



# Steel structure high precision 4th axis installation instructions -MACH3 USB



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Step1 Install the 4th axis on the machine table

## 1 The 4th axis is shown below:



2 The 4th axis is fixed on the worktable with several clamps







3 Connect the two wires of the 4th axis to the interface of the

#### controller







## Step2 Mach3 installation and setting

### **1 Download MACH3**

Download MACH3 from our official website

wwww.china-cncrouter.comor you can directly install MACH3 from CD,

or get from the seller.

### 2 Install MACH3

Do not choose parallel port driver



Select Packages Flease select the program features that	you want to install.
Progran Features Parallel Port Driver V Nizards XML's LazyCan Screen sets Standard Mach3Turn screen Standard Mach3Mill screen Standard Mach3 Plasma screen	Installs the Parallel Port Driver. This is not needed for external motion control devices. ( 328 KB )
Total space required: 39.5 MB	:k Mext > Cancel

After installation finished ,Connect USB cable between controller box

and computer. Copy NcUsbPod.dll from USB card driver file to

MAC3/PlugIns file .This file to enable USB motion card.

名称 ^	修改日期	类型	大小	
NcUsbPod.dll	2018/1/15 16:13	应用程序扩展	420 KB	
EXHC-MKX-V drive V2.58.4.zip	2018/6/11 14:34	好压 ZIP 压缩文件	197 KB	
1+ (F:) Program Files IVIACHS	Plugins			<b>T</b>
+ (F:) Program Files MACHS	▶ Plugins			• •
+ (F:) Program Files → MACHS 共享 ▼ 新建文件夹	◆ PlugIns 修改日期	光刑	*/\	• •
+ (r:) Program Files → MIACH3 共享 ▼ 新建文件夹 称	Plugins 修改日期	类型	大小	
H (F;) Program Files → MACH3 共享 ▼ 新建文件夹 称 Flash.dll	Plugins 修改日期 2008/7/16 3:01	<u>类型</u> 应用程序扩展	大小 1,070 H	CB
件 (F:) Program Files → MACH3 共享 ▼ 新建文件夹 称 Flash.dll JoyStick.dll	Plugins 修改日期 2008/7/16 3:01 2007/9/5 4:33	类型 应用程序扩展 应用程序扩展	大小 1,070 k 180 k	CB CB
共享 ▼ 新建文件夹 称 ③ Flash.dll ④ JoyStick.dll ◎ NcUsbPod.dll	Plugins 修改日期 2008/7/16 3:01 2007/9/5 4:33 2016/10/13 9:43	类型 应用程序扩展 应用程序扩展 应用程序扩展	大小 1,070 H 180 H 272 H	CB CB CB
件(F:) Program Files MACH3 共享 ▼ 新建文件夹 添 ↓ Flash.dll ↓ JoyStick.dll ↓ NcUsbPod.dll ↓ PrinterScope.dll	Plugins 修改日期 2008/7/16 3:01 2007/9/5 4:33 2016/10/13 9:43 2008/10/26 22:55	类型 应用程序扩展 应用程序扩展 应用程序扩展 3 应用程序扩展	大小 1,070 k 180 k 272 k 256 k	CB CB CB CB CB
供 (F:) Program Files → MACH3 共享 ▼ 新建文件夹 S称 S Flash.dll S JoyStick.dll NcUsbPod.dll PrinterScope.dll TurnDiags.dll	Plugins 修改日期 2008/7/16 3:01 2007/9/5 4:33 2016/10/13 9:43 2008/10/26 22:56 2008/10/26 23:33	类型 应用程序扩展 应用程序扩展 应用程序扩展 の用程序扩展 3 应用程序扩展 1 应用程序扩展	大小 1,070 H 180 H 272 H 256 H 256 H	<ul> <li>CB</li> <li>CB</li> <li>CB</li> <li>CB</li> <li>CB</li> <li>CB</li> <li>CB</li> <li>CB</li> </ul>



At last, click reset button to keep it green , let machine can normal work.



#### 3 Mach3 software setting

#### Method 1:

Copy mach3mill.xml fromSetting file we gave to the filewhere Mach3

installed, The file is used to basic software setting .

3 🕨 芯合成V2.38.8 🕨 English Man	ual ► Mach3 config file ►	4 axis card mk4	config	+
共享 ▼ 新建文件夹				
名称	修改日期	类型	大小	
🔮 Mach3Mill	2016/10/13 9:43	XML 文档	150 KB	

Then all setting will be done, machine ready to work.

#### Method 2: manually setting step by step:

First, X Y Z A Axis output configuration as below, select config, Ports and pins .



M C	ach3 CNC Demo			
File	Config Function Cfg's View	Wizards Op	perator PlugIn Control H	Help
-	Select Native Units	L (Alt-2)	Tool Path (Alt 4)	Offsets (Alt.5)
-	Ports and Pins	i (ritez)	root i un pric-ij	onsets (Mes)
Ι.	Motor Tuning			1
	General Config			<u>^</u>
	System Hotkeys			
	Homing/Limits			
	ToolPath			
	Slave Axis			
	Backlash			
	Fixtures			
	ToolTable			
	Config Plugins			
	Spindle Pulleys			
	Safe_Z Setup			<b>.</b>
	Save Settings			

Then ,make all setting as below:

Encoder/MPG's	Spindle Setup			Mill Options
Port Setup and Axis Selection Port #1 Port Enable Dx378 Port Entry in Hex 0-9 Kernel Speed C 25000Hz C 35000Hz C 45000Hz C C 65000Hz C 75000Hz C 100khz Note: Software must be restarted and kernel speed is	Motor Outputs Enable: Port Hex 0-9 2-9 as inp 60000hz motors	Input MaxNC Mode Pro estart if Sherli ModBus TCP Mo Event Servo	Signals Max CL Mode Max NC-10 War gram restart changed ne 1/2 Pulse : InputOutput [ ModBus P: odbus support Driven Seria Serial Link	Output Signals enabled ve Drive <sup>mo:</sup> Suppo lugIn Supportej 1 Co: Feedb:



fort Setu	ip and Axis Se	rection		Inputs	Input Signa	12	output Signais
Signal	Enabled	Step Pin#	Dir Pin#	Dir Low	Step Lo	Step Port	Dir Port
X Axis	4	2	6	4	4	1	1
Y Axis	4	3	7	4	4	1	1
Z Axis	4	4	8	4	4	1	1
A Axis	×	5	9	4	4	1	1
B Axis	*	10	11	4	4	0	0
C Axis	*	12	13	4	4	0	0
Spindle	4	0	0	4	4	0	0

En	.coder/MPG's		Spindl	e Setup		Mill	Options
Port Set	up and Axis Sel	lection	Motor Outp	uts	Input Signals	·	Output Signals
Signal	Enabled	Port #	Pin Number	Active Low	Emulated	HotKey	
X ++	<b>X</b>	1	0	4	X	0	
X	<b>X</b>	1	0	4	X	0	
X Home	4	1	0	4	X	0	
Y ++	X	1	1	X	X	0	
ү	<b>X</b>	1	1	X	X	0	
Y Home	4	1	1	4	X	0	
Z ++	*	1	2	X	X	0	
z	X	1	2	X	X	0	
Z Home	4	1	2	4	X	0	
A ++	*	1	0	×	X	0	
	n.n		-	b.n	ha	1	
	Pins 10-13 (	and 15 are inp	uts. Only these	5 pin numbers	may be Automat	ed Setup of	Inputs



Enco	der/MPG's		Spindl	e Setup		Mill Op	tions
Port Setup	and Axis Sel	lection	Motor Outp	uts	Input Signals	01	itput Signals
Signal	Enabled	Port #	Pin Number	Active Low	Emulated	HotKey	~
C	X	1	0	X	X	0	
C Home	X	1	0	X	X	0	
Input #1	X	1	0	X	X	0	
Input #2	×	1	0	X	X	0	
Input #3	×	1	0	X	X	0	
Input #4	X	1	0	X	X	0	
Probe	4	1	4	4	8	0	
Index	*	1	0	X	8	0	
Limit Ovrd	*	1	0	X	X	0	
EStop	4	1	5	4	X	46	
		der.		1 646	- Buin	5.	1020)
	Pins 10-13 «	and 15 are inp	uts. Only these	5 pin numbers	may be		
					[	10.0.00	
					Automate	a setup or 1	nputs

Encoder,	/MPG's	Sp.	indle Setup	Mi	11 Options
Port Setup and	l Axis Selection	Motor	Outputs   Inj	put Signals	Output Signal
Signal	Enabled	Port #	Pin Number	Active Low	~
Enable4	X	1	0	X	
Enable5	X	1	0	X	
Enable6	X	1	0	X	
Output #1	4	1	0	4	
Output #2	4	1	1	4	
Output #3	4	1	2	4	
Output #4	4	1	3	4	
Output #5	4	1	4	4	
Output #6	4	1	5	4	
Charge Pump	X	1	0	X	
Charge Pump2	X	1	0	X	~
Pin	s 2 - 9 , 1, 14, 1	6, and 17 are ou	ttput pins. No other	pin	

Motor parameter settings, X Y Z Axis setting is completely same, A Axis

## needs to change Settings



File	Config Function Cfg's View	Wizards	Operator	PlugIn Control	Help
	Select Native Units Ports and Pins	l (Alt-2)	Too	l Path (Alt-4)	Offsets (Alt-5)
	Motor Tuning				
	General Config				<u>^</u>
	System Hotkeys				
	Homing/Limits				
	ToolPath				
	Slave Axis				
	Backlash	1 mar	_		
	Fixtures				
	ToolTable				
	Config Plugins				
	Spindle Pulleys				
	Safe_Z Setup				+
	Save Settings				









A axis before setting





#### Before setting



#### Input Signals for mechanical limit, Estop, Probe, Noted: The

machine did not support Motor Home/Soft limit, So no need to set.



Signal	Enabled	Dort #	Din Number	Active Low	Emulated	HotKe	21/		
Y TT	Linabled	2	1	ACTIVE LOW		0	-y	H	
X	4	2	1	4	X	0			
X Home	*	2	1	4	X	0			
V ++	4	2	2	4	X	0			
v	4	2	2	4	X	0			
V Home	×	2	2	4	×	0			
7 ++	4	2	3	4	X	0			
	Pine 10-12	- -	ute Only these	F ais suchaus	nu ha	1		*	
					 确定	1	取消		应用
C C .	·	D'	and the second second	-					
e Configurat	tion Ports &	Pins		the states					1
Enco	oder/MPG's		Spindl	e Setup	) Tarant Si = 12-	Mi	11 Opti-	ons	
Port Setu	p and Axis Se	Lection	Motor Uut	puts	Tubar Signars		Uutp	ut S	1 gnal 5
Signal	Enabled	Port #	Pin Number	Active Low	Emulated	HotKe	ey 🛛	*	
Z ++	4	2	3	4	×	0		=	
Z	4	2	3	4	X	0			
Z Home	×	2	3	4	X	0			
A ++	×	0	0	X	X	0	50) (1)		
A	×	0	0	X	X	0			
A Home	×	0	0	×	X	0			
B ++	×	0	0	×	×	0		-	
	Ping 10-13 a	and 15 are int	uts Only these	te= 5 nin numbers	mar ha	1.		07.001	
			,	o prin manoura	ing or				
					确完	1	面消		டின்⊞
							47.71		лин
e Configurat	tion Ports &	. Pins	and the second		and a state of the second			No.	
Enco	oder/MPG's	1	Spindl	e Setup	1	Mi	11 Opti	ons	
Port Setu	p and Axis Se	election	Motor Out	puts	Input Signals		Outp	ut S	ignals
Signal	Enabled	Port #	Pin Number	Active Low	Emulated	HotKe	ey 🛛	*	
Input #3	X	0	0	X	X	0			
Input #4	X	0	0	X	X	0			
Probe	4	2	10	4	X	0		H	
Index	×	0	0	X	X	0			
Limit Ovrd	×	0	0	×	X	0	-		
Eften	4	2	16	4	X	0			
LSIOP	*	0	0	×	X	0			
THC On		U							

**Output Signals:** 



Encode Port Setup an	r/MPG's nd Axis Selection	Sp   Motor	indle Setup Outputs   Ing	Mil mut Signals	1 Options Output Signa
ignal	Enabled	Port #	Pin Number	Active Low	<u> </u>
Digit Trig	×	2	0	<b>X</b>	E
inable1	4	2	16	4	
nable2	4	2	15	4	
inable3	4	2	13	4	
inable4	4	2	14	4	
nable5	*	2	13	*	
nable6	*	2	0	×	
<b>`</b> #1	2	2	16	2	<b>-</b>
Pi	ns 2 - 9 , 1, 14, 16	5, and 17 are ou	utput pins. No other	pin	

Encode Port Satur or	r/MPG's ad Avis Salastian	Sp Sp	indle Setup Outputs   Tra	M Nimola	Mill Options		
fort Setup a	ad Axis Selection		outhous   114	out Signars	and a second		
Signal	Enabled	Port #	Pin Number	Active Low	<u>^</u>		
Enable4	4	2	14	4			
Enable5	×	2	0	×	=		
Enable6	×	2	0	×			
Output #1	*	2	0	*			
Output #2	*	2	0	X			
Output #3	<b>X</b>	2	0	X			
Output #4	×	2	0	×			
Outout #5	2	2	0	*	<b>T</b>		
Pi	ns 2 - 9 , 1, 14, 1	6, and 17 are ou	tput pins. No other	pin			



## Spindle speed control as below:

Spindle speed control	Motor Outp Spindle	uts 5 Setup	Inp	it Signals	w111	Output Option
Kelay Colomed Selection For Disable Spindle Rel Clockwize Output 1 CCW (N4) Output 2 Dutput Signal #'s Flood Wist Control ✓ Disable Flood/Mist reDelay Wist Output 4 0 Flood Output 3 0 Output Signal #'s ModDus Spindle - Use Step/Dir as 4 Fanbled Reg 64 64 - Mar ADC Count 16380	Notor Control Vue Spindle Motor Vue Spindle Motor Vul Control Step/Dir Moto PMMBase Freq. 10 Minimum FMM 1 3 General Parameters CM Delay Spin UP CCW Delay Spin UP CCW Delay Spin DOWN CCW Delay Spin DOWN CCW Delay Spin DOWN CCW Delay Spin DOWN	Out;	Special Fu Vas Spi Closed P 0.25 Spindle PWM pa Seconds Seconds Seconds Seconds Seconds Seconds Seconds Seconds	nctions ndl+ Feedback Loop Spindle I I I I Speed Avera rameter set Special Op HotYire Lawr W Torch V Torch V	k in Syn Cont D 0.3 gi tions, 1 Heat fo tode. fr Yolts Cor vato Of	e M Jually or J ats
				确定	1 80	调

## USB Motion control card configuration

	Config Function (	fg's ۱	View	Wizards	Operator	PlugIn Control	Help	
	Select Native Ports and Pins Motor Tuning General Confi System Hotke Homing/Limits	Units ; g ys		I (Alt-2)		I Path (Alt-4)	Offsets	(Alt-5)
	ToolPath Slave Axis Backlash Fixtures ToolTable						-	
l	Config Plugins							
	Spindle Pulley Safe_Z Setup., Save Settings,	s						-



×

IgIn Control and Activation				
Enabled	PlugIn Name	Config		
4	Flash-FlashScreen-SWF-PlugIn-A.FenertyBBar	CONFIG		
X	JoyStick-JoyStick-PlugInArt-Fenerty-Ver-1.0a	CONFIG		
4	NcUsbPod-XHC-Mach3-USB-Motion-Card -	CONFIG		

XHC-USB-Motion-Card-V2.58.4



At last, Open

software ,Choose"NcUsbPod-XHC-Mach3-USB-Motion-Card",andChoo

se "Don't ask me this again"



Your system is showing more	than one control device
Please pick the one you wou	Id like this profile to use.
C Normal Printer port	Operation.
ReUsbPod-XHC-Ma	ach3-USB-Motion-Card
G No Device	Choose
C No Device	"NcusbPod-XHC-Mach3-USB-Motion-Ca
○ No Device	
Dont ask me this again	ок

All above, The MACH3 installation and setting is finished.

# Detail

Maximum clamping diameter of three-jaw chuck is 60mm

