

## *VistaCNC P3A-(E) CNC Control Pendant for Mach4*



## **PREFACE**

Any machine tool, including computer controlled machine tool, is potentially dangerous. VistaCNC LLC 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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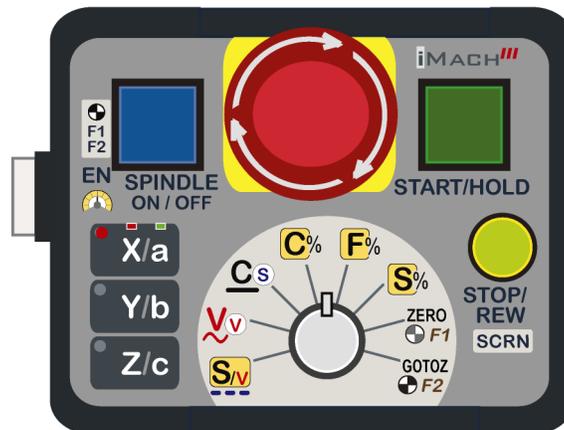
## **WARNING**

E-STOP switch button in iMach<sup>III</sup> P3A CNC Control Pendant only provides  
Emergency STOP signal to Mach4 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.
- E-Stop button with flash LEDs indicator.
- Step, Velocity and Continuous mode jogging through MPG.
- Feed rate, Spindle speed, and Slow Jog rate change through MPG.
- Program Cycle Start and Feed Hold button with LED indicator.
- Spindle control button with LED indicator.
- Quick predefined step size, feed rate, spindle speed and slow jogging rate selection.
- 6 Axis selections.
- Axis zeroing control.
- Extended E-STOP functions. (P3A-E model).



## PLUGIN and FW

Download the latest Mach4 P3A Plugin package from [www.vistacnc.com](http://www.vistacnc.com) download page and unzip the package.

The package includes following files:

- [This manual](#)
- **P3ASpendant.m4pw** --- P3A-S4 pendant Mach4 PlugIn file 1
- **P3ASpendant.sig** --- P3A-S4 pendant Mach4 PlugIn file 2
- [Pendant FW update procedure](#) --- pendant firmware upgrade procedure
- Pendant FW Loader --- tools for FW upgrade
- P3A\_Mach4\_FW\_v1\_1.hex --- FW for Mach4

**Move** 2 PlugIn files to Mach4 Plugins directory.

**Refer to** “VistaCNC Pendant FW update procedure” to upgrade the pendant firmware (FW) to Mach4 if the pendant was preinstalled or used with other CNC application, or a newer FW version is available.

## CONNECTION and START

- Directly plug the USB cable into any USB port on the PC.
- Start Mach4 application.
- Click Config from menu, select Config Plugins, and enable P3A Pendant.
- Close Mach4 application and restart Mach4 application.

## FUNCTIONS and OPERATIONS

### 1. Axis selection



**1.1** Press X/a, Y/b or Z/c axis selection button to select an axis to jog. X axis and A axis, Y axis and B axis, or Z axis and C axis share the same button. Press the button again to select A, B or C axis. Red LED indicates X, Y or Z axis and green LED indicates A, B or C axis.

## 2. MPG (Manual Pulse Generator) mode selection and control button operation

### 2.1

### 2.2 STEP, STEP SIZE mode

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

**2.1.2** While pressing and holding the Quick Selection Button , turn MPG few steps to select the predefined step size. Selected step size displays on Mach4 Screen.

### 2.3 VELOCITY mode

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

**2.2.2** Pressing and holding the Quick Selection Button will temporally slow down the axis movement.

### 2.4 CONTINUOUS

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

### 2.4 CONTINUOUS RATE mode

**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 Mach4 Screen.

### 2.5 FEED RATE mode

**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

**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.

## 2.7 FUNCTION buttons

**2.7.1** Press and release the Function Button twice (double click)  to execute ZERO (F1) and GOTOZ (F2).

## 3. Control Operation



### 3.1 SPINDLE ON / OFF push button

- While pressing and holding the Enable Button , press and release SPINDLE ON/OFF button to turn on the Spindle if the Spindle is off, or turn off the Spindle if the Spindle is on.
- When Spindle is on, LED embedded in the Spindle button flashes at ½ second rate.

### 3.2 START / HOLD push button

- While pressing and holding the Enable Button , press and release START/HOLD button to cycle start the program if the program is not running or is in Feed Hold, or feed hold the program if the program is running.
- When program enters Cycle Start state, LED embedded in the button flashes at ½ second rate.

- When program enters Feed Hold state, the LED, in every second, flashes twice in the first half second and stops flashing in the next half second.

### 3.3 STOP / REW push button

- While pressing and holding the Enable Button , press and release STOP/REW button to stop the program if the program is running, or rewind the program if the line of the program is not zero, or stops any axis movement.

## 4. E-Stop switch button



- When the button is pressed and locked, the embedded LED flashes at  $\frac{1}{4}$  second rate.
- When the button is released and Mach4 application is in Reset mode, the LED flashes at  $\frac{1}{2}$  second rate.

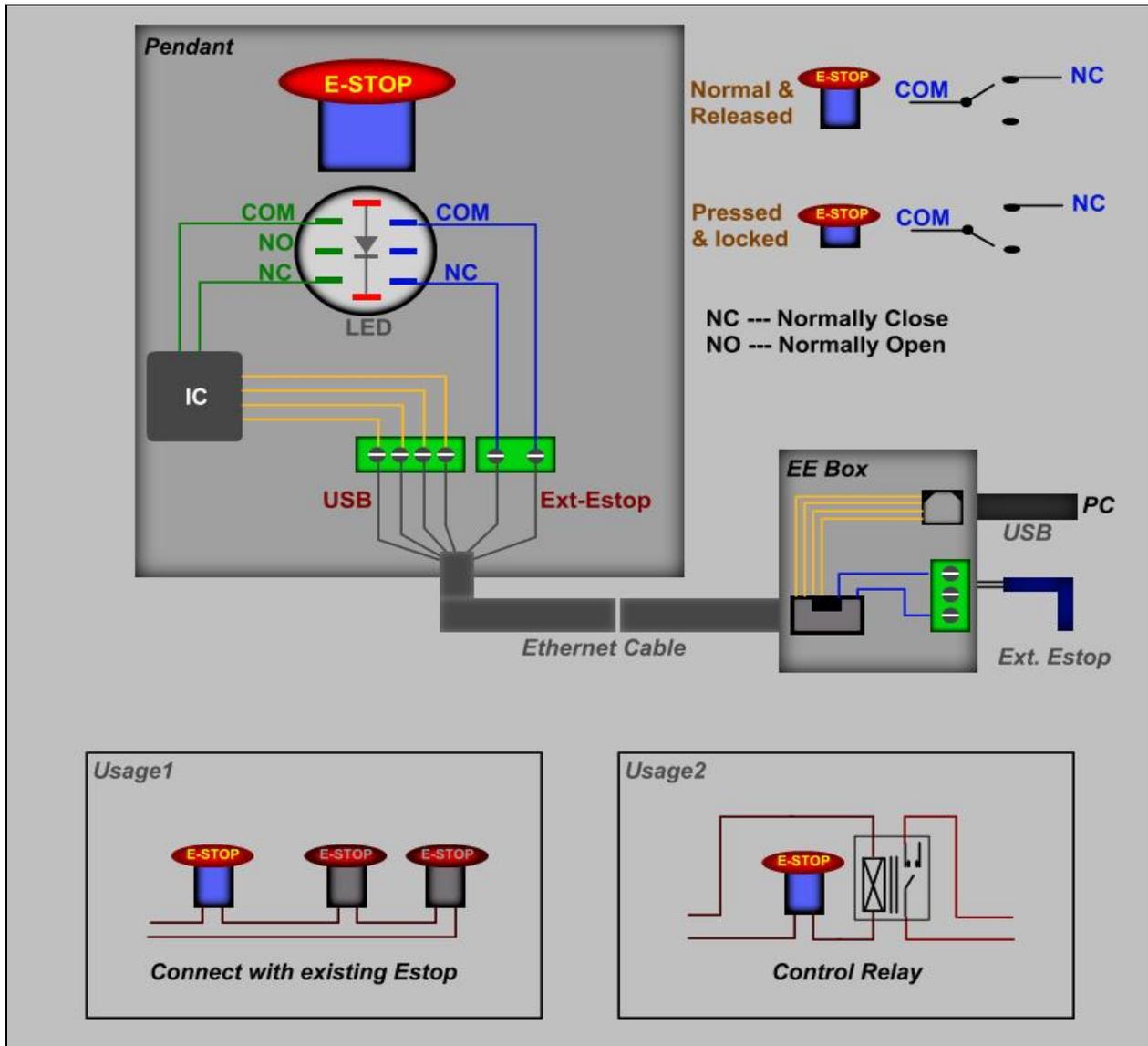
### 4.1 E-Stop switch button in P3A model

- Press E-STOP switch button to send out E-Stop signal to Mach4 application and activate Emergency Mode in Mach4 application.
- When the button is pressed, the switch is locked down. Twist the button to reset it on.

### 4.2 E-Stop switch button in P3A-E model

- Press E-STOP switch button to send out E-Stop signal to Mach4 application and activate Emergency Mode in Mach4.
- The same E-stop signal is simultaneously sent out through a 2-wire loop, which can be used to control a relay or to connect with other E-stop buttons.
- When the button is pressed and the switch is locked down, the 2-wire loop is open.

- Twist the button to reset the switch and reset E-STOP signal, and at the same time, the two wires are connected at the switch end and form a closed loop.
- ❖ An EE box is needed as an interface to separate the 2-wire loop and USB signal.



E-STOP switch and EE box connection in P3A-E

## **SPECIFICATIONS**

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