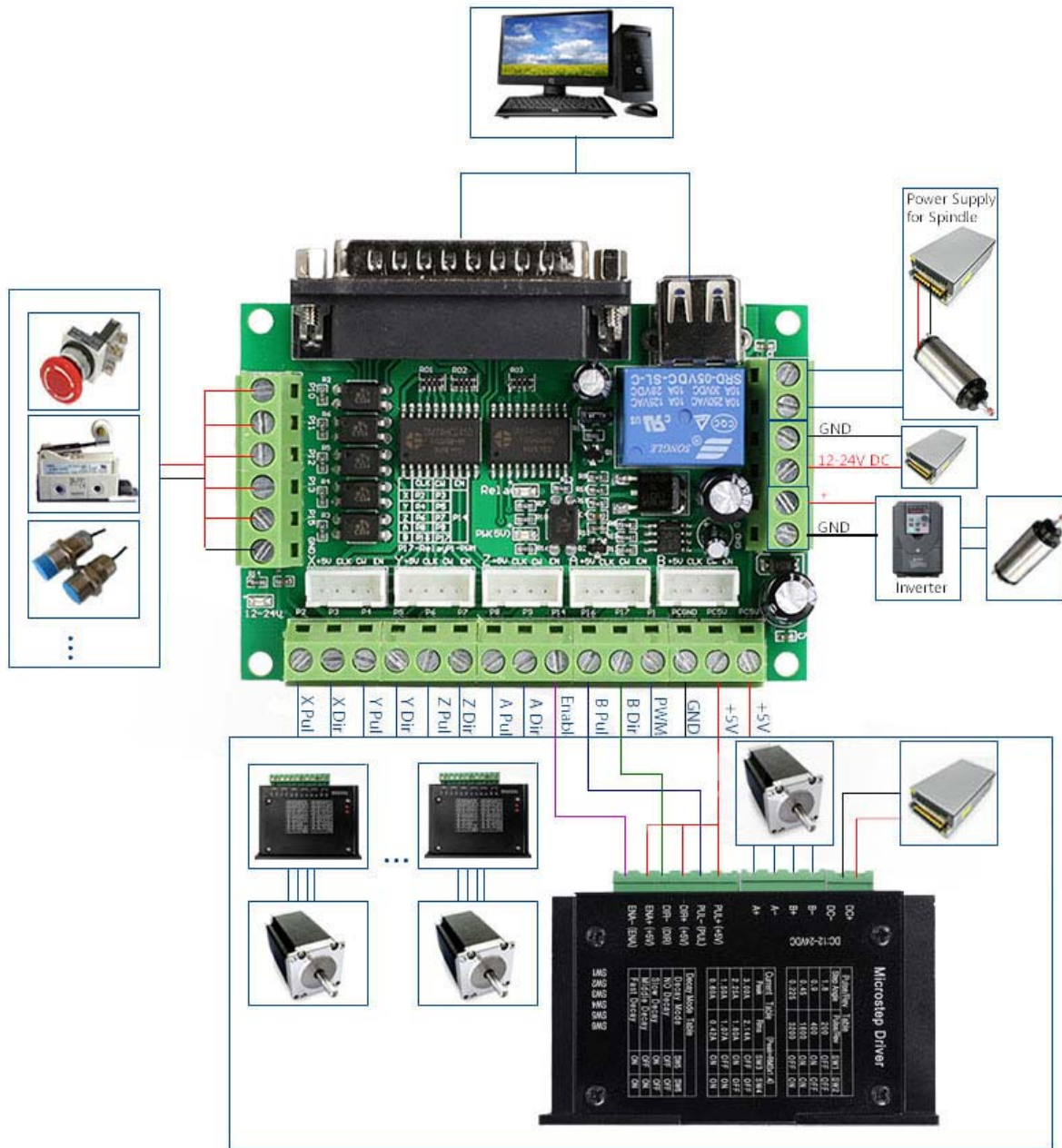
### 1. Functions and Features:

- 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:

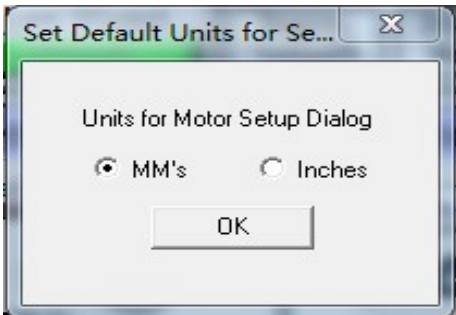
a. First check MACH3 driver is install set correct or not:



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

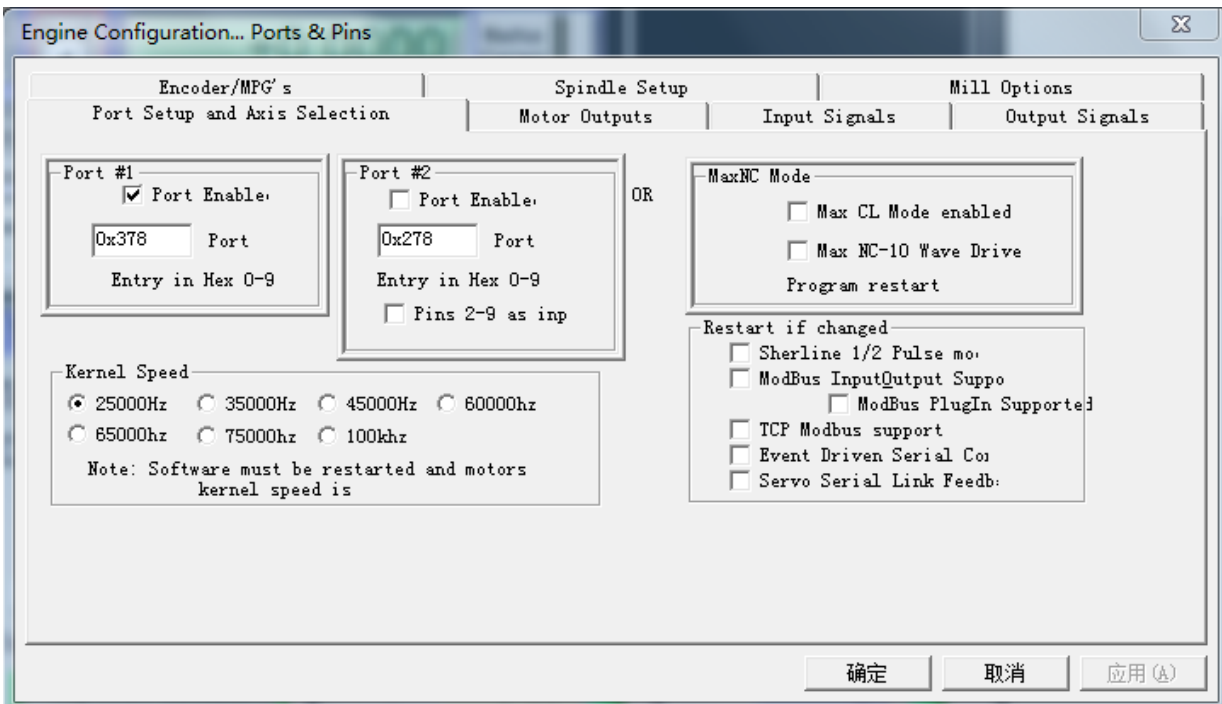
b. Software setting:

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

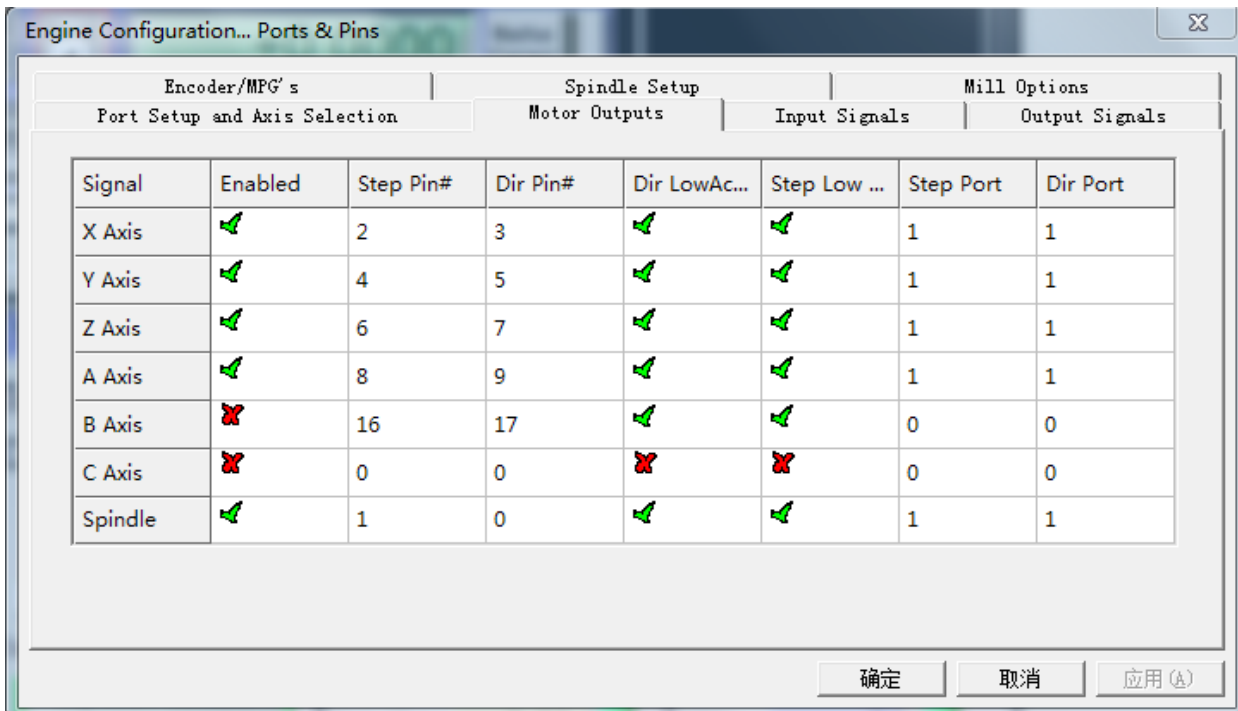


2. Ports and pins:

(1). Port setup and axis selection:

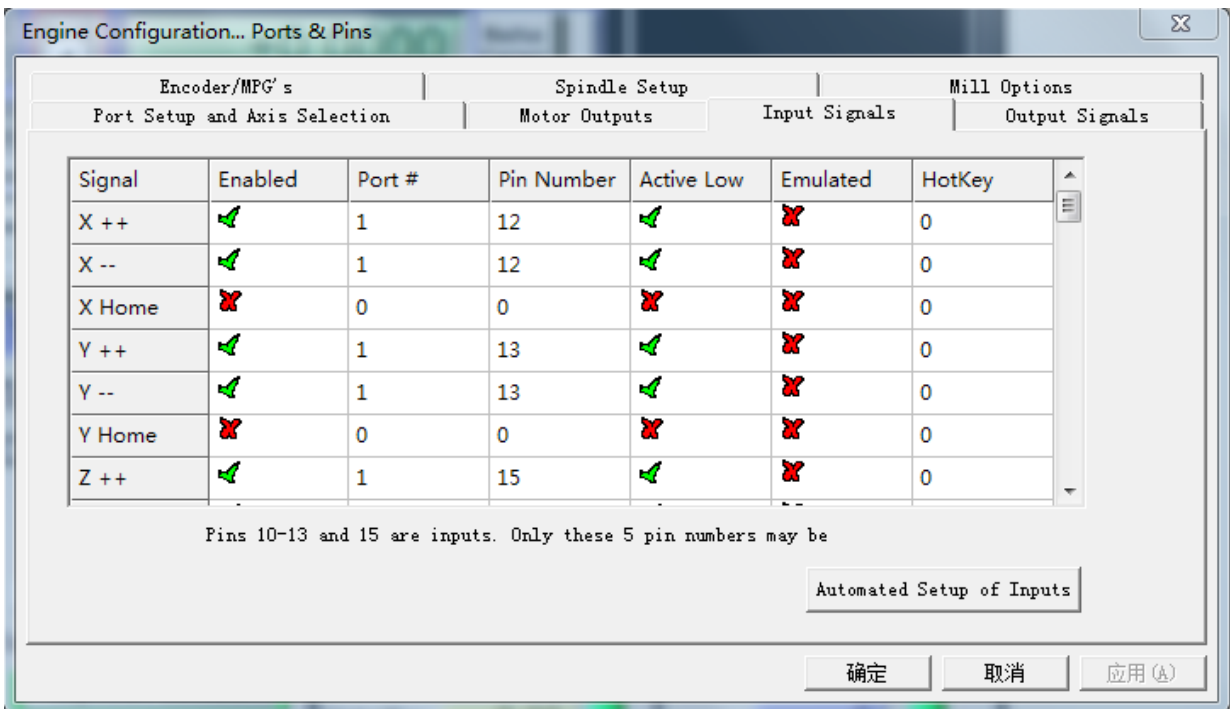


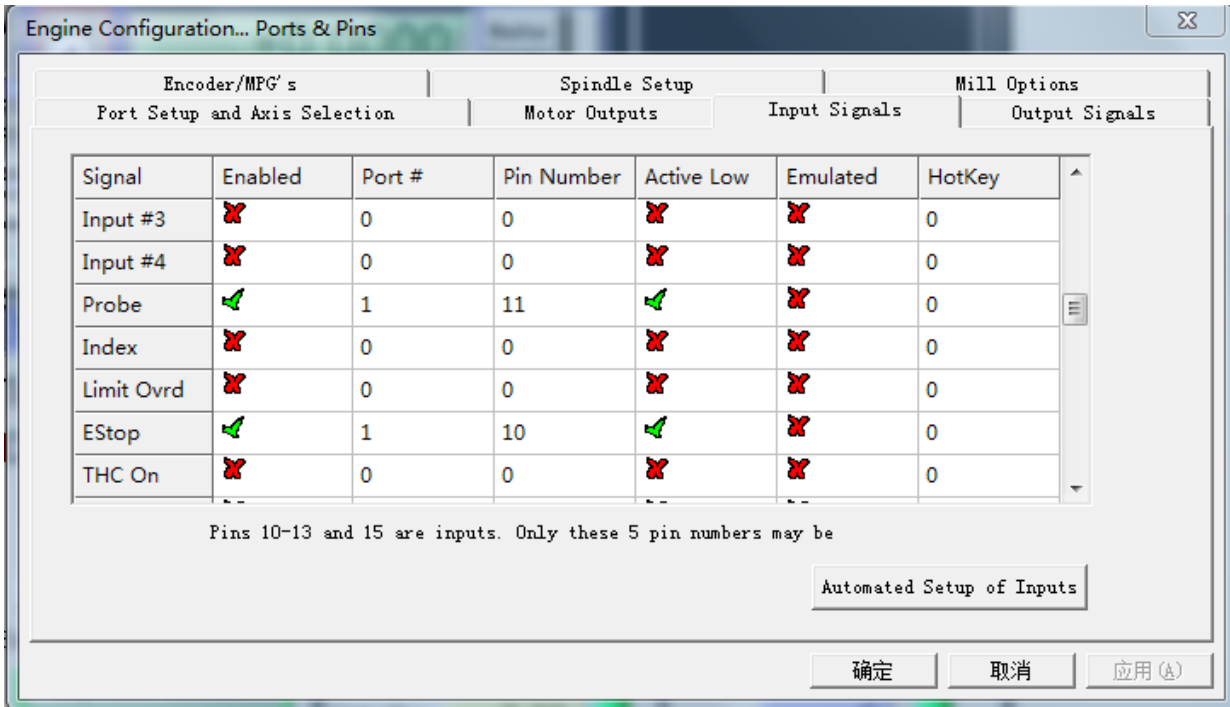
(2). Motor outputs: set as per below



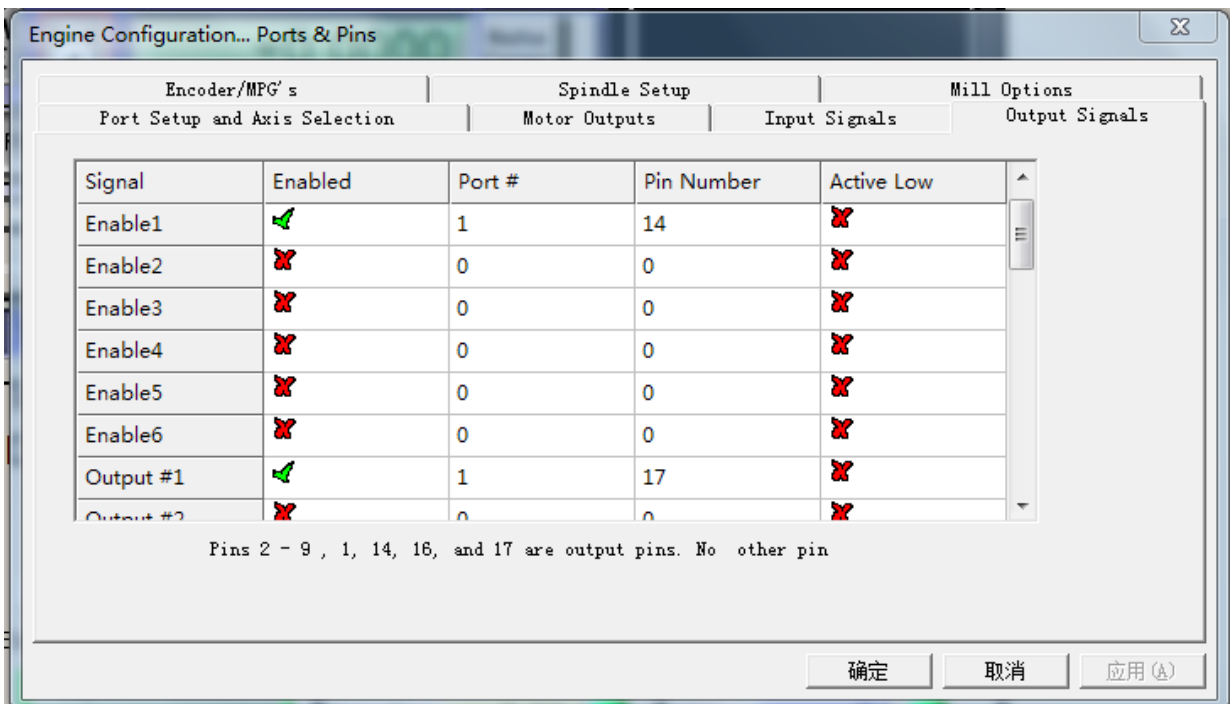
Please note: motor turning direction is relevant to its connection method. If the direction is not right, you can adjust "Dir LowActive" as on the diagram.

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

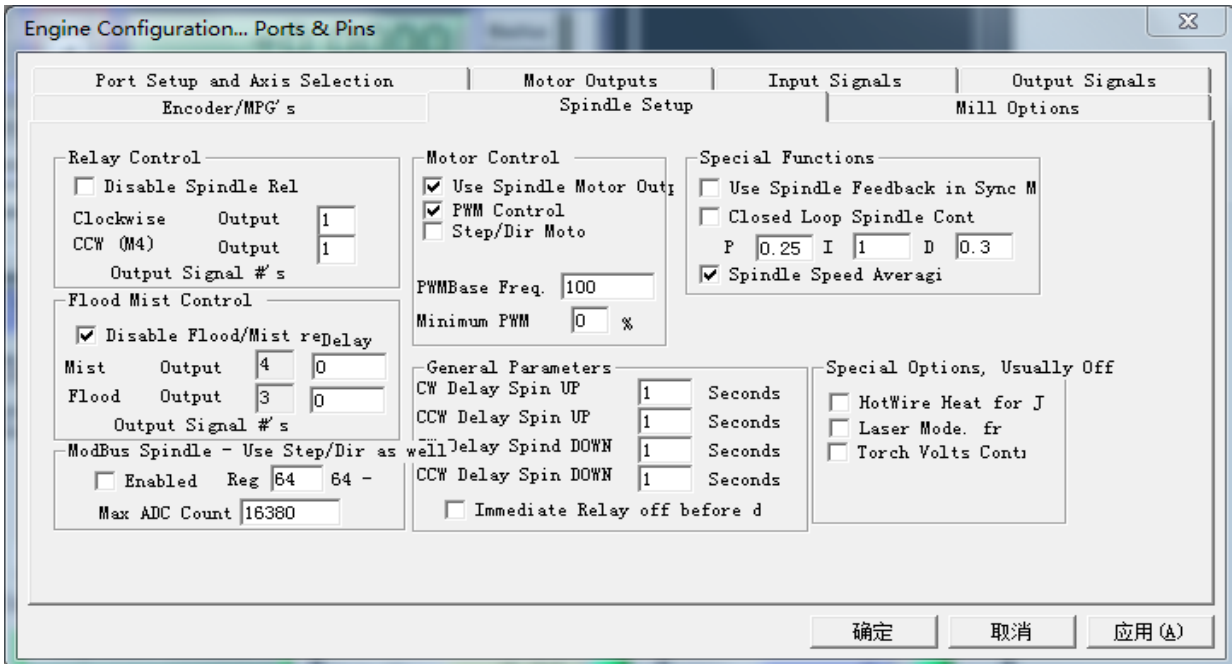




(4). Output signals: set as below, then click the "confirm" button.

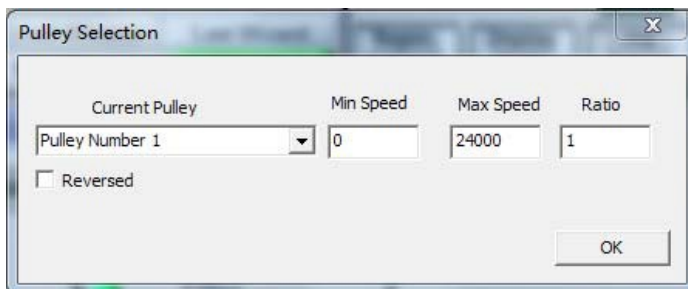


Enable1: stepper motor enable setting. --p14  
 Output #1: spindle relay switch setting. --P17



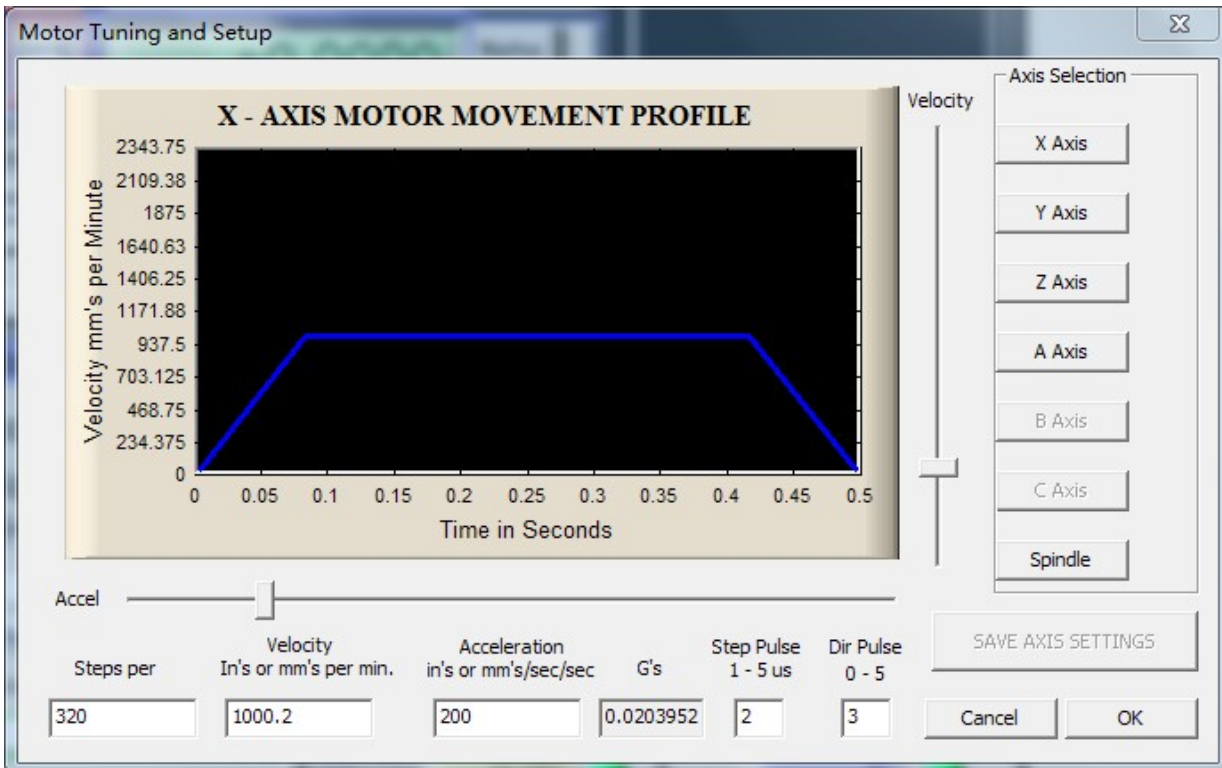
(5). Spindle setup:

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



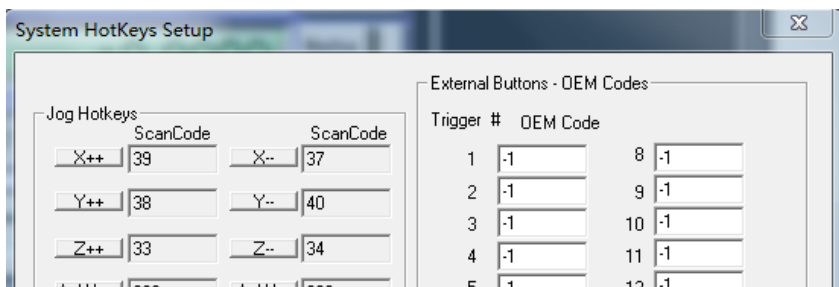
### C. Motor turning:

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.