

## *iMach<sup>III</sup> P1A CNC Control Pendant*



## **PREFACE**

Any machine tool, including computer controlled machine tool, is potentially dangerous. Accepts no responsibility for any damage or injury caused by its use. It is your responsibility to insure that you understand the machine you are using and the procedures for safety operations.

If you are in any doubt you must seek guidance from a professionally qualified expert rather than risk injury to yourself or to others.

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## **WARNING**

E-STOP switch button in iMach<sup>III</sup> P1A CNC Control Pendant only provides Emergency STOP signal to Mach3 CNC application.

For further protection in CNC operation, other emergency protection methods may be needed.

## FEATURES

- Plug n' Play USB connection and controls.
- 100 steps high precision MPG.
- Step, Velocity and Continuous mode jogging through MPG.
- Feed rate, Spindle speed, and Slow Jog rate change through MPG.
- Quick step size selection.
- 4 Axis selections.
- E-Stop with flash LEDs indicator.

## PLUGIN

- Download the latest iMach3-P1A v3.x Plugin from [www.vistacnc.com](http://www.vistacnc.com) download page.
- Move the plugin file into Mach3 Plugins directory.

## CONNECTION and START

- Directly plug the USB cable into any USB port on the PC.
- Start Mach3 application.
- Click Config from menu, select Config Plugins, and enable iMach3-P1A-Pendant.
- Close Mach3 application and restart Mach3 application.

## FUNCTIONS and OPERATIONS

### 1. Axis, Step Size and Axis Zeroing

#### 1.1 Axis selection

Turn axis selection knob to X, Y, Z, or A position to select an axis to jog.

## 1.2 STEP SIZE selection



Turn axis selection knob to STEP SIZE mode. Turn MPG few steps to cyclically select the step size. Selected step size displays on Mach3 Screen. Different step sizes can be set up in PlugIn Configuration table.

## 1.3 Pendant offline mode.



Turn mode selection knob to Scr/Off position.

1.3.1 When axis selection knob is at X, Y or Z position, the pendant is in Offline mode, and any MPG signals are not sent to Mach3 application. Offline mode can be used to align the MPG wheel to a specific number with no axis movement.

❖ **When axis selection knob is in OFF position and the E-stop button is pressed down, the pendant will send E-stop signal to Mach3 application.**

1.3.2 When axis selection knob is at F%, S% or C% position, turning MPG few steps will open or close the Mach3 Screen TAB window.

## 1.4 Axis zeroing (v2 version)



When Axis Selection knob is at X, Y, Z or A position, turn MPG few steps to zero selected axis.

## 2. MPG (Manual Pulse Generator) mode

Turn mode selection knob to select MPG mode.

### 2.1 STEP / VELOCITY mode



**2.1.1** In STEP / VELOCITY mode, turning MPG wheel at higher speed automatically changes MPG mode from STEP mode to VELOCITY mode.

- ❖ ***To set to STEP only mode, select 0 in STEP to VELOCITY mode change sensitivity in Plugin Configuration Table..***
- ❖ ***Use MPG cap to turn the MPG wheel to get lower speed for STEP mode. Use MPG handle to turn the MPG wheel to get higher speed for VELOCITY mode.***
- ❖ ***STEP to VELOCITY mode change sensitivity can be set up in Plugin Configuration Table.***

**2.1.2** When in STEP mode, the selected axis moves 1 step at each MPG click (detent) with the step size currently in the system.

- ❖ ***A fixed feed rate which is only used in Step mode can be setup in PlugIn Configuration table. Set 0 to use the feed rate currently in the system.***

**2.1.3** When in VELOCITY mode, axis moves at 0 to 100% of maximum axis speed based on how fast the MPG wheel is turned.

- ❖ ***Speed change sensitivity in V mode can be set up in PlugIn Configuration table.***

## 2.2 VELOCITY mode

In VELOCITY mode, axis moves at 0 to 100% of maximum axis speed based on how fast the MPG wheel is turned.

- ❖ ***Speed change sensitivity in V mode can be set up in PlugIn Configuration table.***

## 2.3 CONTINUOUS mode

**2.3.1** In C mode, axis moves at constant speed with Slow Jog Rate. The axis movement is independent to the speed at which the MPG is turned.

- ❖ ***To avoid accidentally moving MPG and axis, the number of steps to delay the start of axis movement can be set in plugin configuration table.***

## 2.4 CONTINUOUS RATE mode C%

2.4.1 In C% mode, turning MPG changes the speed used in CONTINUOUS mode. The rate displays in Slow Jog Rate DRO (Digital Read Outs) on Mach3 Screen.

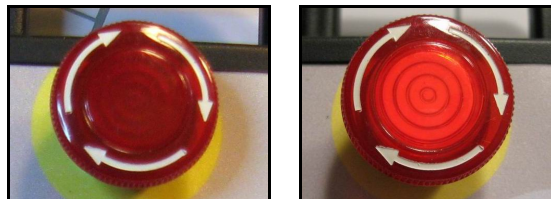
## 2.5 FEED RATE mode F%

2.5.1 In F% mode, turning MPG changes feed rate overridden (FRO) rate from 1% to 250 %. FRO rate can be changed when axes are moving.

## 2.6 SPINDLE SPEED mode S%

2.6.1 In S% mode, turning MPG changes spindle speed overridden rate from 1% to 250 %. Spindle speed can be changed when the spindle is running.

## 3. E-Stop switch button



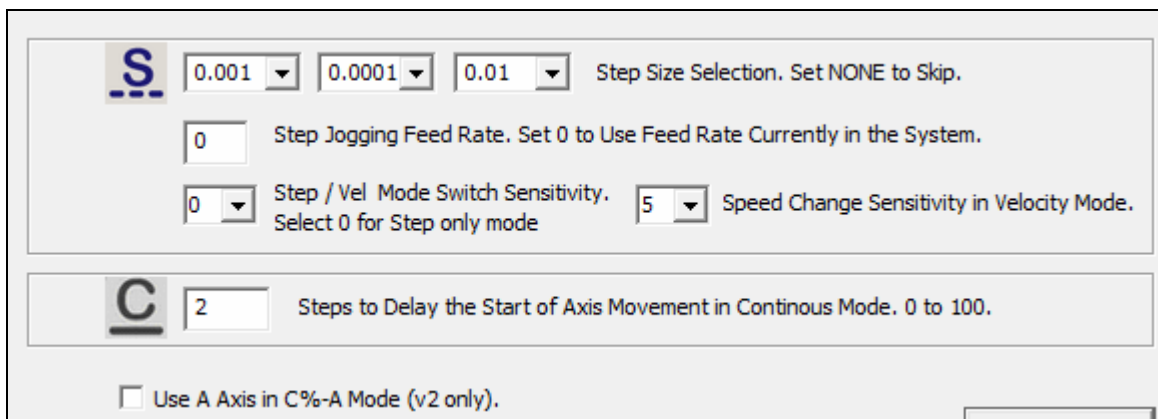
- Press E-STOP switch button to send out E-Stop signal to Mach3 application and activate Emergency Mode in Mach3 application.
- When the button is pressed, the switch is locked down. Twist the button to reset it on.
- When the button is pressed and locked, the embedded LED flashes at ¼ second rate.
- When the button is released and Mach3 application is in Reset mode, the LED flashes at ½ second rate.

### **PENDANT PLUGIN CONFIGURATION**

In Mach3 menu, select Config, then Config Plugins



In PlugIns menu, click CONFIG



- **Step Size Selection** sets predefined step size in each dropdown window. Select NONE to skip that window in cyclic step selection. Step size in the first window is used as the default step size.
- Number in **Step Jogging FeedRate** is the feed rate only used in MPG step jogging. When MPG wheel stops, the feed rate and FeedRate Overridden rate (FRO) automatically changes

back to the number which was used before MPG moving. Set 0 to use current FeedRate and FRO rate in the system.

- Numbers in **Step /Vel Mode Switch Sensitivity** is set to adjust the sensitivity of mode change from STEP to VELOCITY. The smaller the number, the less turns are needed to change to VELOCITY mode.
- Numbers in **Speed Change Sensitivity** is set to adjust the speed change sensitivity in V mode. The smaller the number, the less turns are needed to reach maximum axis speed.
- **Steps to Delay Start** is used to set the number of steps to delay to start axis movement. In C mode, axis starts to move only after that many numbers of steps are turned from MPG wheel.

## **SPECIFICATIONS**

- Work with Mach3 R2.63 and above.
- 100 steps (clicks) per Rev MPG.
- MPG MTBF > 10000 hour.
- Shipped with 10' High Speed USB cable. Extendable to 15' with extension cable, and to 45' with USB hub cables.
- Size (over all) 6.1"(L) x 3.1"(W) X 2.7"(H)