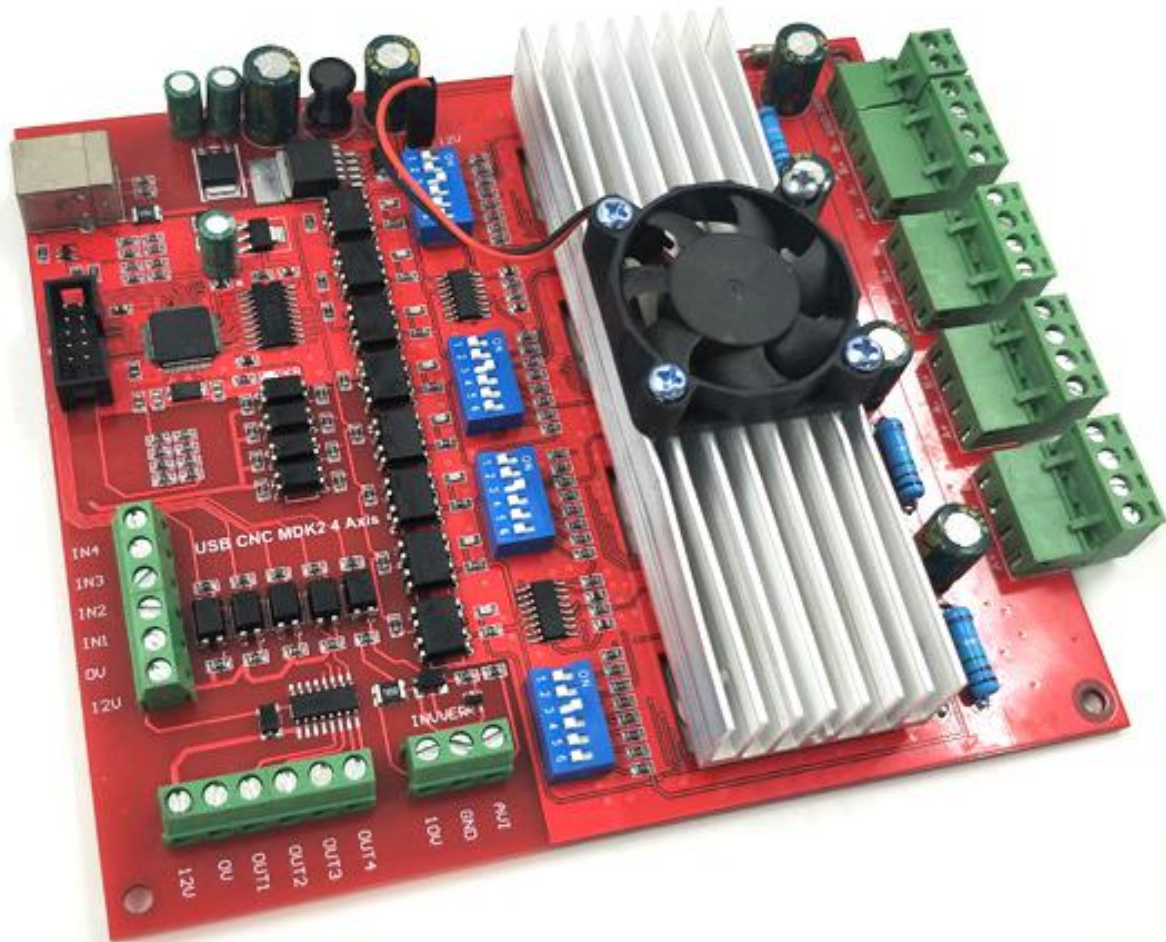


Mach3 USB Motion Card (JDSW43R) Installation Manual





The motion control card for machine control, with strong professional. Requires the operator to have the relevant expertise! If used improperly, may appear an accident, please strictly follow the instructions and warnings using this product if you are not sure, consulting engineers for help. First time users, if you are not familiar with the product and software features Mach3 In your test product, make sure the machine's power switch on hand, you can quickly turn off the power. Recommends that users install the emergency stop button and make sure the button is functioning properly. Please strictly follow the instructions and warnings using this product. Any direct / indirect personal injury, our company does not assume any responsibility.

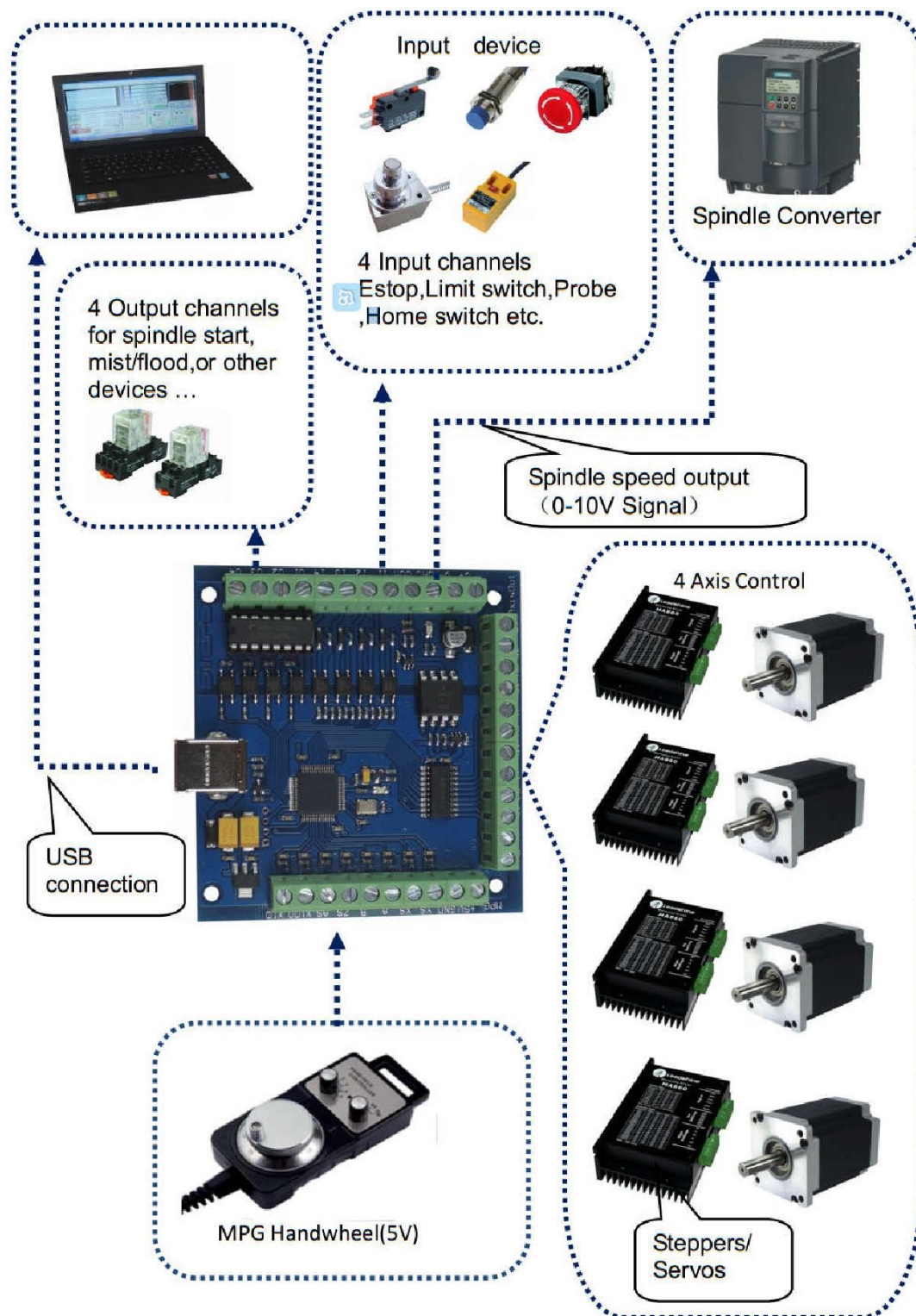
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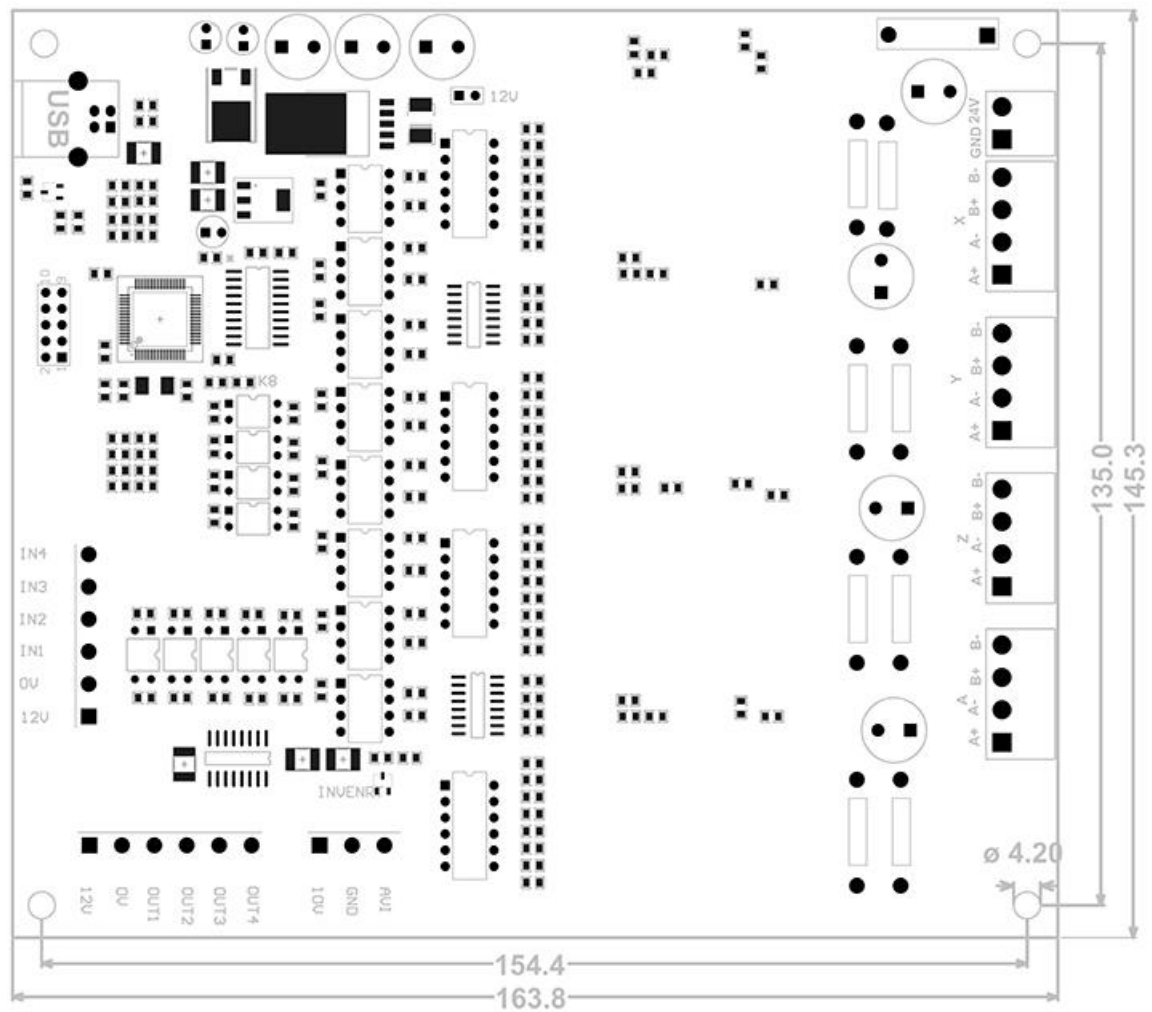
Features:

1. Support for 4-axis linkage, you can connect four stepper motor drives or servo drives;
2. Maximum step-pulse frequency is 100KHz, which is suitable for the servo or stepping motor;
3. 4 general-purpose opto-couplers isolation input : can connect the limit switch, emergency stop switch, auto tool zero, home switch etc.
4. Support for connecting electronic handwheel;
5. Have 0-10V signal output , you can use mach3 software to control the spindle motor speed.
6. 4 general-purpose isolated relay drive output interface, can drive four relays for controlling the spindle starts, forward rotating and reverse rotating, pumps or other device;
7. 1 status LED, indicate connection status on the board.
8. Resolution 1、1\2、1\8、1\16 micro stepping output.
9. Four(or three) channels 3.5A adjustable output current for 2/4 phase bipolar stepper driver.
10. Build with 4 outputs and 5 inputs.

Basic connection diagram (an Overview):



Mechanical dimensions diagram:



1.Prepare:

1.1.Installation the Mach3:

Open the CD, find mach3 software, run the installation file:

新建文件夹			
名称	修改日期	类型	大小
 Mach3VersionR3.041	2014/1/10 13:23	应用程序	25,733 KB

Follow the prompts to install, until the last step.

The last step requires Note: For 64-bit computer, it is best not to select”**LoadMach3 Driver** “this one, because it will cause the system to prompt installation errors.



1.2. Software license application:

Copy license files “**Mach1Lic.dat**” from “**mach3 software folder**”, to **C:\Mach3** Cover the original file, Reset Computer (must reset the computr, please don't open the software dircetly!) Way above the license for DIY or study purposes only, not for commercial use.

1.3. Installation the software of the USB motion card:

This USB motion card does not need install any USB driver, Windows2000/XP/Windows7, can directly identify.

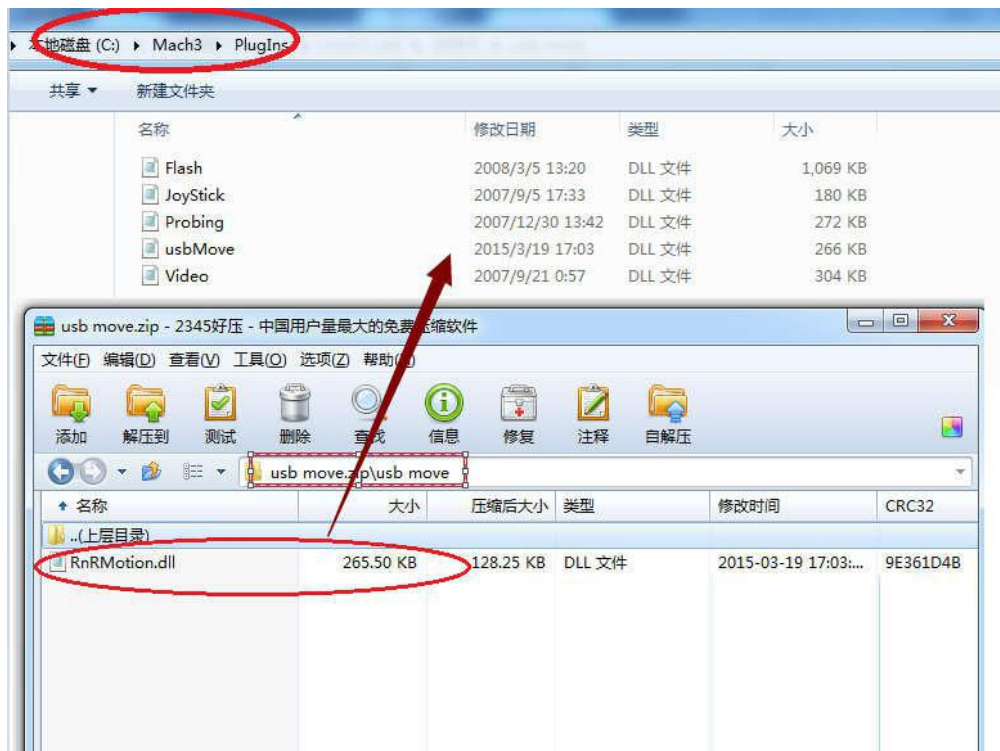
1.3.1 Connecting the USB cable to the PC and the motion card:

The first installation of motion control card, take about 10s, when the green led lights on motion control card, indicating that the connection is successful, return the following tips when you install on your computer:

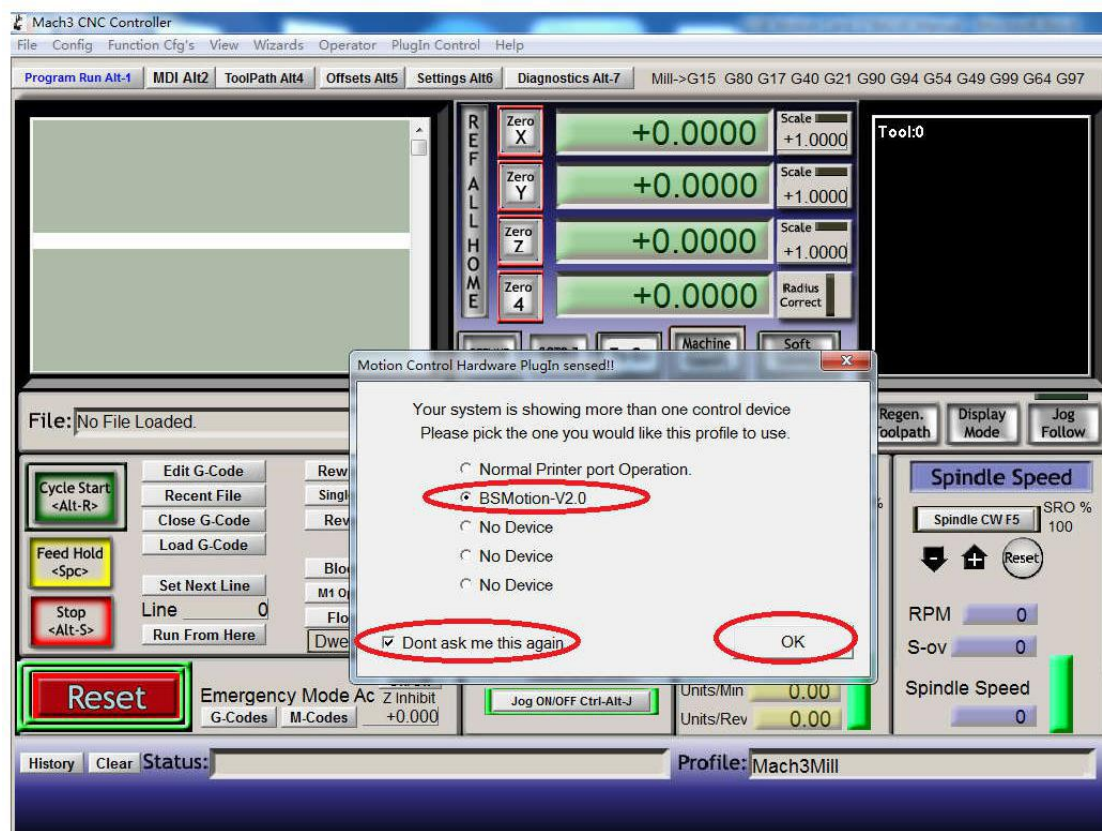


1.3.2 Installing the motion card plug-in.

Unzip the usb move.zip, copy or drag RnRMotion.dll into your Mach3\PlugIns folder.

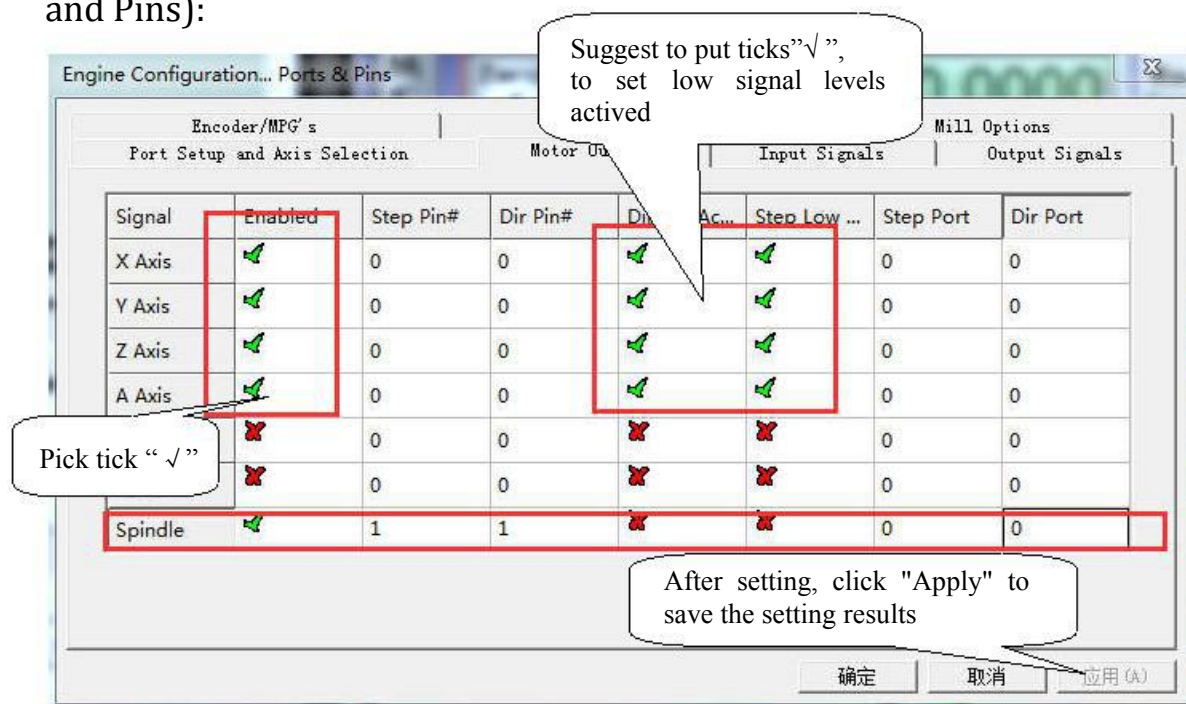


1.3.3 Start the Mach3 software, a dialogue of “Motion Control Hardware PlugIn sensed!” is shown. Please select the “ BSMotion-V2.0”, you can also check “Don't ask me this again”.

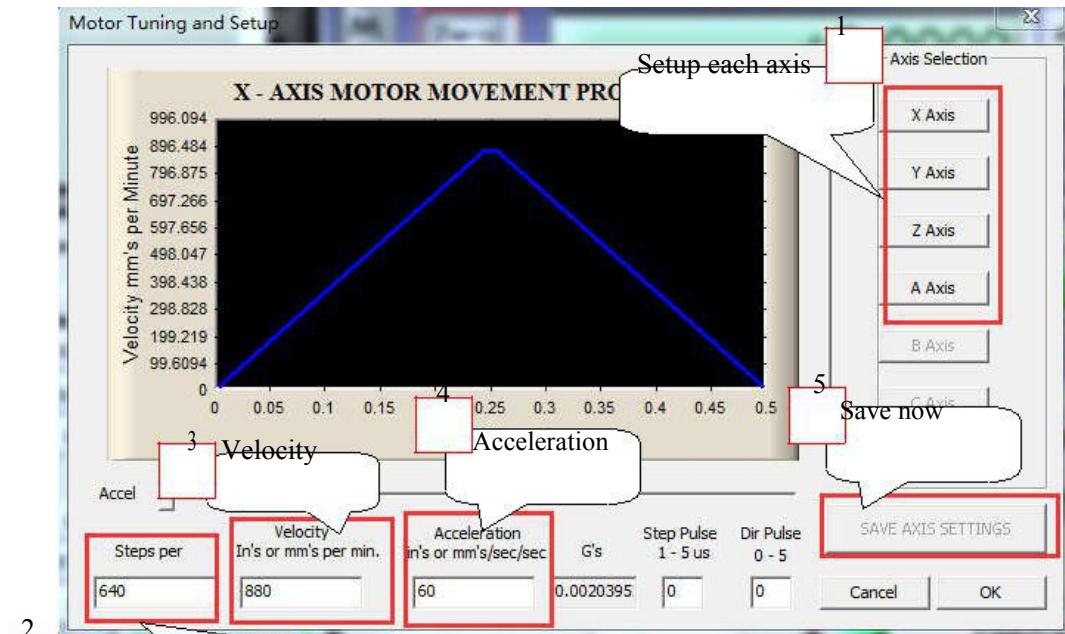


2.config for mach3:

2.1 Mach3 X、Y、Z、A Axis config as shown below: Config => Ports and Pins):



2.2 Motor tuning setup as shown below: (Config => Motor Tuning)



Mach3 steps per unit:

Mach3 steps per unit = Mach3 steps per rev x Motor revs per unit

2.3 The Mach3 Menu => Config => Homing/Limits dialog:

Axis direction, depends on the "Reversed"

Axis	Reversed	Soft Max	Soft Min	Slow Z...	Home ...	Home ...	Auto Z...	Speed %
X	X	100.00	-100.00	1.00	0.0000	✓	✓	20
Y	✓	100.00	-100.00	1.00	0.0000	✓	✓	20
Z	✓	100.00	-100.00	1.00	0.0000	✓	✓	20
A	X	100.00	-100.00	1.00	0.0000	✓	✓	20
B	X	100.00	-100.00	1.00	0.0000	X	✓	20
C	X	100.00	-100.00	1.00	0.0000	X	✓	20

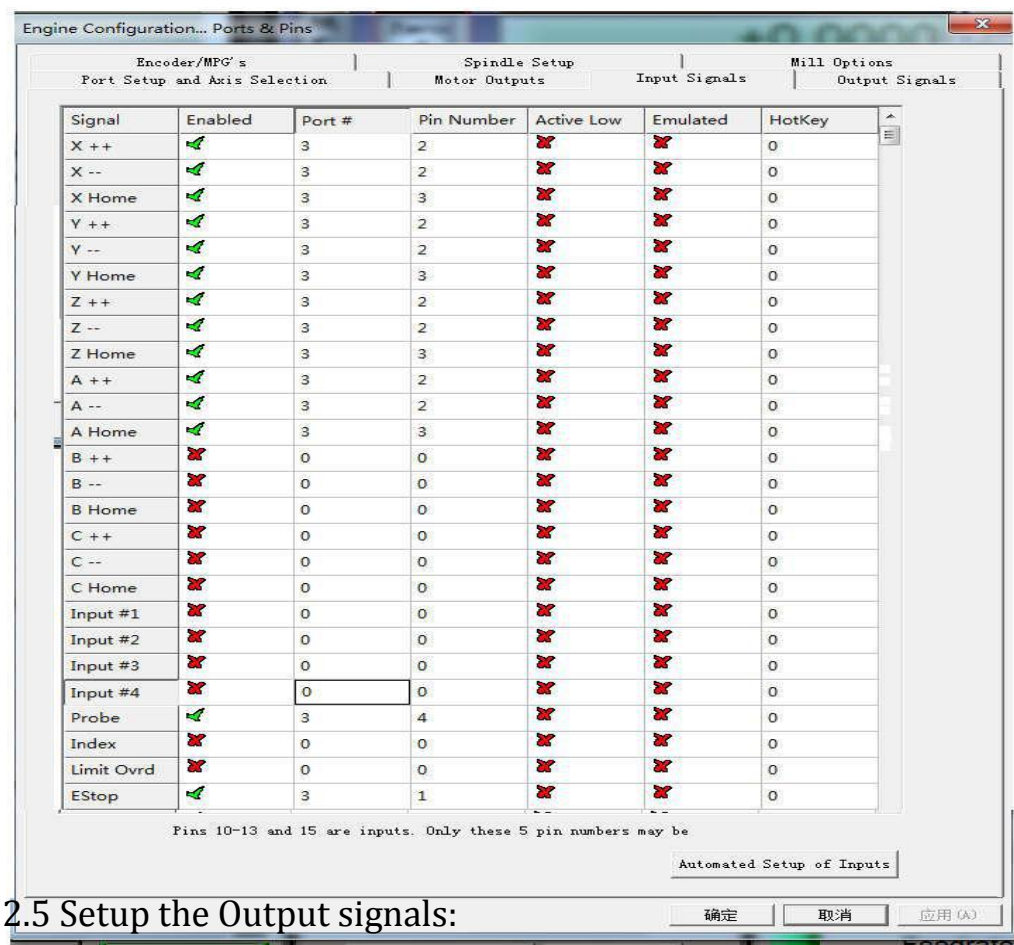
Axis direction: Depends on "✓" or "X"

2.4 Setup the input signal:

There are 4 general-purpose input channels. The channels number is from I1 to I4.

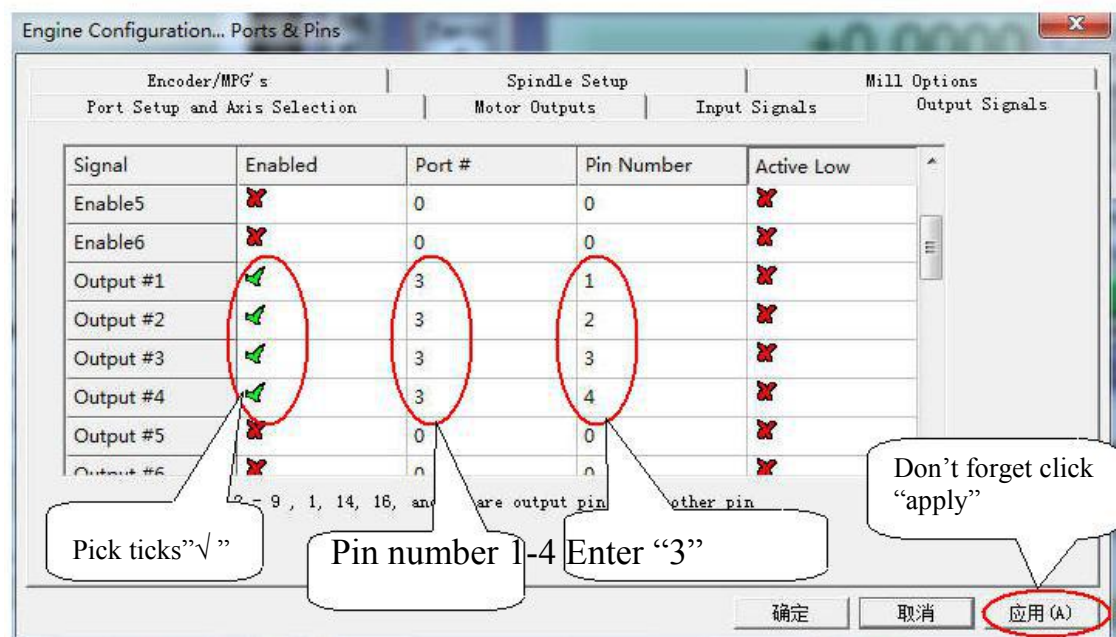
Example of input signal settings: I1 is connected to emergency stop switch, I2 is connected to 4 axis limit switches, I3 is connected to 4 axis home switches, I4 is connected to auto tool zero, set as shown

below:



2.5 Setup the Output signals:

There are 4 general-purpose (open-drain) output channels, The channels number is from O1 to O4, mach3 setup as shown below:



M3 code control output 1 output, M4 code control output port 2 output, M5 shut down output 1 and output2.

M7 code control output 3 output, M8 code control output port 4 output, M9 shut down output 1 and output2.

2.6 Spindle speed control (0-10V) Setup:

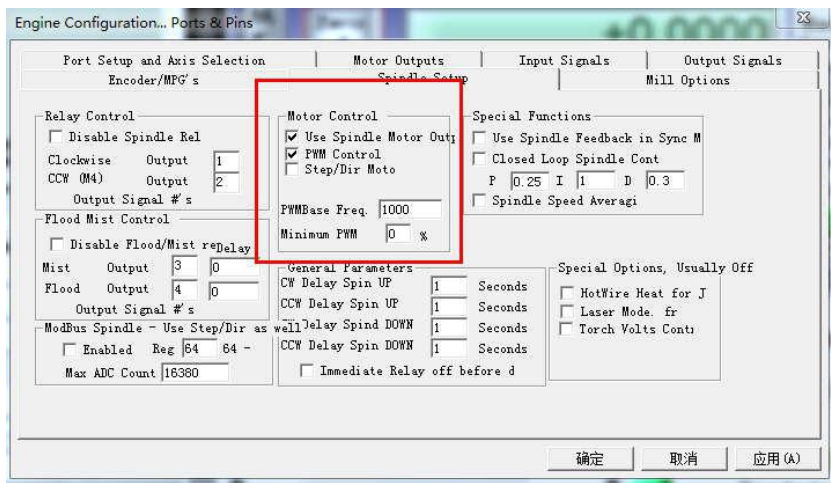
There is 0-10v signal output on the control card, Can be used to connect the Inverter to control the spindle speed.

According to the actual parameters of the inverter and the spindle, set the maximum spindle

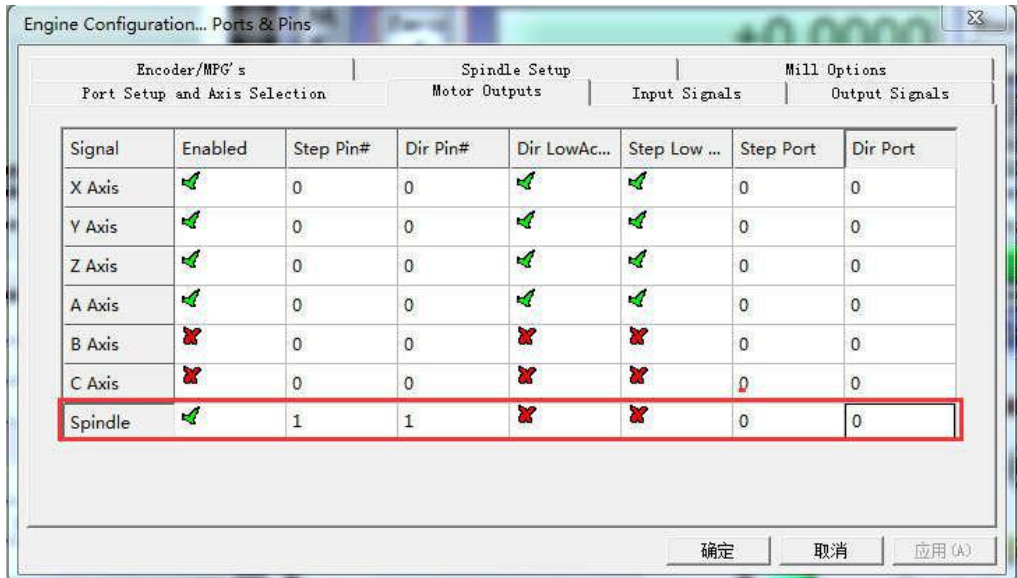
speed (for example,24000RPM). As shown below:The Mach3 Menu => Config => Spindle pulleys:



Setup Spindle parameters: as shown in the red box

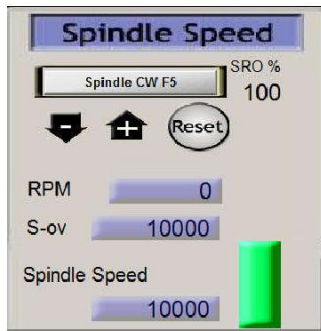


Enable spindle output. as shown below:



Completion of the setting, there are two ways to control the output value of 0 ~ 10V.

1. Using the S command. Such as S20000 (the speed to 20000RPM)
2. Using the Mach3 interface control (input Spindle Speed, and adjust Percentage SRO's). Figure:



3.config for drivers:

3.1 Current settings:

Torque Settings				
Current	3A	2.25A	1.5A	0.6A
S1	OFF	OFF	ON	ON
S2	OFF	ON	OFF	ON

3.2 Subdivision

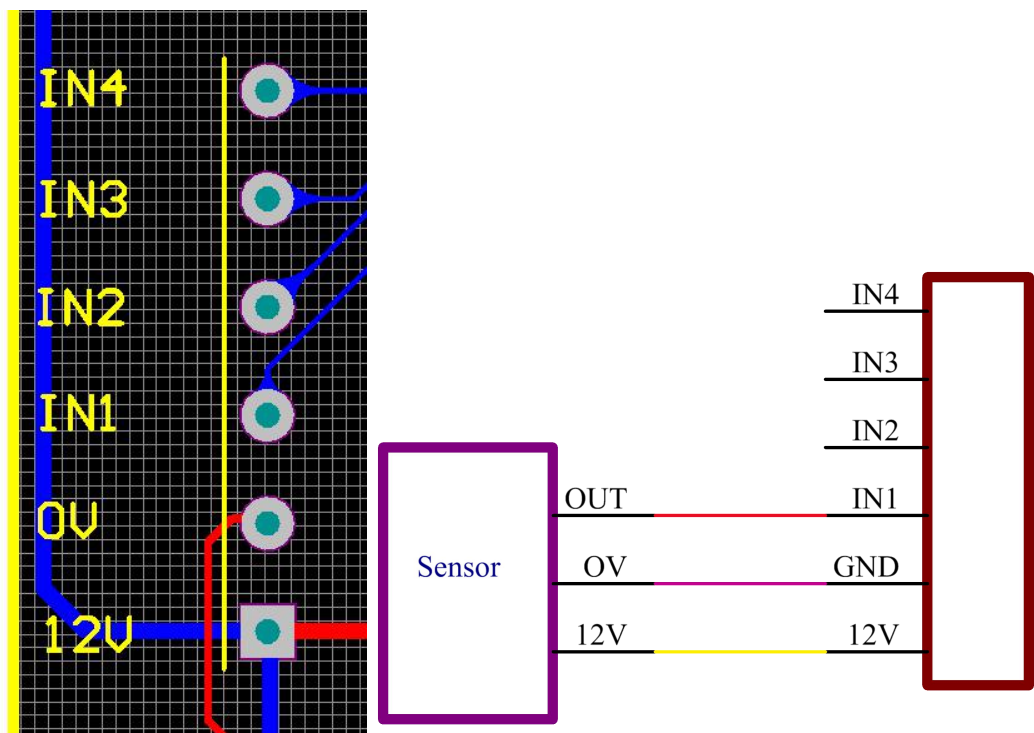
Subdivision				
Sub.	1	2	8	16
S3	OFF	OFF	ON	ON
S4	OFF	ON	ON	OFF

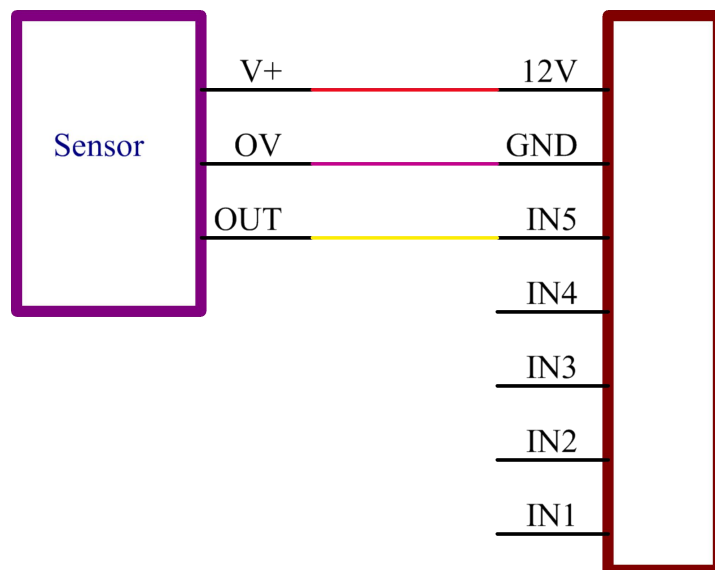
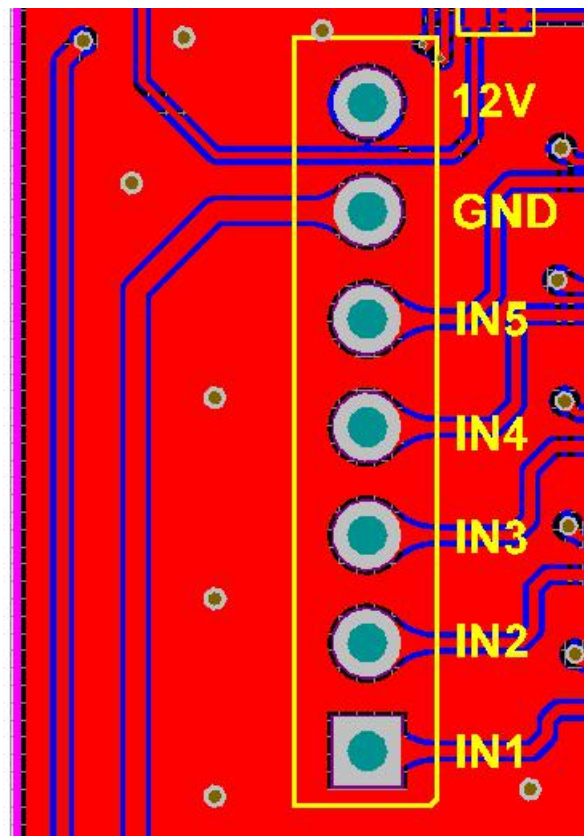
3.3 Decay

Decay				
Decay	0%	25%	50%	100%
S5	OFF	OFF	ON	ON
S6	OFF	ON	OFF	ON

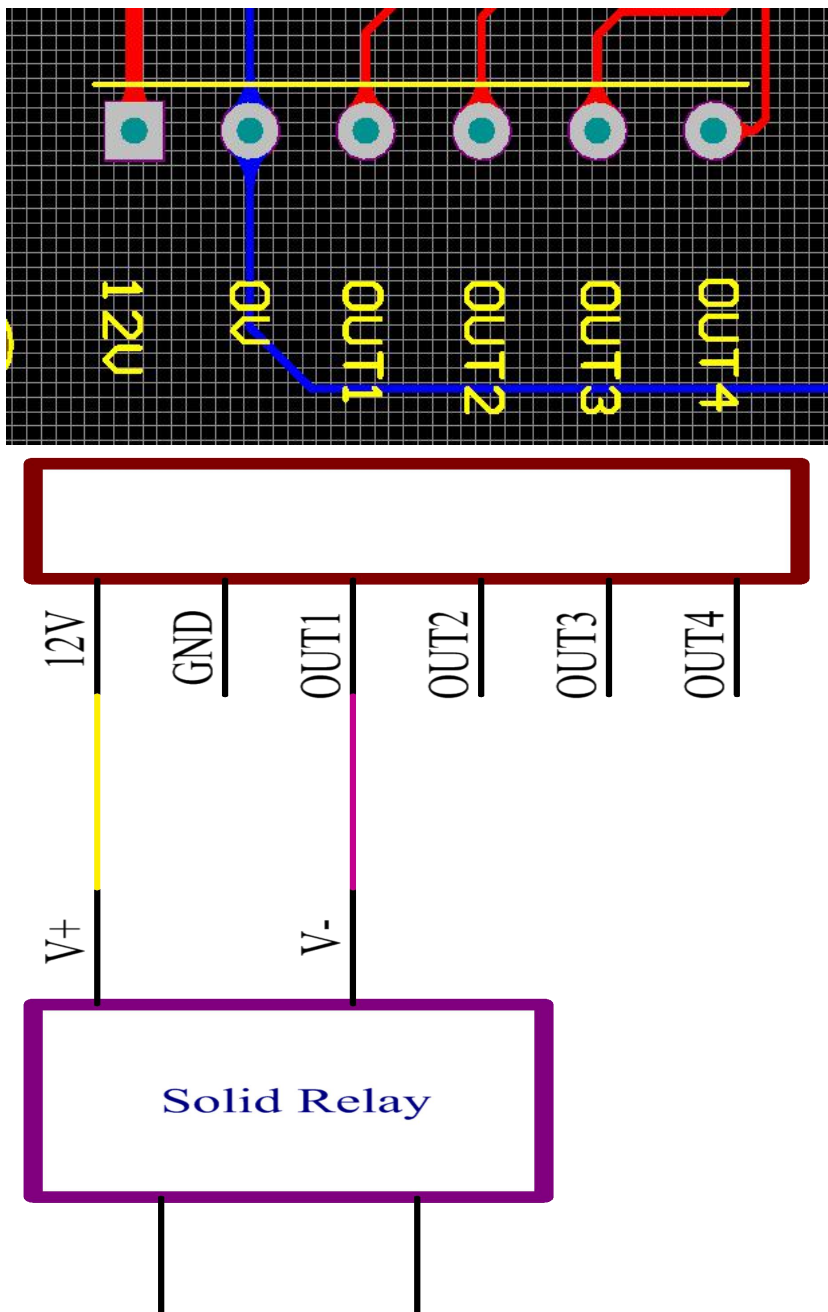
4.Connection diagrams

4.1 For sensors:

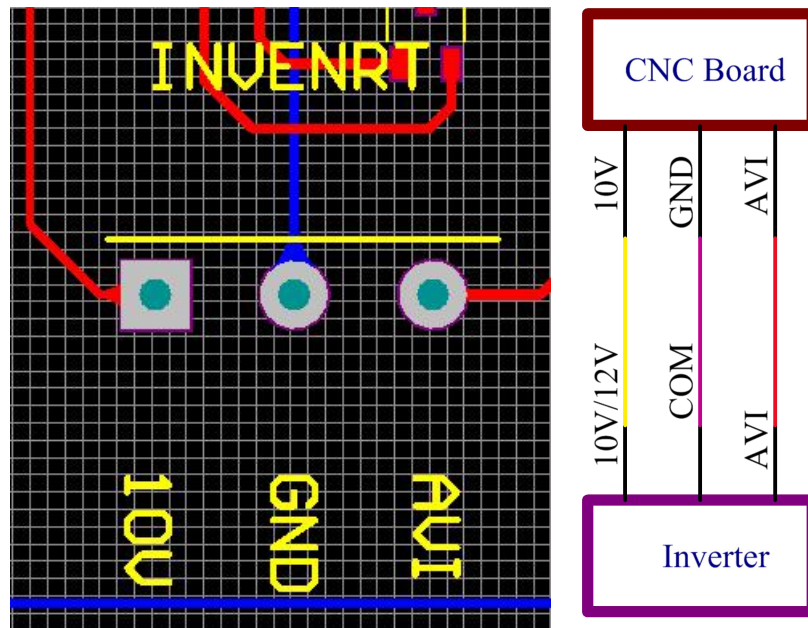




4.2 For Outputs:

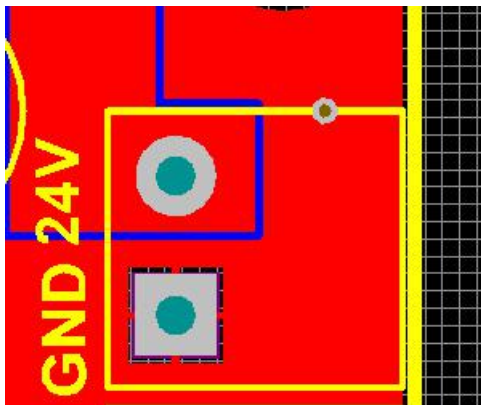


4.2 For Inverter:



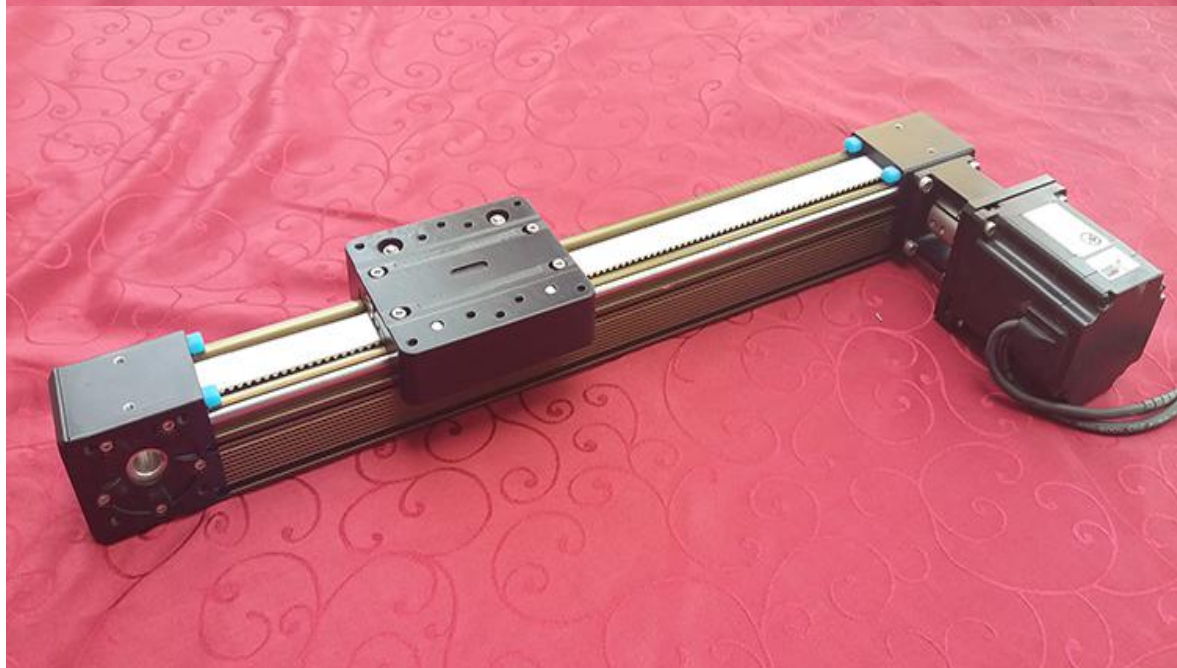
4.2 For Power:

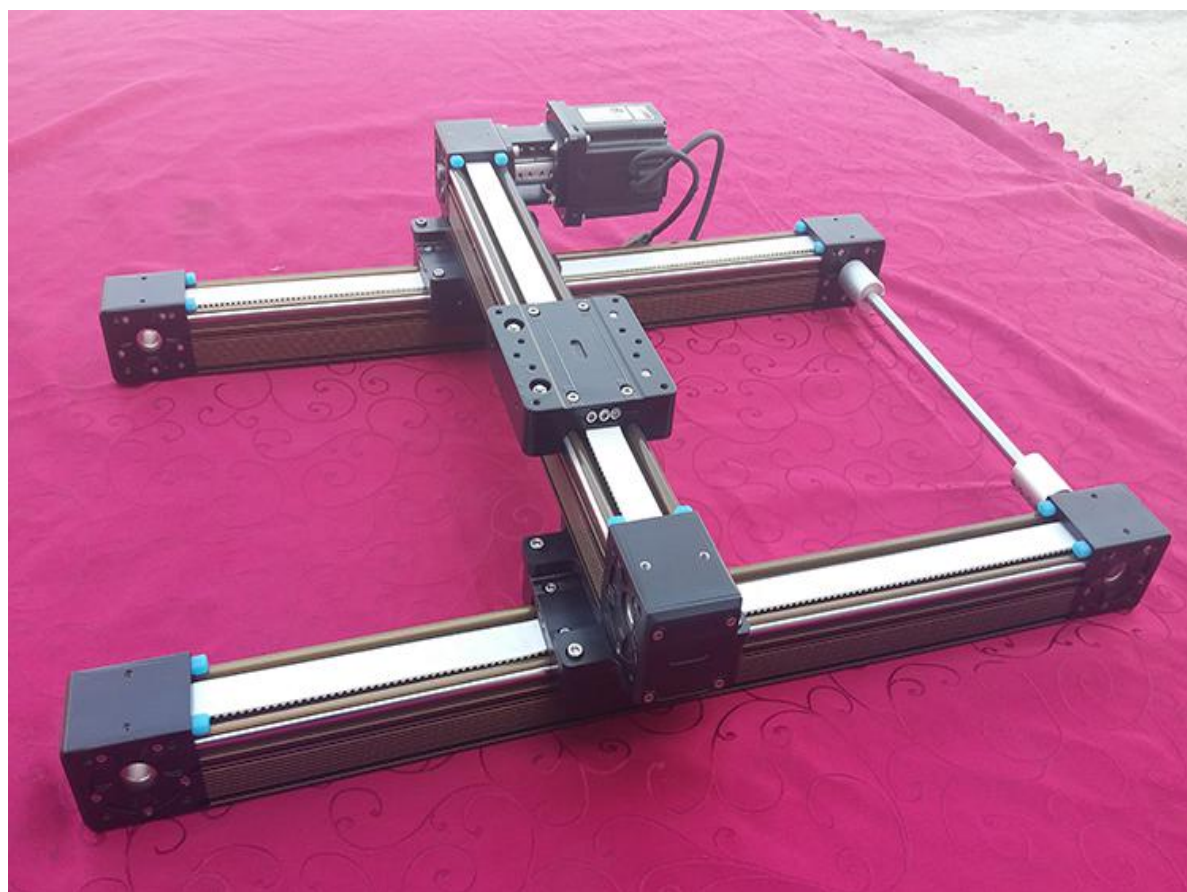
DC power must be used, and the Switch DC Power can be 360w/24v.



Other cnc parts we have:

1、 Belt linear module:





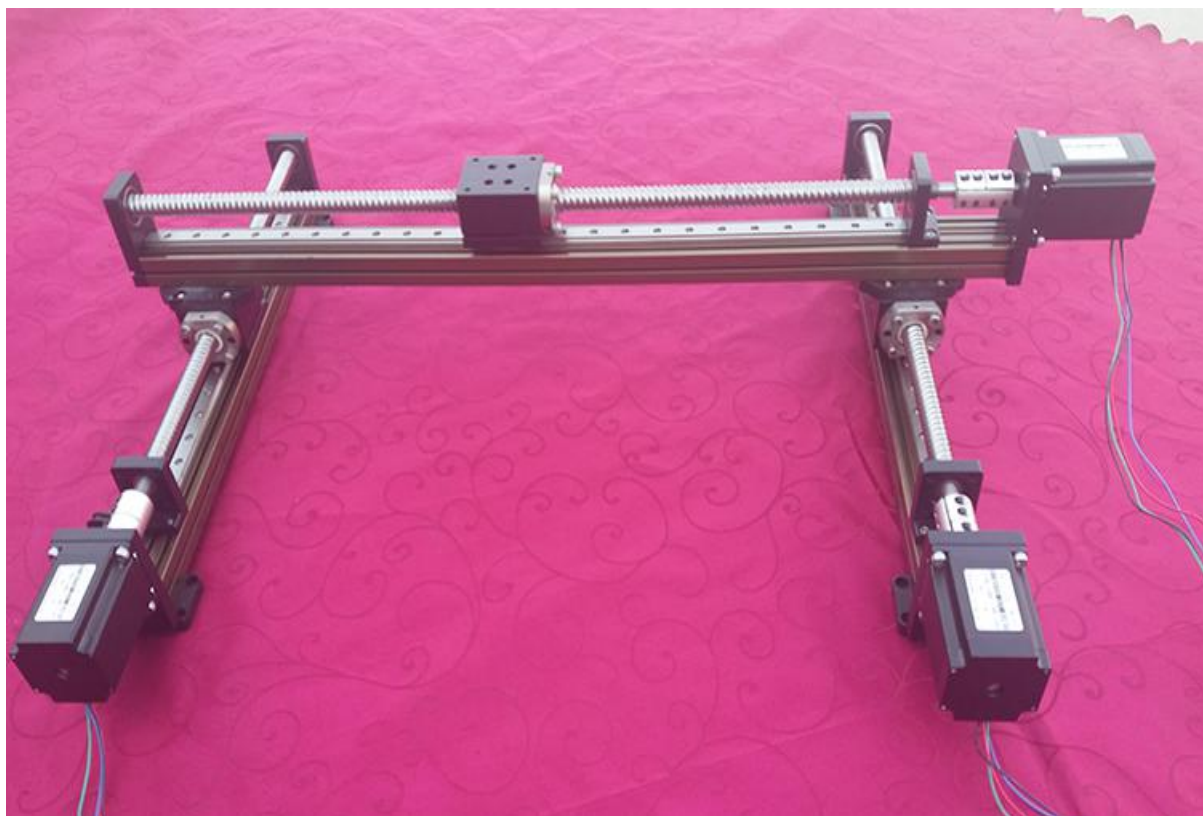








Ball Screw Actuator linear module:





Stepper motors and drivers:

Microstep driver DM542

Current Table(Peak=RMSX1.4)

Peak	RMS	SW1	SW2	SW3
1.00	0.71	ON	ON	ON
1.46	1.04	OFF	ON	ON
1.92	1.36	ON	OFF	ON
2.37	1.69	OFF	OFF	ON
2.84	2.00	ON	ON	OFF
3.32	2.36	OFF	ON	OFF
3.79	2.69	ON	OFF	OFF
4.20	3.00	OFF	OFF	OFF

SW4: off=Half Current; on=Full Current
Pulse/rev Table

Pulse/rev	SW5	SW6	SW7	SW8
400	OFF	ON	ON	ON
800	ON	OFF	ON	ON
1600	OFF	OFF	ON	ON
3200	ON	ON	OFF	ON
6400	OFF	ON	OFF	ON
12800	ON	OFF	OFF	ON
25600	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
25000	OFF	OFF	OFF	OFF

VDC: +18V--+50V



PWR/ALM

PUL+ (+5V)

PUL- (PUL)

DIR+ (+5V)

DIR- (DIR)

ENBL+ (+5V)

ENBL- (ENB)

Signal

Setting

Power

SW8

SW7

SW6

SW5

SW4

SW3

SW2

SW1

DC-

DC+

A+

A-

B+

B-



