

iMach^{III} P4-S and P4-SE CNC Control Pendant



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^{III} P4-S 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.
- LCD display with backlit.
- Large E-Stop button.
- Step, Velocity and Continuous mode jogging through MPG.
- Feed rate, Spindle speed, and Slow Jog rate change through MPG.
- Program Cycle Start and Spindle control buttons.
- Quick predefined step size, feed rate, spindle speed and slow jogging rate selection.
- 6 Axis selections.
- 3 custom control functions.
- Extended E-STOP functions. (P4-SE model).



PLUGIN

- Download the latest iMach3-P4-S v4.x Plugin from 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-P4-S-Pendant.
- Close Mach3 application and restart Mach3 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.

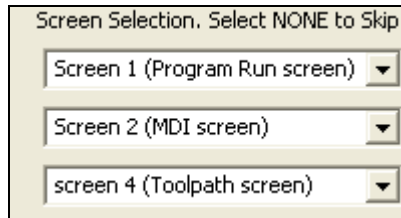
- ❖ *A, B and C axis selection can be skipped based on the settings in PlugIn configuration table. See Pendant PlugIn Configuration section for more information.*

<input checked="" type="checkbox"/> Include A axis in axis selection
<input checked="" type="checkbox"/> Include B axis in axis selection
<input checked="" type="checkbox"/> Include C axis in axis selection

2. MPG (Manual Pulse Generator) mode selection

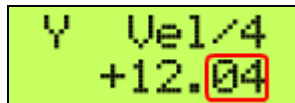
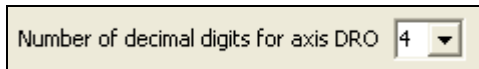


- ❖ At any time, pressing and releasing SCR (SCReen) button within 1 second will open or close the TAB window on Mach3 screen, and pressing and holding SCR button for more than 1 second and releasing the button will change Mach3 screens. Screen selection can be



setup in PlugIn configuration table.

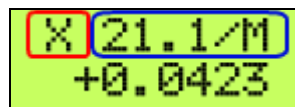
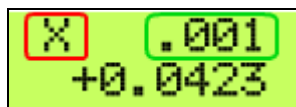
- ❖ Number of decimal digits to display can be setup in the Plugin Configuration Table:



2 decimal digits

2.1 STEP, STEP SIZE and STEP JOG RATE mode

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.



Selected axis name. It flashes at 1/2 second rate.

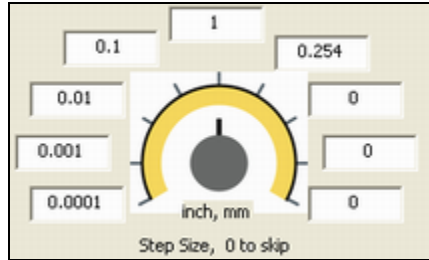
Step jogging rate in units/minute, Step size. The step size and rate display changes alternately every 2 seconds

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.

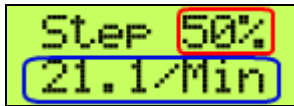
9 different step sizes can be set up in PlugIn Configuration table. Other step size can be set



directly on Mach3 screen .

2.1.3 STEP JOG RATE While double clicking (press, release, and press, within half a second)

and holding the EN side button **EN**, turn MPG to change step jogging rate.

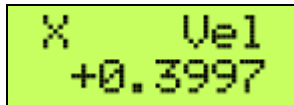


- Percentage of the maximum axis velocity.
- Feedrate used in step jogging

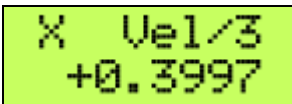
2.2 VELOCITY mode

2.2.1 In VELOCITY mode, axis moves at 0 to 100% of maximum axis speed based on how fast the

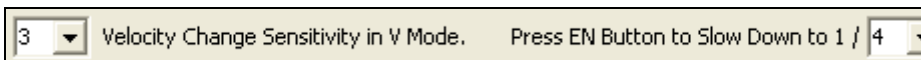
MPG wheel is turned.



2.2.2 Pressing and holding the EN side button **EN**, will temporally slow down the axis movement.



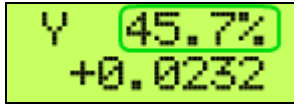
- ❖ Speed change sensitivity can be setup in PlugIn Configuration table.
- ❖ Speed slow down ratio can be setup in PlugIn Configuration table.



2.3 CONTINUOUS, CON'T / STEP mode

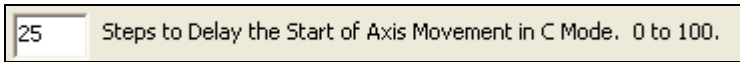
In CONTINUOUS mode, axis moves at Continuous rate (Slow Jog Rate on Mach3 screen)

2.3.1. The axis movement is independent to the speed at which the MPG is turned.



Continuous rate (Slow Jog Rate on Mach3 screen)

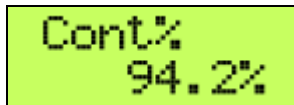
❖ To avoid accidentally moving MPG and axis, steps to delay the start of axis movement can be set in plugin configuration table.



2.3.2 Pressing and holding the EN side button , will temporally turn CONTINUOUS mode to STEP mode. A matched feed rate as in CONTINUOUS mode will be used in STEP mode.

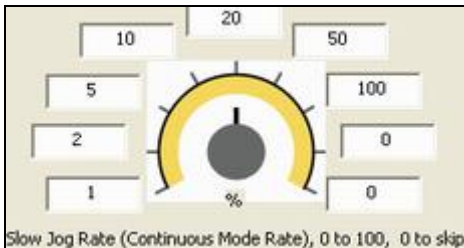
2.4 CONTINUOUS RATE mode

2.4.1 In C% mode, turning MPG changes the speed used in CONTINUOUS mode. The rate displays



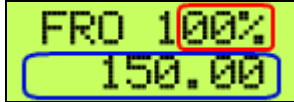
in Slow Jog Rate on Mach3 Screen.

2.4.2 While pressing and holding the EN side button , turn MPG few steps to select the predefined Continuous Rate. Different Continuous Rate can be set up in PlugIn Configuration table.




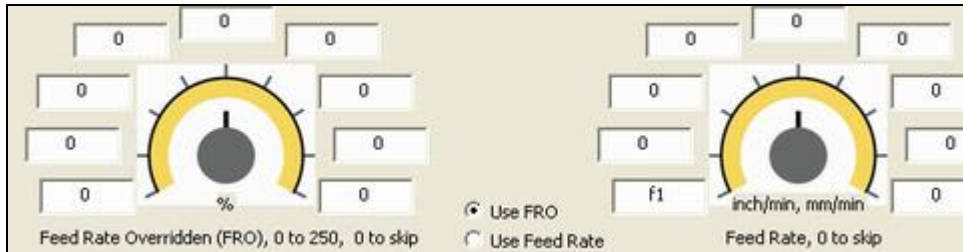
2.5 FEED RATE mode

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.



Feed Rate Override percentage. Feed Rate Override, Unit/Min.

2.5.2 While pressing and holding the EN side button , turn MPG few steps to select the predefined Feed Rate Overridden (FRO) or Feed Rate. Selection to use FRO or Feed rate, and different Feed Rate Overridden (FRO) or Feed Rate can be set up in PlugIn Configuration table.



❖ Quick Selection is disabled when program is running or axes are moving.

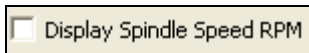
2.6 SPINDLE SPEED mode


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.



Spindle Speed RPM. Spindle Speed Override. Current pulley number.

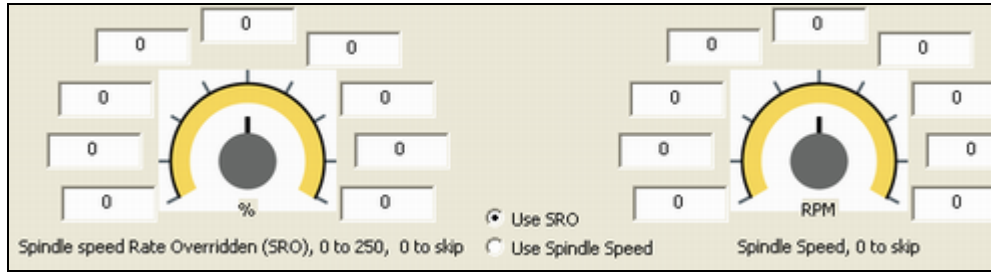
Checking "Display Spindle Speed RPM" in Plugin Configuration Table to display Spindle RPM.



2.6.2 While pressing and holding the EN side button , turn MPG few steps to select the predefined Spindle speed Rate Overridden (SRO) or Spindle Speed. Selection to use SRO or Spindle

Speed, and different Spindle speed Rate Overridden (SRO) or Spindle Speed can be set up in PlugIn Configuration table.

❖ Quick Selection is disabled when Spindle is on, program is running or axes are moving.




3. Button Jog and Function Buttons




3.1 Button Jogging

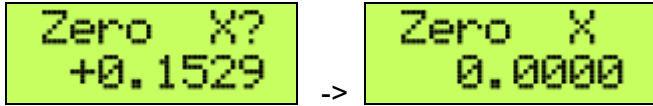
Double clicking and holding (press, release, and press, within half a second) a Button Jogging button to start jogging. Slow Jog Rate is used in jogging.

When X axis is selected, X,Y Jog button  will move X axis,

When Y axis is selected, X,Y Jog button  will move Y axis. 

3.2 ZERO and F1 button

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

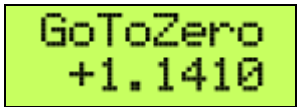


3.2.2 If F1 is not set to NONE in Plugin Configuration Table, action in 3.2.1 will execute predefined Mach3 OEM button, Custom Button, or Custom Macro.

3.3 GOTOZ and F2 button


3.3.1 While pressing and holding F2 button, LCD displays the button function, and press the EN side

button  to execute GoToZero function.



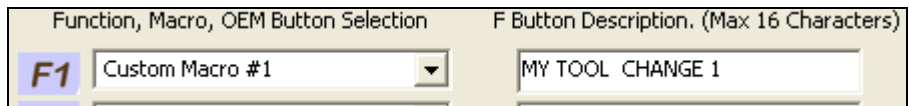
3.3.2 If F2 is not set to NONE in Plugin Configuration Table, action in 3.3.1 will execute predefined Mach3 OEM button, Custom Button, or Custom Macro.

3.4 COORD and F3 button

3.4.1 While pressing and holding F2 button, LCD displays the button function, and press the EN side button  to select different coordinate or fixture. Selection sequence is G54 (fixture 1), G55 (fixture 2), G56 (fixture 3), G57 (fixture 4), Machine Coordinate, and Distance to Go.



3.4.2 If F3 is not set to NONE in Plugin Configuration Table, action in 3.6.1 will execute predefined Mach3 OEM button, Custom Button, or Custom Macro.

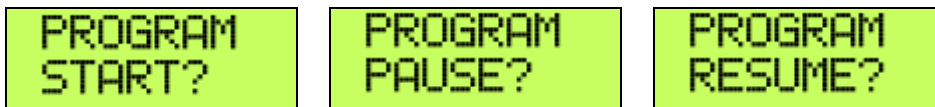
- ❖ *When pressing and holding a function button, user defined function name will display on LCD. Maximun16 characters can be used to name a function in Plugin Configuration Table.*





4. Operation Controls

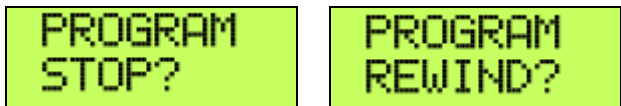
4.1 START / HOLD button :

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





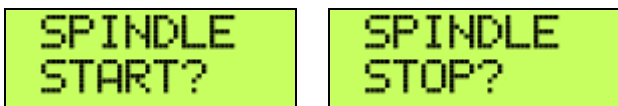
4.2 STOP / REW button :

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.

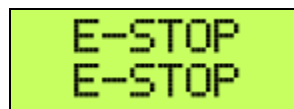


5. E-Stop switch button



5.1 E-Stop switch button in P4-S model

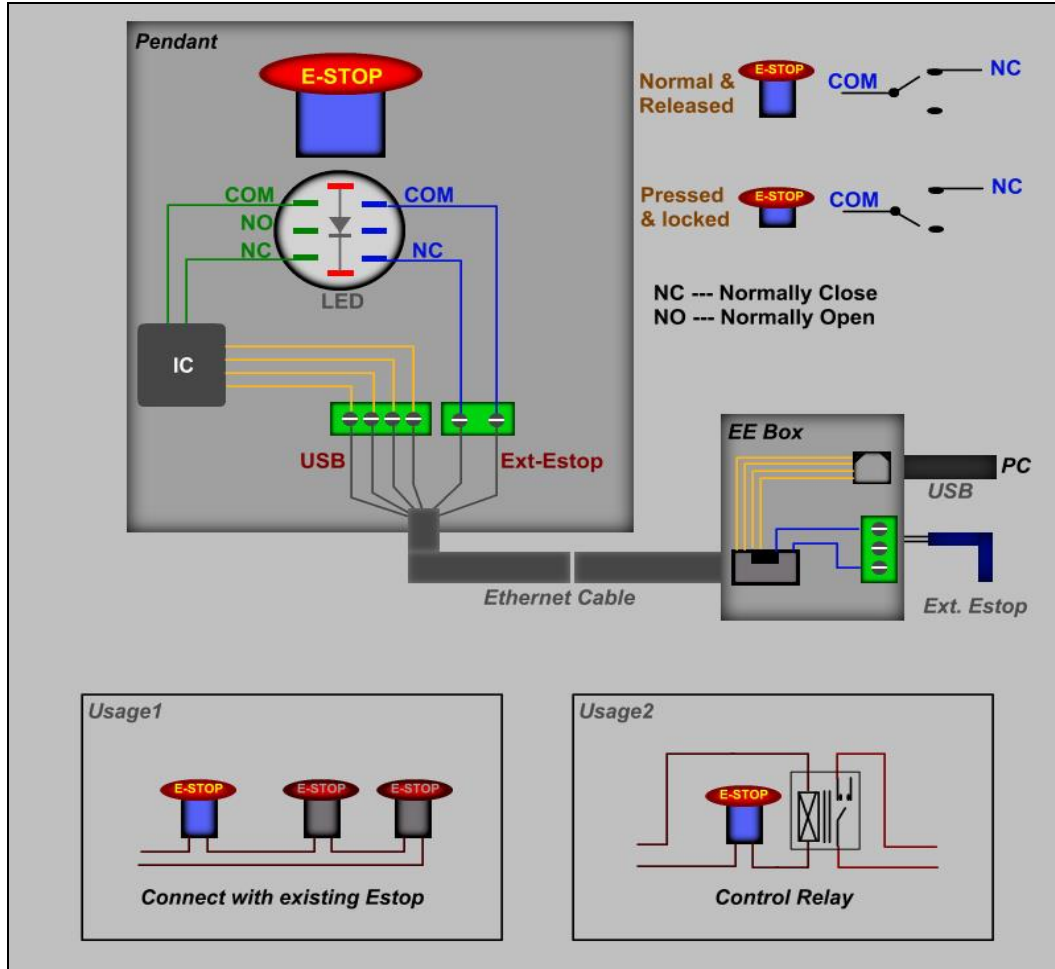
- Press E-STOP switch button to send out E-Stop signal to Mach3 application and activate Emergency Mode in Mach3.



- 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-SE model

- Press E-STOP switch button to send out E-Stop signal to Mach3 application and activate Emergency Mode in Mach3.
- 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.



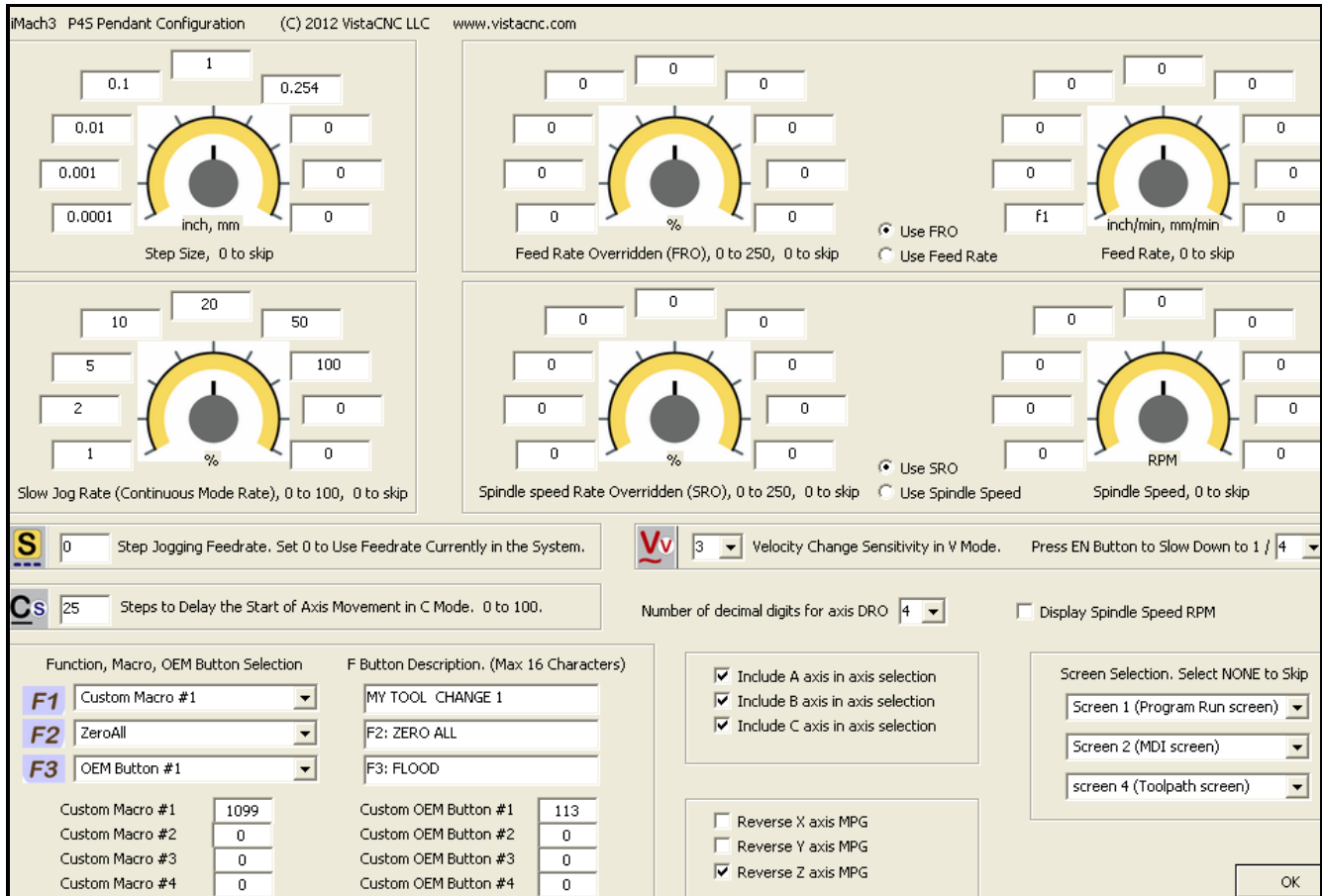
E-STOP switch and EE box connection in P4-SE

PENDANT PLUGIN CONFIGURATION

In Mach3 menu, select Config, then Config PlugIns



In PlugIns menu, click CONFIG



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, or to 45' with USB hub cables.
- Size (over all) 6.1"(L) x 3.1"(W) X 2.7"(H)