

## *VistaCNC P4-S4(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.

Information in this document is subject to change without notice. The manufacturer does not make any representations or warranties (implied or otherwise) regarding the accuracy and completeness of this document and shall in no event be liable for any loss of profit or any other commercial damage, including but not limited to special, incidental, consequential, or other damages.

## **WARNING**

E-STOP switch button in P4-S4(E) CNC Control Pendant only provides  
Emergency STOP signal to Mach4 application.

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

## FEATURES

- Plug n' Play USB connection and controls.
- 100 steps high precision MPG encoder.
- Step, Velocity and Continuous mode jogging through MPG.
- Feed rate, Spindle speed, and Step jogging size and rate change through MPG.
- Program Cycle Start and Spindle control buttons.
- X, Y, Z button jogging.
- LCD display with backlit.
- Large E-Stop button.
- 6 Axis selections.
- 3 control functions.
- Extended E-STOP functions. (P4-S4E model).



## PLUGIN and FW

Download the latest Mach4 P4-S4 Plugin package from [www.vistacnc.com](http://www.vistacnc.com) download page and unzip the package.

The package includes following files:

1. This manual
2. **P4Spendant.m4pw** --- P4-S4 pendant Mach4 PlugIn file 1
3. **P4Spendant.sig** --- P4-S4 pendant Mach4 PlugIn file 2
4. Pendant FW update procedure --- pendant firmware upgrade procedure
5. Pendant FW Loader --- tools for FW upgrade
6. P4S\_Mach4\_FW\_v1\_1.hex --- FW for Mach4

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

**Refer to** “iMach3 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

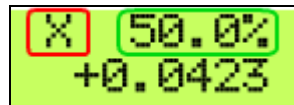
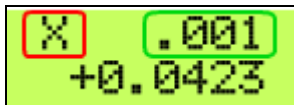
- Directly plug the USB cable into any USB port on the PC.
- Start Mach4 application.

## FUNCTIONS and OPERATIONS

### 1. Axis selection



1.1 Press X/A, Y/B or Z/C axis selection button to select an axis. 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.



- Selected axis name. It flashes at 1/2 second rate.
- Step size and Step jogging rate. The size and rate display changes alternately every 2 seconds.

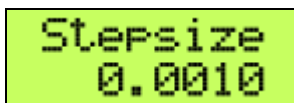
### 2. MPG (Manual Pulse Generator) mode selection


#### 2.1 STEP, STEP SIZE and STEP JOG RATE



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

2.1.2 STEP SIZE While pressing and holding the EN side Button **EN**, turn MPG one or few clicks clockwise or counterclockwise to select predefined step size.




**2.1.3 STEP JOG RATE** While double clicking (press, release, and press, within half a second) and holding the EN side button , turn MPG to change step jogging rate.

```
StepJog%
 49.7%
```


## 2.2 VELOCITY, SLOW V and SLOW V RATE

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

```
X Vel
+0.3997
```

**2.2.2 SLOW V** Pressing and holding the EN side button  while in V mode temporarily slows down the axis movement .

```
X Vel/3
+0.3997
```

**2.2.3 SLOW V RATE** Double clicking and holding the EN side button  and turn MPG clockwise or counterclockwise to change V slow down rate. Settable number: 2, 3 and 4.


```
Vel Slow
Rate 3
```

## 2.3 CONTINUOUS, VEL-CON'T and DECIMAL PLACE

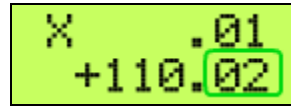
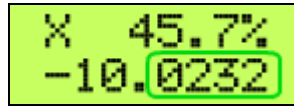
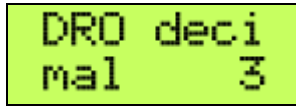
**2.3.1 CONTINUOUS** In CONTINUOUS mode, axis moves at constant speed of continuous rate set in CONTINUOUR RATE mode.

```
Y 45.7%
+0.0232
```

Continuous rate

**2.3.2 VEL-CON'T** Pressing and holding the EN side button  to change CONTINUOUS mode to V mode with max speed of CONTINUOUR RATE.

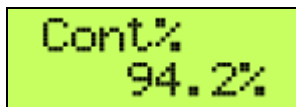
**2.3.3 DECIMAL DIGITS** Double clicking the EN side button **EN** to set up number of decimal digits to display. Settable number: 2, 3 and 4.



4 and 2 decimal digits.

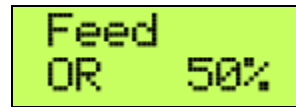
## 2.4 CONTINUOUS RATE **C%**

In C% mode, turning MPG changes the speed used in CONTINUOUS mode.



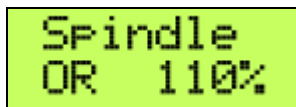
## 2.5 FEED OVERRIDE **F%**

In F% mode, turning MPG changes current feed overridden (FO) rate.



## 2.6 SPINDLE OVERRIDE **S%**

In S% mode, turning MPG changes current spindle speed overridden (SO) rate.





# 3. Button Jog and Function Buttons

## 3.1 Button Jogging

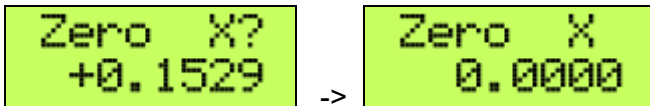


Double clicking and holding a Button Jogging button to start jogging. CONTINUOUS RATE is used in jogging.

- ❖ When X axis is selected, X,Y Jog button  will move X axis, and when Y axis is selected, X,Y Jog button  will move Y axis.

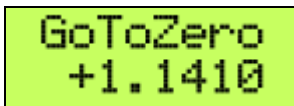
### 3.2 F1 (ZERO) button

While pressing and holding F1 button, LCD displays the button function, and press the EN side button **EN** to zero the currently selected axis.



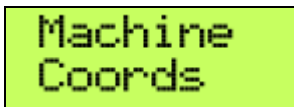
### 3.3 F2 (GOTOZ) button

While pressing and holding F2 button, LCD displays the button function, and press the EN side button **EN** to execute GoToZero function.



### 3.4 F3 (Machine Coordinates) button



While pressing and holding F3 button, LCD displays the button function, and press the EN side button **EN** to toggle machine coordinate.

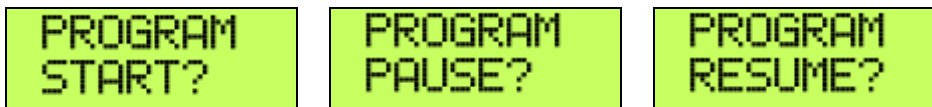






## 4. Operation Controls

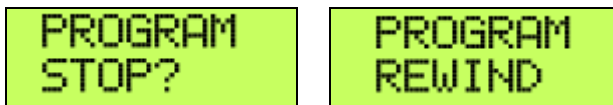
### 4.1 START / HOLD button

While pressing and holding START / HOLD  button, LCD displays the button function, and press the EN side button  to execute the function.





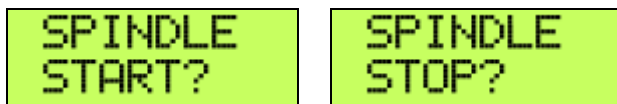
### 4.2 STOP / REW button

While pressing and holding STOP  button, LCD displays the button function, and press the EN side button  to execute the function.



### 4.3 SPINDLE ON / OFF button

While pressing and holding SPINDLE ON / OFF  button, LCD displays the button function, and press the EN side button  to execute the function.

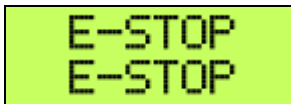


## 5. E-Stop switch button



### 5.1 E-Stop switch button in P4-S4 model

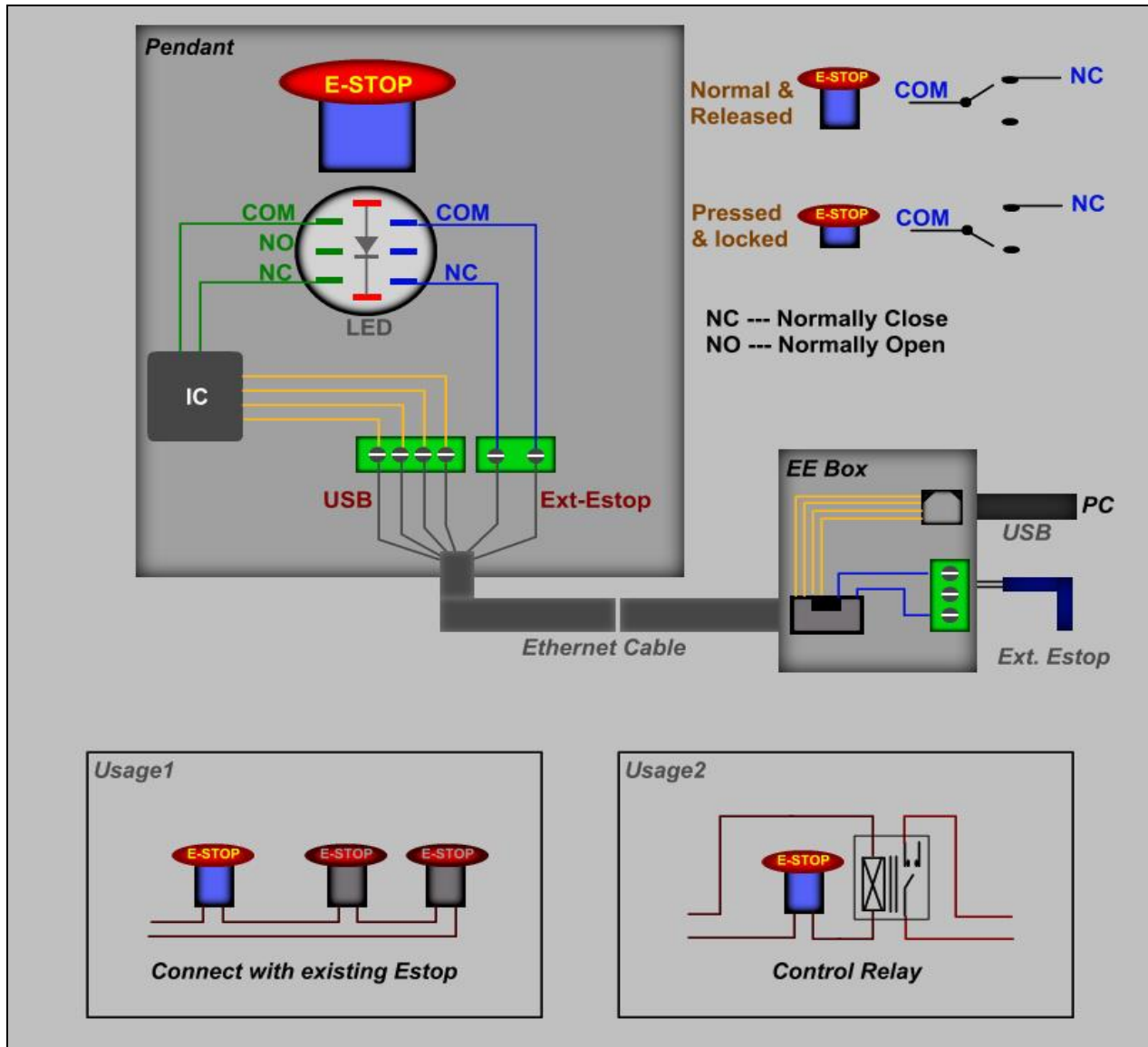
- Press E-STOP switch button to send out E-Stop signal to Mach4 application and activate Emergency Mode in Mach4.



- When the button is pressed, the switch is locked down. Twist the button to reset the button and reset E-STOP.

### 5.2 E-Stop switch button in P4-S4E 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.
- ❖ A EE box is needed as an interface to separate the 2-wire loop and USB signal.



E-STOP switch and EE box connection in P4-S4E

### 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 repeater cables.
- Size (over all) 6.1"(L) x 3.1"(W) X 2.7"(H)