

VistaCNC P4-S(E) CNC Control Pendant for LinuxCNC



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-S(E) CNC Control Pendant only provides
Emergency STOP signal to LinuxCNC 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 override, Rapid override, Max velocity, Spindle speed, and Step jogging size and rate changing 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-SE model).



Driver and HAL file installation

1. Download the latest P4-S LinuxCNC upgrade package from www.vistacnc.com download page, and unzip the package.

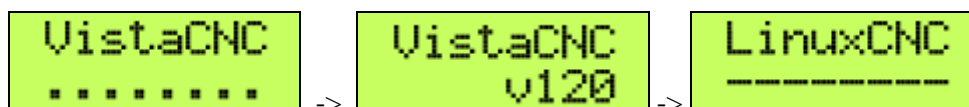
The package includes following files:

1. This manual
 2. **Pendant FW update procedure** --- for pendant firmware upgrade
 3. Pendant FW Loader --- tools for FW upgrade
 4. P4S_LinuxCNC_FW_v --- FW for LinuxCNC
 5. **P4-S LinuxCNC Installation Instruction** --- for driver installation
 6. 99-vistacnc-pendant.rules
 7. vc-p4s --- driver file
 8. vc-p4s.hal ---HAL file
 9. vc-postgui.hal --- HAL file
 10. Makefile --- to move 99-vistacnc-pendant.rules and vc-p4s into the corresponding folder.
2. Refer to “iMach3 Pendant FW update procedure” to upgrade the pendant firmware (FW) to LinuxCNC if the pendant was used with other CNC application or a newer FW version is available.
The upgrade application needs to be run under XP or Win7 PC.
 3. Refer to “P4-S LinuxCNC Installation Instruction” to install driver and other files, and add lines to the .ini file.

CONNECTION and START

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

LCD displays

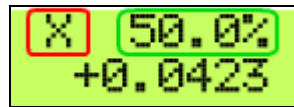
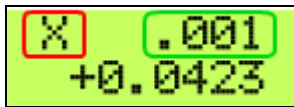


FUNCTIONS and OPERATIONS

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.

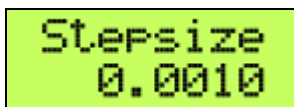
2. MPG (Manual Pulse Generator) mode selection

2.1 STEP, STEP SIZE and STEP JOG RATE



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.

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. All step sizes are defined in `vc-p4s.hal` file.



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.

```
StepJog%
 49.7%
```

2.2 VELOCITY, SLOW V and SLOW V RATE

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

```
X Vel
+0.3997
```

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

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

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

```
Vel Slow
Rate 3
```

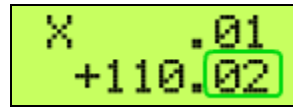
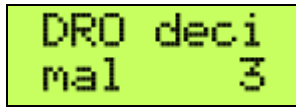
2.3 CONTINUOUS and DECIMAL PLACE

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

```
Y 45.7%
+0.0232
```

Continuous rate

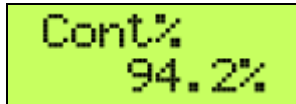
DECIMAL DIGITS Double clicking the EN side button **EN** to set up number of decimal digits to display. Settable number: 2, 3 and 4.



□ 4 and 2 decimal digits.

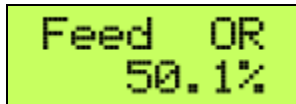
2.4 CONTINUOUS RATE **C%**

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

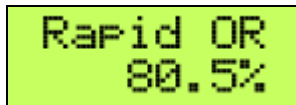


2.5 FEED OVERRIDE, RAPID OVERRIDE, MAX VELOCITY **F%**

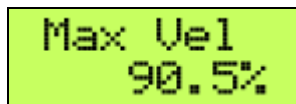
FEED OVERRIDE In F% mode, turning MPG changes current feed overridden (FO) rate.



RAPID OVERRIDE Pressing and holding the EN side button **EN** temporarily goes into Rapid Override change mode. .

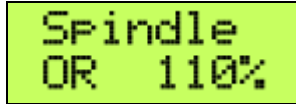


MAX VELOCITY Double clicking and holding the EN side button **EN** temporarily goes into Max Velocity change mode. .



2.6 SPINDLE OVERRIDE

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.

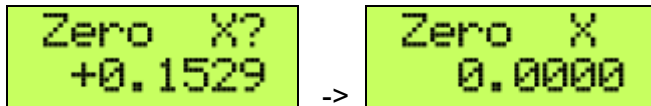
❖ When X axis is selected, X,Y Jog button  will move X axis, and when Y axis is selected,

 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

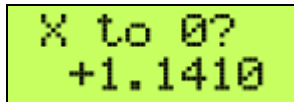
EN to zero the currently selected axis.



3.3 F2 (GOTOZ) button

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

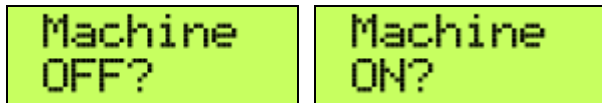
EN to execute GoToZero function.



3.4 F3 (Machine ON/OFF) button

While pressing and holding F3 button, LCD displays the button function, and press the EN side button

EN to execute Machine ON or Machine OFF function.

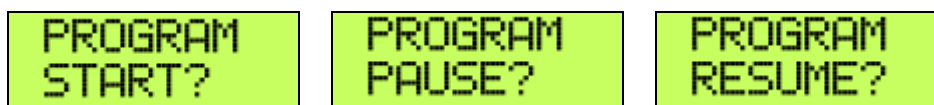


4. Operation Controls



4.1 START / HOLD button

While pressing and holding START / HOLD  button, LCD displays the button function, and

press the EN side button **EN** 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.

PROGRAM
STOP?

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.

SPINDLE
START?

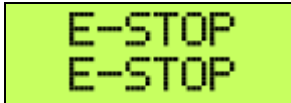
SPINDLE
STOP?

5. E-Stop switch button



5.1 E-Stop switch button in P4-S model

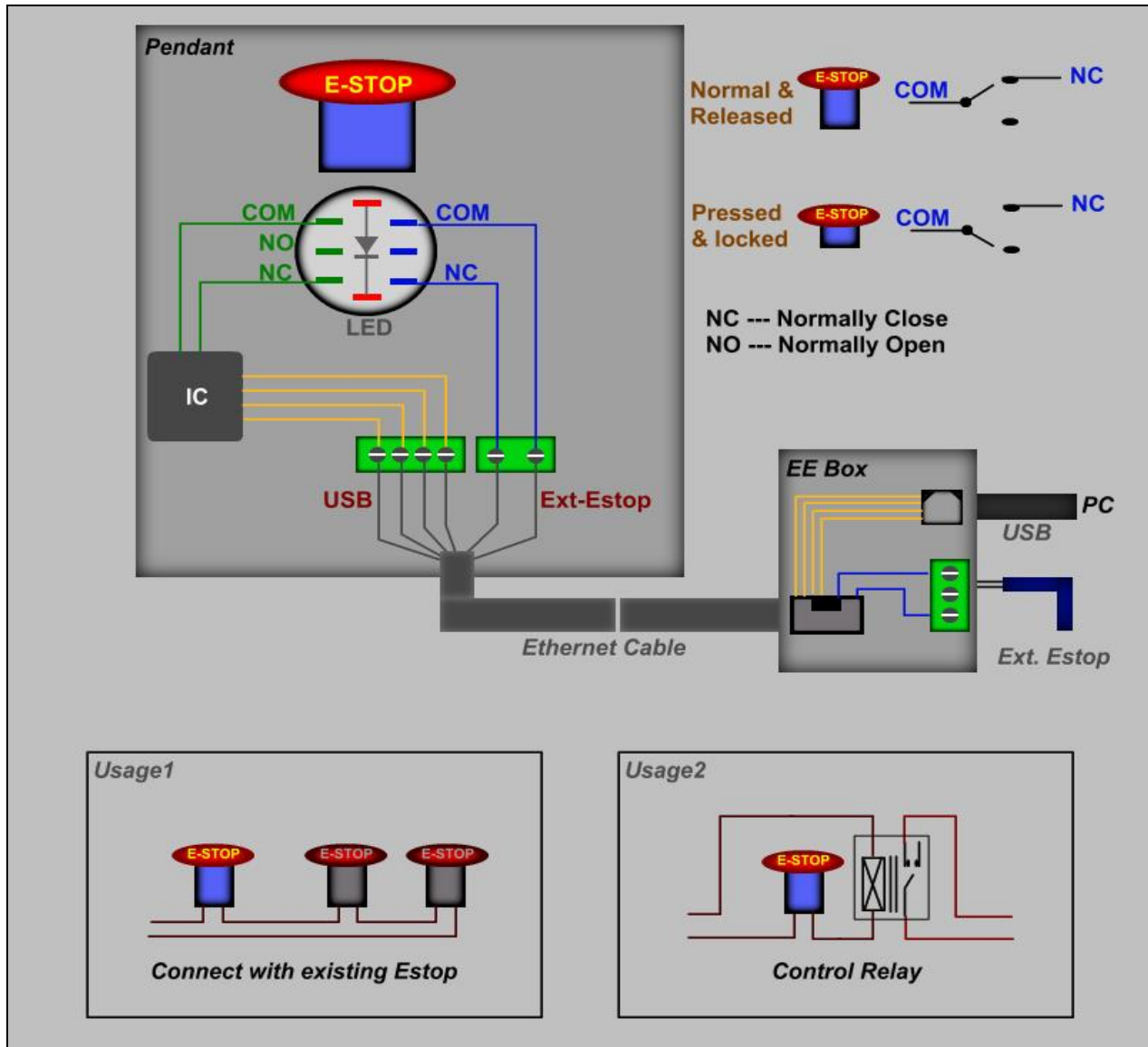
- Press E-STOP switch button to send out E-Stop signal to LinuxCNC application and activate Emergency Mode in LinuxCNC.



- 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 LinuxCNC application and activate Emergency Mode in LinuxCNC.
- 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

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)