

User Guide for 3 axis TB6560 driver board

Product Features:

- Toshiba TB6560AHQ chip - High power, maximum **3A** drive current chipset !
- 1-1/16 microstep setting - Higher accuracy and smoother operation than standard 1, 1/2 step!
- Adjustable drive current settings for each axis - 25%,50%,75%,100% of full current can be set for different stepper motors
- Overload, over-current and over-temperature safety - Full protection for your computer and peripheral equipment !
- On board current switching - Power output can be set according to specific user requirement !
- Full closed-type optical isolation to protect the user's computer and equipment
- Relay spindle interface - Outputs Max. 36V 7.5A for spindle motors or coolant pump (only one device can be powered by this output!)
- 4 channel inputs interface- Can be used for XYZ limit and emergency stop !
- Professional design - Two stage signal processing with super anti-jamming !
- Bipolar constant current chopper drive with non-resonant region - Controls motors smoothly through range without creep effect !
- Four control inputs (divided into pairs of knives) - Allows setting of limit and emergency stop !
- Universal architecture - Supports most parallel software MACH3,KCAM4,EMC2 etc!

Dip settings: ON – '0' OFF – '1'

	1	2		3	4		5	6
Current Setting	TQ1	TQ2	Decay Mode Settings	DCY2	DCY1	MicroStep Settings	M2	M1
100%	ON	ON	Normal 0% FAST	ON	ON	1	ON	ON
75%	OFF	ON	25%	ON	OFF	1/2	ON	OFF
50%	ON	OFF	50%	OFF	ON	1/8	OFF	OFF
20%	OFF	OFF	100% SLOW	OFF	OFF	1/16	OFF	ON

Important Notes:

- Power supply DC **12-34V** (not included)

**Voltage Selection:*

12-16V DC power supply for Nema 17 stepper motors

16-24V DC power supply for Nema 23 stepper motors

24-36V DC power supply for Nema 34 stepper motors

(High voltage will burn up the chips or stepper motors!!!)

**Ampertage Selection:*

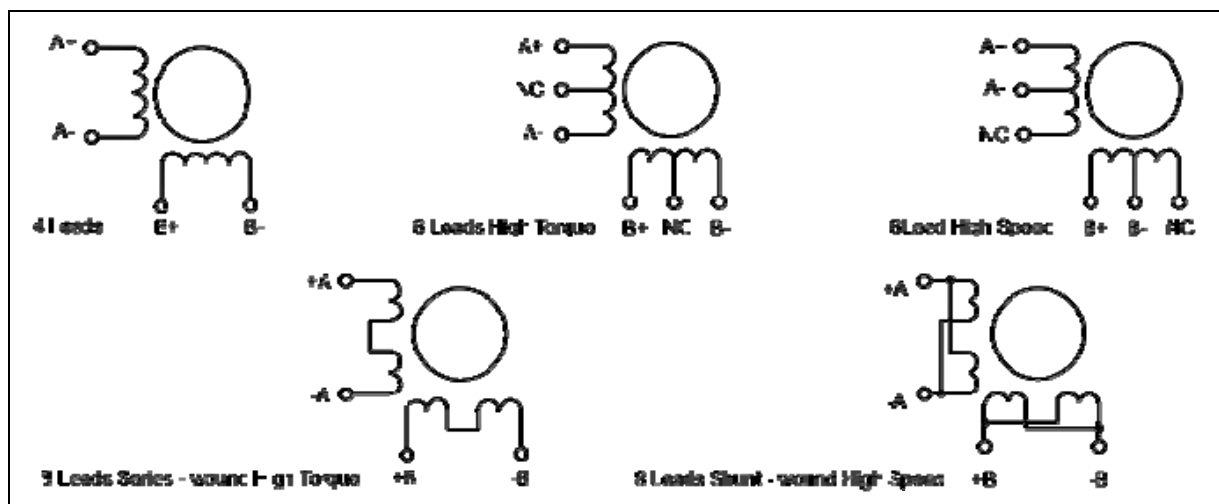
Output current of the power supply can be calculated by the following expressions:

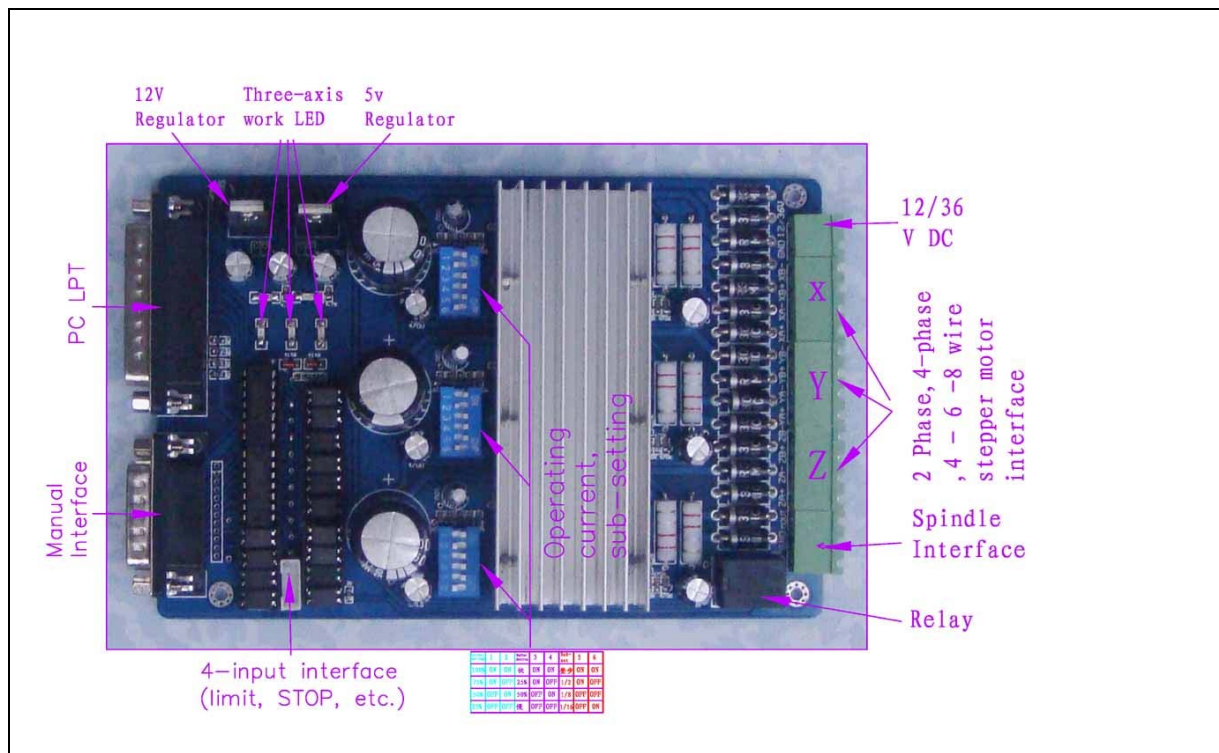
*Output current = Rated current of your stepper motors * quantity + 2A*

*(For example, if you want to drive 3 * 3A Nema 23 stepper motors, theoretically 24V 11A DC power supply is recommended, but higher power such as 24V 15A also will be good.*

If you are not sure about the selection of power supply, please feel free to contact us for help)

- The power output of 12V shall be applied to the radiator fan of 12V
- Driver output compatible with 2 or 4 phase, 4,6 or 8 lead stepper motors, 3A max.
- Suitable for unipolar or bipolar stepper motors.
- Voltage regulated spindle speed controlled by parallel interface as function of supply voltage.





The definition of 1-PIN 25 (25) of Parallel Interface:

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8	Pin9	Pin10	Pin11	Pin12
X Step	Y Enable 1 – Enabl 0 - Disabl	Y Dir	Z Dir	Z Step	Z Enable 1 – Enabl 0 - Disabl	X Dir 1 – CW 0 - CCW	Y Step	spindle motor 1 - ON	X Home	Y Home	Z Home

Pin13	Pin14	Pin15	Pin16	Pin17	Pin18	to	Pin25
EStop	X Enable 1 – Enabl 0 - Disabl	Expand input1	Expand output 1	Expand output2	GND	GND	GND

The definition of 1-PIN15 (15) of Manual Interface:

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8	Pin9	Pin10	Pin11	Pin12	Pin13	Pin14	Pin15
X Step	X Enable	Spindle Motor	X Dir	Y Enable	Z Dir	Z Step	Z Enable	VDD +5V	GND	EStop P13(25)	Y Step	Y Dir	Z Home P12(25)	Y Home P11(25)

The definition of 4 channel inputs interface:

Pin1	Pin2	Pin3	Pin4	Pin5
GND	EStop	Z Home	Y Home	X Home
	Pin13(25) Pin11(15)	Pin12(25) Pin14(15)	Pin11(25) Pin15(15)	Pin10(25)

Limit setting for reference:

Signal	Enabled	Port #	Pin Number	Active Low	Emulated	HotKey
X ++		1	10			0
X --		1	10			0
X Home		1	10			0
Y ++		1	11			0
Y --		1	11			0
Y Home		1	11			0
Z ++		1	12			0
Z --		1	12			0
Z Home		1	12			0
A ++		1	0			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)

Signal	Enabled	Port #	Pin Number	Active Low	Emulated	HotKey
Input #4		1	0			0
Probe		1	0			0
Index		1	0			0
Limit Ovrd		1	0			0
EStop		0	13			0
THC On		1	0			0
THC Up		1	0			0
THC Down		1	0			0
OEM Trig #1		1	0			0
OEM Trig #2		1	0			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)

The definition of output Interface:

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8	Pin9	Pin10	Pin11	Pin12	Pin13	Pin14	Pin15	Pin16	Pin17
VDD	GND	XA+	XA-	XB+	XB-	YA+	YA-	YB+	YB-	ZA+	ZA-	ZB+	ZB-	MO/ V+	GND	MO -

Instructions of *MACH3*

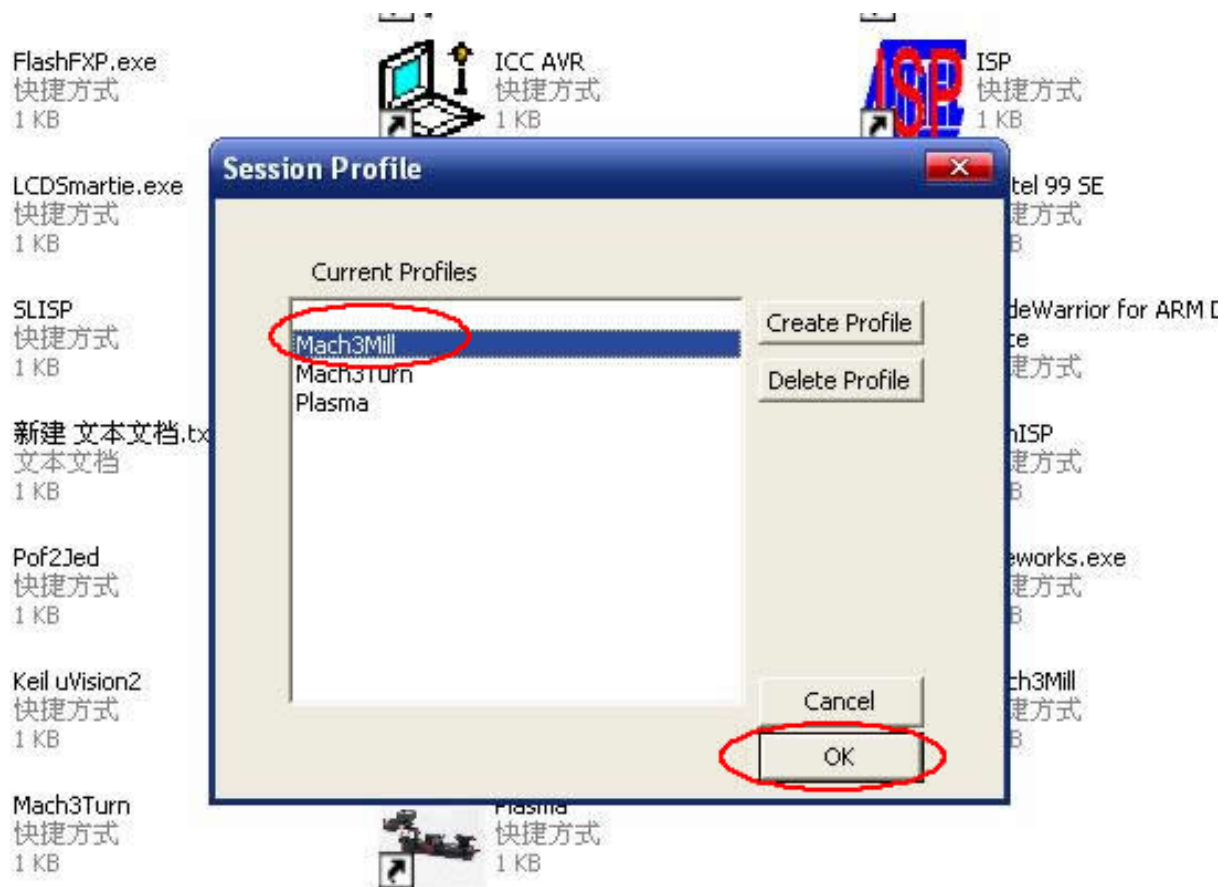


Fig.1

Open *MACH3* software, select *mach3MILL*, and then click *OK*. Please refer to Fig.1

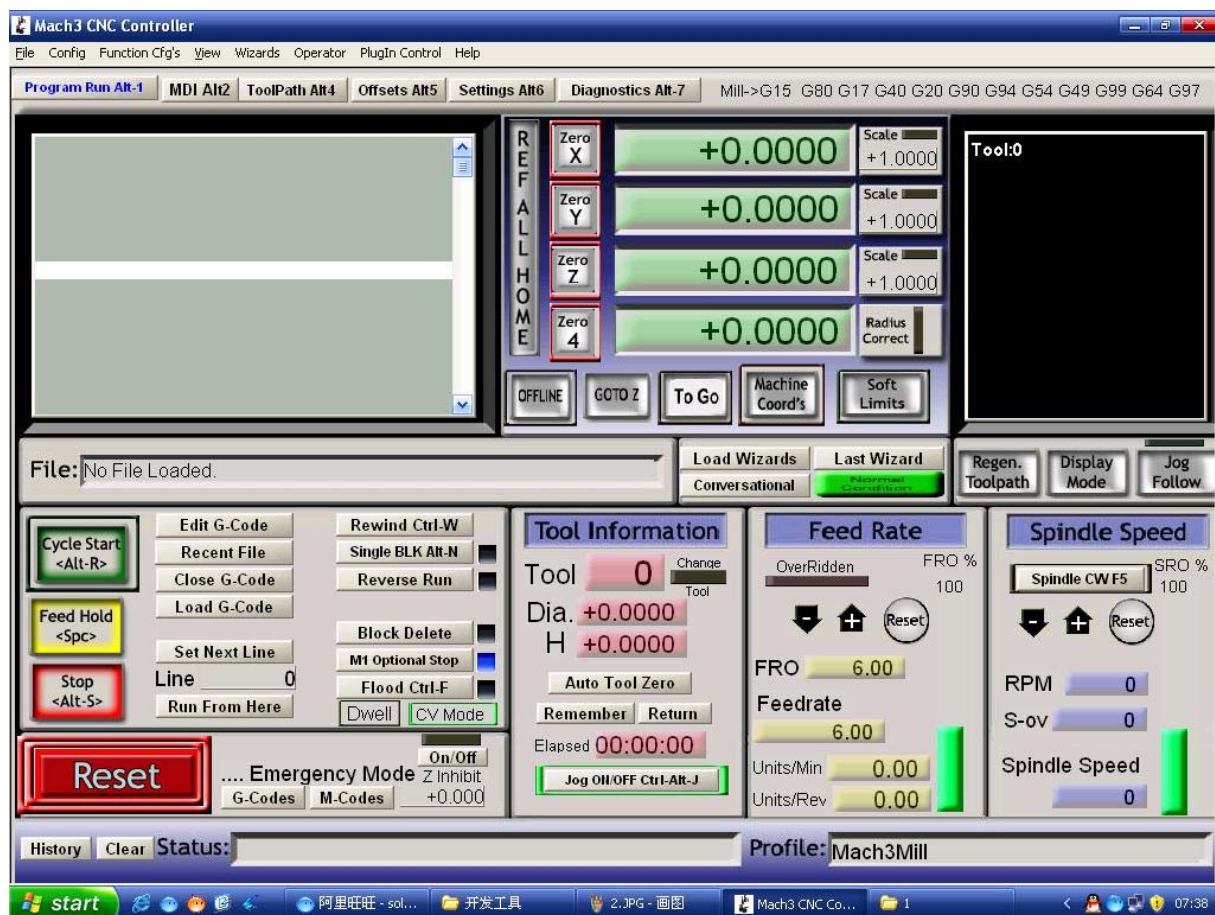


Fig.2

The interface of *MACH3* is displayed as Fig.2. The frequently-used action buttons are listed on the interface. We can configure *MACH* software at first.

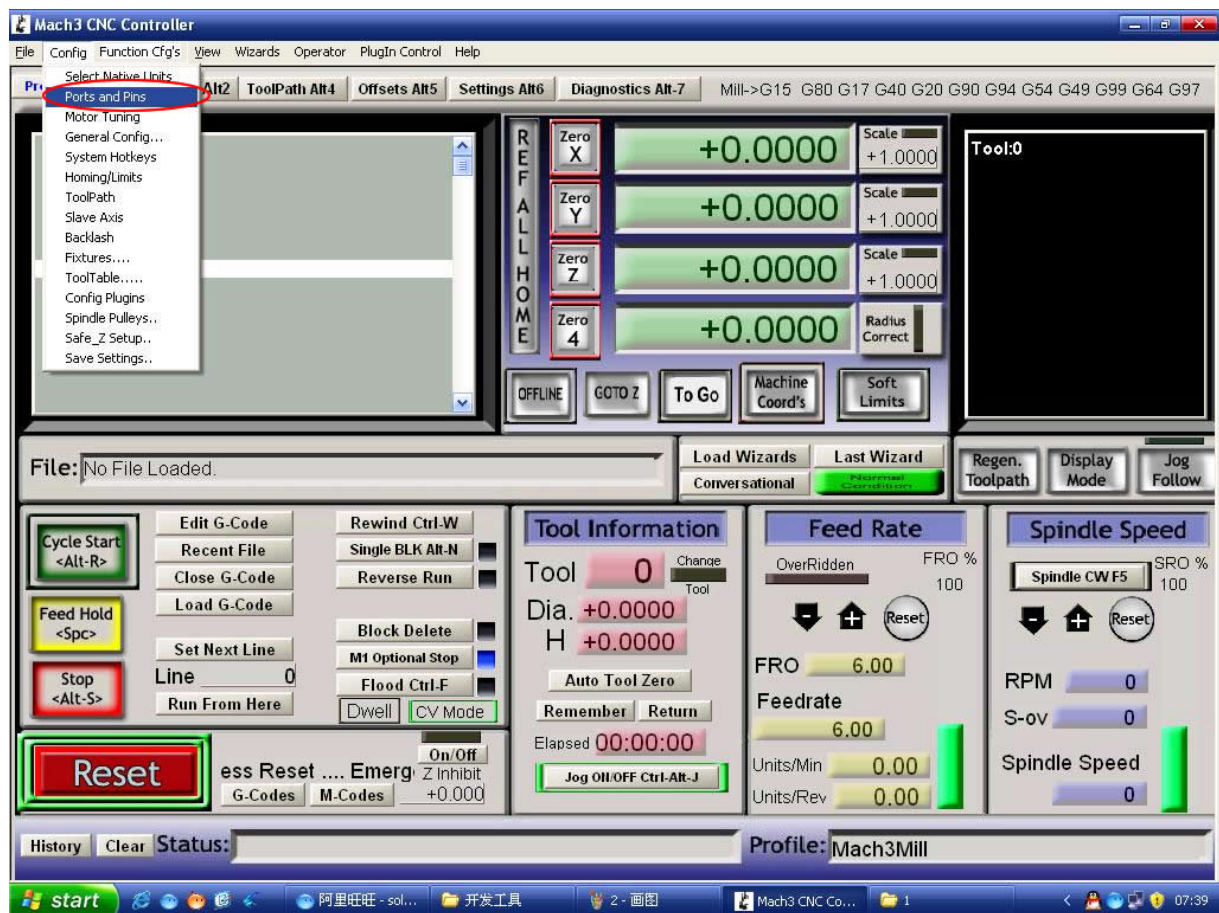


Fig.3

Click *PORT & PIN* sub-menu of *config* menu. Please refer to Fig.3.
Please refer to Fig.4

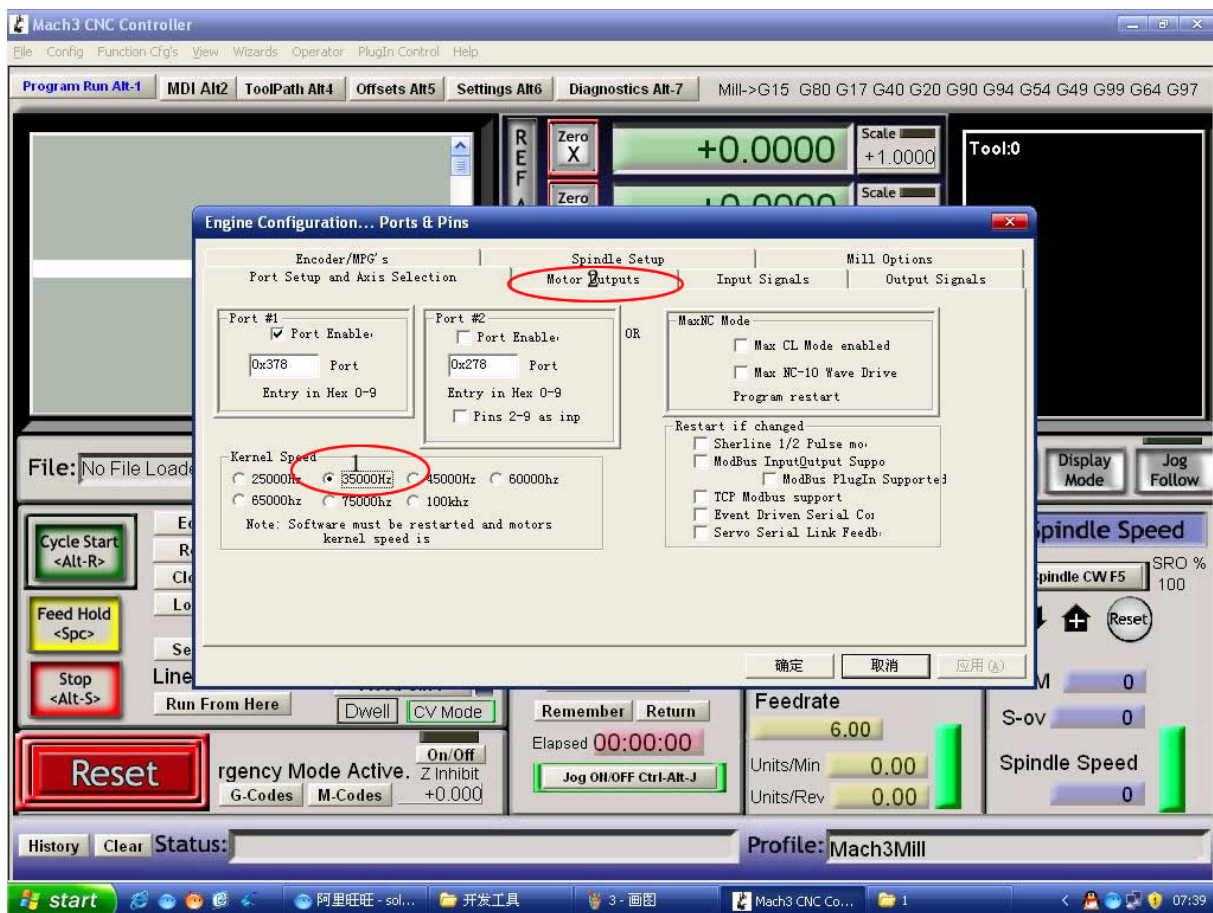


Fig.4

To set up the basic frequency within the above Circle 1. This parameter will affect the rotational speed of the motor. After the setup of basic frequency, select Circle 2 where *Configuration Scripting* will be defined, please refer to Fig.5.

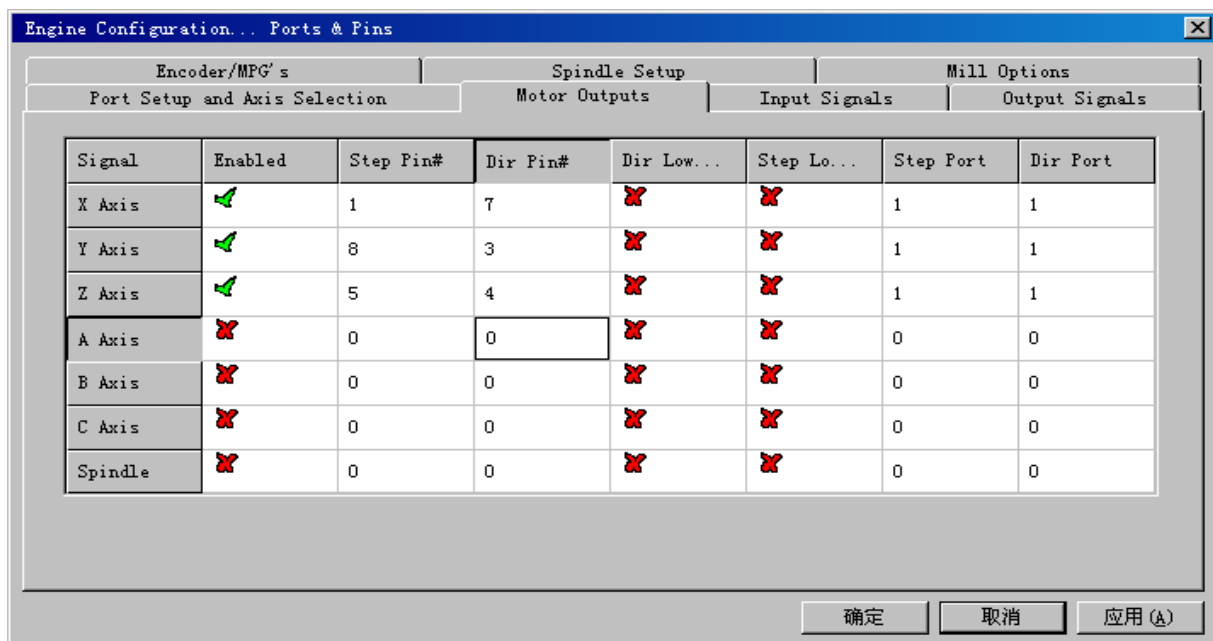


Fig.5

To modify the software settings according to the definition of Parallel Interface which is detailed in the above circle.

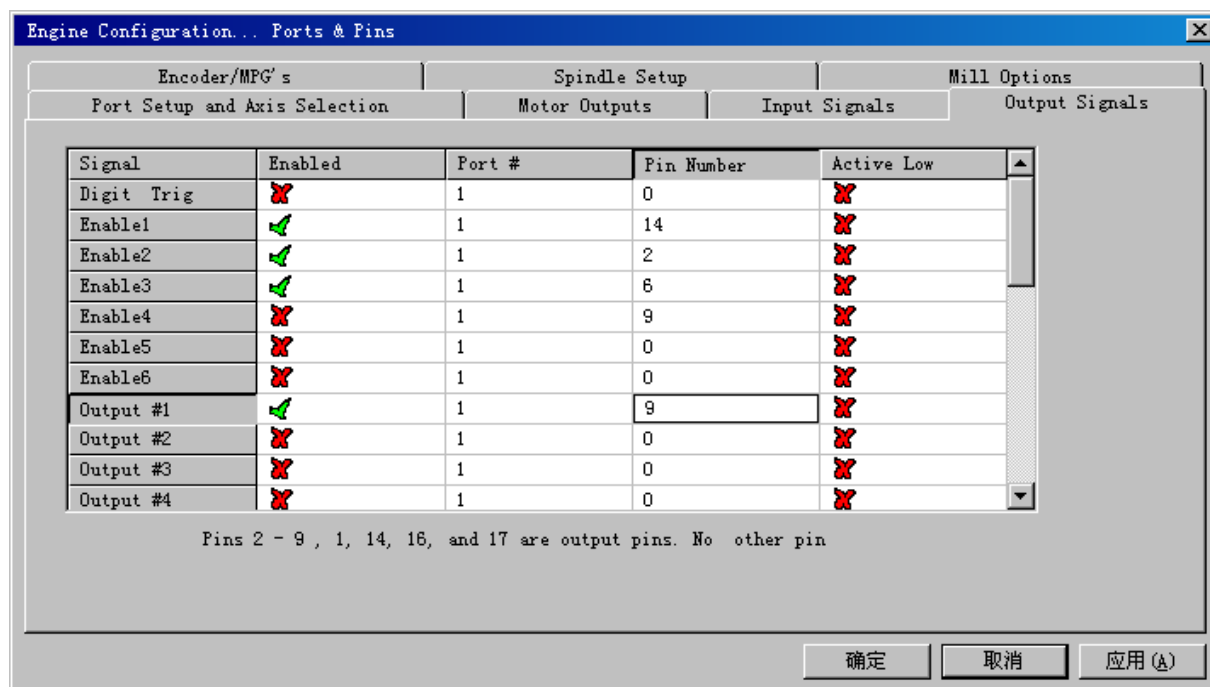


Fig.6

Then select the *output signals* column, as shown in Fig.6, and set up the corresponding items per the setup described in the circle.



Fig.7

After all have been set up, open the G CODE that needs to run, as shown in Fig.7

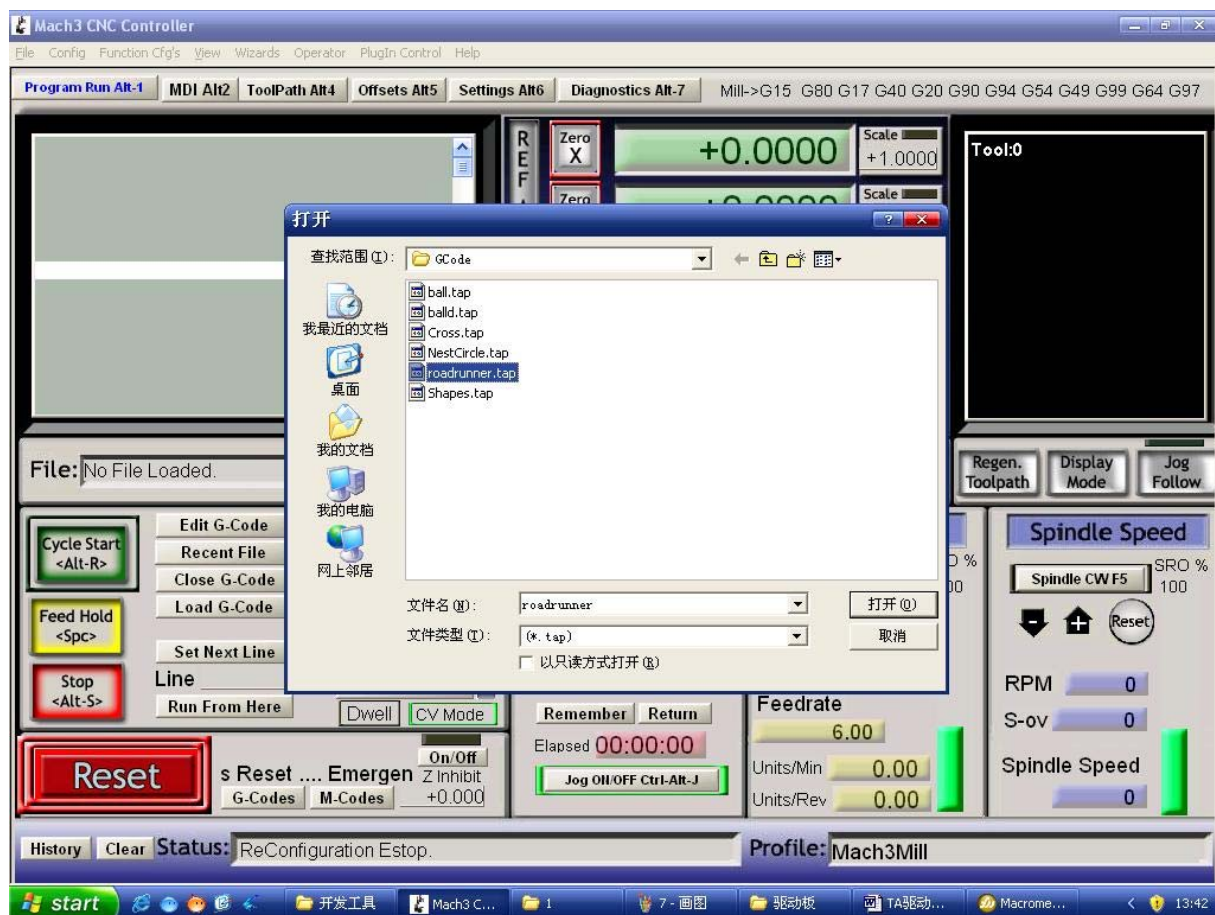


Fig.8

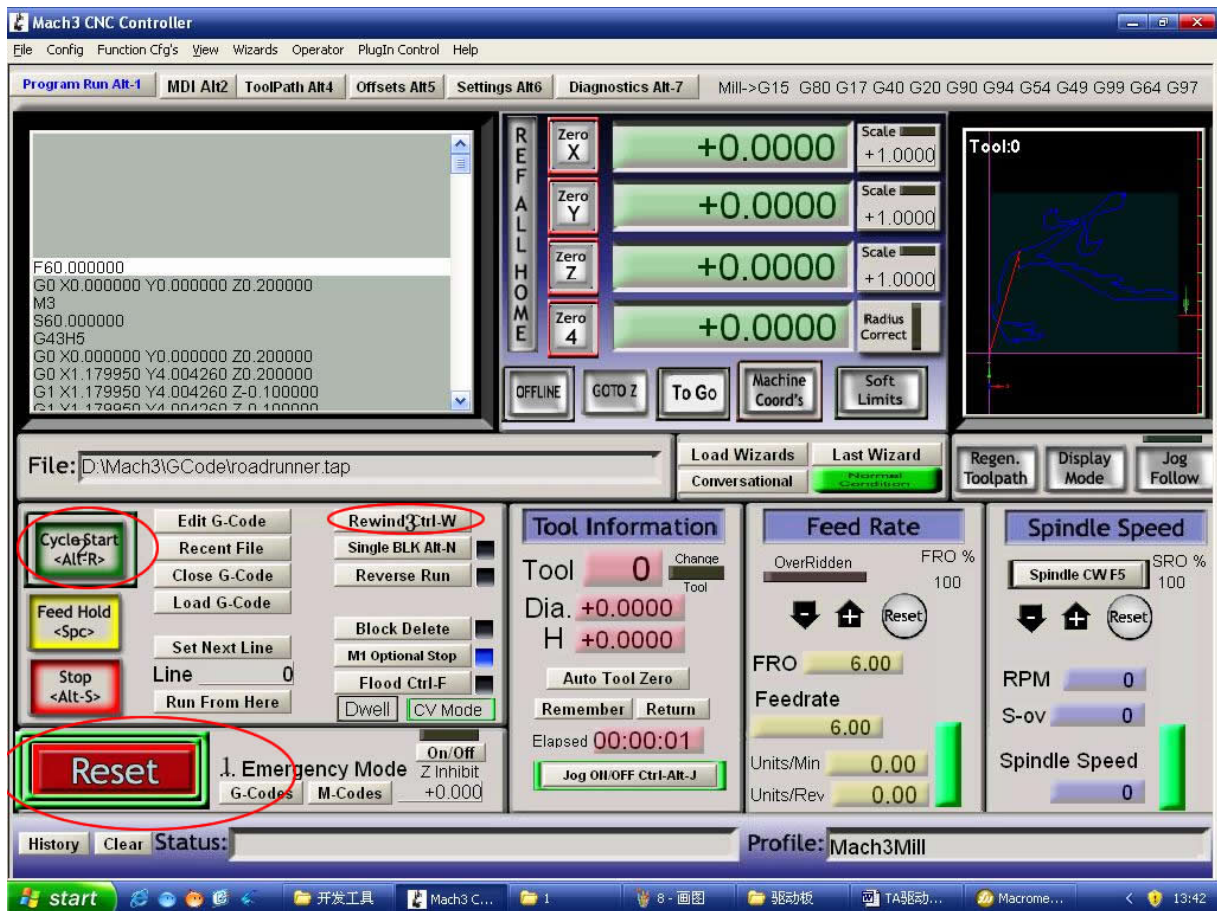


Fig.9

After G CODE has been opened, you may see the red button RESET flashing. Click RESET to stop the flashing and then press CYCLESTART at the location of Circle 2

***Simple solutions if the driver does not work properly:**

- Please double check the software settings according to the Fig.5 and Fig.6
- Please confirm the parallel cable has been plugged tightly
- Please turn off the power supply before changing dip settings
- Please use stable high quality DC power supply for this driver
- Problems in Mach3 using, Please refer to the Mach 3 User Manual
- If problem persists, please feel free to contact us!