Manual KL-Series CNC

KL-6090 | KL-1212 | KL-1325 Versions

Welcome

Automation Technology Inc. is a supplier of motion control and CNC equipment. Featuring both the best of domestic American motion control brands, as well as high-value imported machine components. Automation Technology Inc. has the devices you need, in stock in America, and ready to ship. With inhouse engineering expertise, amazing prices and our new online presence, we hope to be your first choice in motion control!

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Mach3 CNC Control Software

Mach3 turns a typical computer into a 6-axis CNC machine controller. It is very rich in features, works on most Windows PC's, and is customizable for many applications. Mach3 is the most intuitive CNC control software available.

Download Mach3

Go to Mach3 website and download the newest Mach3 version.

http://www.machsupport.com/software/downloadsupdates/

Install Mach3

Once downloaded, run the installation of Mach3.





1



No need to set up a custom profile. We will set one up here in a few minutes.



It is best to leave the default installation location.

3	Mach3 Setup	×
Installing Mach3 Please wat		
Installing Files Seeking		
		Çancel

5		Mach3 Set	up	×
Install Informatio Please read the fol	n Iowing information			
Installing Instaling the parali Please press the N	Parallel P el port driver. lext button and on	Port Driver	hie may take a minute.	
			- North	Consul

5	Mach3 Setup	×
Install Information Please read the follo	wing information.	C.C.
Installing	DriverTest	1
Installing the parall Please press the N	No Driver sensed installed. Run DriverTest.	
	ОК	



Creating a machine profile

Open Mach3 Loader from your desktop. You're going to want to create a new profile and load the default settings to begin.



Click create profile.

Crea	ate Profile	×
Clone From Mach 3Mill Mach 3Turn Plasma Screen 4	New Profile Name KL6090 Desktop C Default Profile Values Do not put any extension on the new profile	
ОК	Cancel	

Give your profile a name.





Check the box, and agree to the terms.

Configuring Mach3

Most of the important settings you will be changing are in the Config tab. Make the nessary changes to match the screenshots below.

Click Config > Ports & Pins to start.



Set Motor Output pins

Signal	Enabled	Step Pin#	Dir Pin#	Dir LowActi	Step Low A	Step Port	Dir Port
X Axis	4	4	5	4	4	1	1
Y Axis	4	6	7	×	4	1	1
Z Axis	4	8	9	×	4	1	1
A Axis	×	0	0	×	×	0	0
B Axis	×	0	0	×	×	0	0
C Axis	×	0	0	×	x	0	0
Spindle	4	1	0	×	4	1	1

Set Input Signals, Probe, Estop



Set Output pins



Spindle Setup

Relay Control Disable Spindle Relays Clockwise (M3) Output # 2 CCW (M4) Output # 1 Output Signal #'s 1-6	Motor Control	Special Fund Use Spin Closed Lo P 0.25	tions dle Feedback in Sync Modes oop Spindle Control I 1 D 0.3 ipeed Averaging
Bood Mat Cortrol Image: Cortro Image: Cortrol Image	Minimum PWM I X General Parameters CW Delay Spin UP CW Delay Spin UP UW Delay Spin DOWN CW Delay Spin DOWN CW Delay Spin DOWN CW Delay Spin DOWN	Seconds Seconds Seconds Seconds e delay	Special Options, Usually Off - HotWire Heat for Jog Laser Mode freq 1 Torch Volts Control Torch Auto Off

Motor Tuning

The next settings to set up are in Motor Tuning. These are ballpark values and you will be calibrating them in a littlw while. Make the nessary changes to match the screenshots below.

Click Config > Motor Tuning to start.





Movement Test

At this point you've got almost all settings defined. You should now be able to jog the machine around using the arrow keys along with Page Up and Page Down.

Right Arrow = Jogs X+ Left Arrow = Jogs X-Up Arrow = Jogs Y+ Down Arrow= Jogs Y-Page Up = Jogs Z+ Page Down = Jogs Z-

Axis Calibration

Next up, you are going to really dial in the tuning of the machines' axis. You're going to need a ruler, tape measure, or other precision measuring device. You will be doing this for all axes. And it's best to do a few times. And remember decimal places are very important. What you need to do is take your measuring device and lay it on the table parallel to the axis you are going to calibrate. Jog the machine to line up an edge to a number on the measuring device. (you may need to switch tabs to Program Run to jog the machine)Lets start with X. Click the Settings tab in Mach3 and navigate down to the button, Set Steps per Unit.

MR 7] MR -015 01 017 G46 020 030 034 054 G49 029 054 037
Carbon Relations Relation Relations Carbon Relations All + 00.0000 Carbon Relations Bl + 00.00000 Carbon Relations
VY Common 150,0000 V restance 141,0000 V/ restance 141,0000
HONOLONG AN A
Pick the axis you are
calibrating.

Input a small value, like 2. Once you press OK, the machine will jog to what it thinks is 2 inches.

How far wo	uld you like to Move the X Axis?
	1
	UK

Answer This:

Answer This:	Measure the amount the
How far did the X Axis move? (Measured Value) 375 0K	machine actually moved and input here.
Set Steps Per Unit	
X Axis Will be Set to 10835.103272 Step	s per Unit. Would you like to Accept it??
	Yes No

The machine will then automatically calculate the correct steps per unit you saw back in Motor Tuning.

You're going to want to run through this process multiple times per axis, each time increasing the distance. We usually suggest three or four times.

Alternatively, if you would like a video explaining please visit the following link. https://www.youtube.com/watch?v=EVrqObwaAF4

AutoTool Height Settings

In order for the auto tool height setting device to work (If equiped) we need to write a macro for it. Follow the following screenshots.

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Proprov Raw (MARY MAR (MARY) Second (MARY Second (MAR	Hinge (All 4) Responses (All 7) (All -CIS G3 G4 G17 G40 G20 G90 G94 G54 G49 G99 G64 G9	
	1 -20.5483 1000 1 +110.7680 1000 7 -225.9141 1000 7 -0.0000 1000 10 100 1000	
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Mach3 CNC Licensed To:		00
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Chail Cerly Chair Ve Monte File-Sio File Loaded	1 +0.0000 Anton 1560 East	
Rescue Local Conference Referen		



As you can see, this button is not yet programmed to work. The following page will have the code that needs to be typed in. (The whole left side of page)

uchPlateHeight represents the actual height of
Touch Plate from the work surface.
idjustments can be made for calibration pur- e caution)
teHeight = 0.57 '.57 inch for CNC Router ch Plate
"Auto Tool Zeroing")
Signal (22) Then
isMetric = GetOEMLED(801)
Zprobe = -3
Zretract = 1.5
ZfeedRate = 10
If isMetric = 0 Then
Zprobe = Zprobe * 25.4
Zretract = Zretract * 25.4
ZfeedRate = ZfeedRate *25.4
TouchPlateHeight = TouchPlate- 25.4
End If
Call SetDRO(2, 0.00)
code "G31 Z" & Zprobe & " F" & ZfeedRate
While IsMoving()
Wend
Call SetDRO(2, TouchPlateHeight)
code "G1 Z" & Zretract

The code shown below will need to be carefully measured by you and modified. You're going to measure the middle distance of the tool touch plate from bottom to the plate that the tool will be touching. Take the value of 0.57 and replace it with the value that you measured. Best if measured by precision digital calibers.

TouchPlateHeight = **0.57** '.57 inch for CNC Router Parts Touch Plate

> For more assistance please visit us at, www.automationtechnologiesinc.com Or give us a call at 1 (847) 882-2208