

## *VistaCNC P2-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.

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## **WARNING**

E-STOP switch button in iMach<sup>III</sup> P2-S(E) CNC Control Pendant only provides  
Emergency STOP signal to LinuxCNC 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 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.
- 4 Axis selections.
- 4 control functions.
- Extended E-STOP functions. (P2-SE model).



## Driver and HAL file installation

1. Download the latest P2-S LinuxCNC upgrade package from [www.vistacnc.com](http://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. P2S\_LinuxCNC\_FW\_v --- FW for LinuxCNC
5. **P2-S LinuxCNC Installation Instruction** --- for driver installation
6. 99-vistacnc-pendant.rules
7. vc-p2s --- driver file
8. vc-p2s.hal ---HAL file
9. vc-p2s-postgui.hal --- HAL file
10. Makefile --- to move 99-vistacnc-pendant.rules and vc-p2s 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.

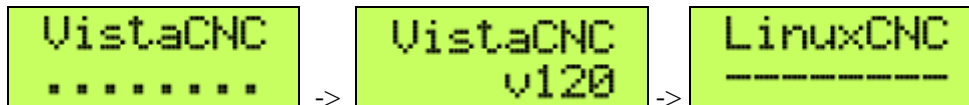
The upgrade application needs to be run under XP or Win7 PC.

3. Refer to “P2-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

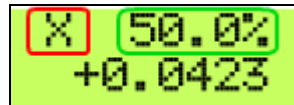
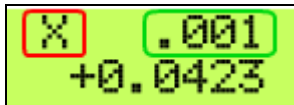


## FUNCTIONS and OPERATIONS

### 1. Axis selection



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




- Selected axis name. It flashes at ½ second rate.
- Step size and Step jogging rate. The size and rate display changes alternately every 2 seconds.

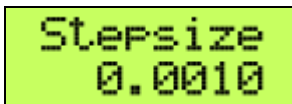
## 2. MPG (Manual Pulse Generator) mode selection


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

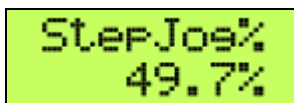


**STEP** In STEP mode, the selected axis moves 1 step at each MPG click (detent) with the step size currently in the system and with speed of step jogging rate.

**STEP SIZE** While pressing and holding the EN side button , turn MPG one or few clicks clockwise or counterclockwise to select predefined step size. All step sizes are defined in `vc-p2s.hal` file.



**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.

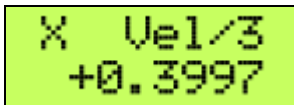



## 2.2 VELOCITY, SLOW V and SLOW V RATE

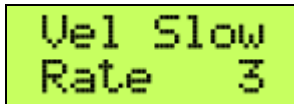
VELOCITY Axis moves at 0 to 100% of maximum axis speed based on how fast the MPG wheel is turned.



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

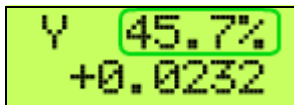


SLOW V RATE Double clicking and holding the EN side button  and turn MPG clockwise or counterclockwise to change V slow down rate. Settable number: 2, 3 and 4.




## 2.3 CONTINUOUS, CONTINUOUS RATE

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




Continuous rate


CONTINUOUS RATE Pressing and holding the EN side button  to change to C% mode. In C% mode, turning MPG changes the speed used in CONTINUOUS mode.

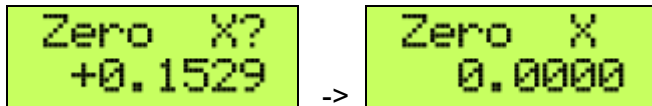
## 2.4 FEED OVERRIDE and SPINDLE OVERRIDE

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


SPINDLE OVERRIDE Pressing and holding the EN side button  to change to S% mode. In S% mode, turning MPG changes current spindle speed overridden (SO) rate.

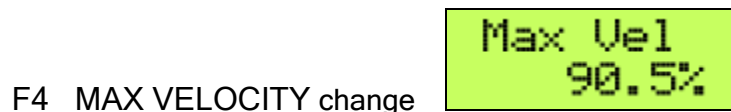
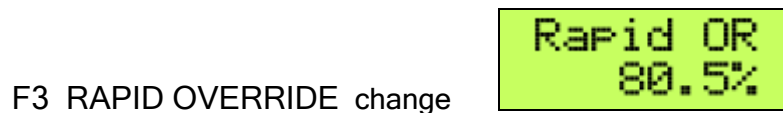
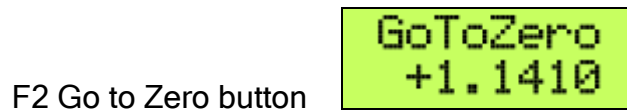
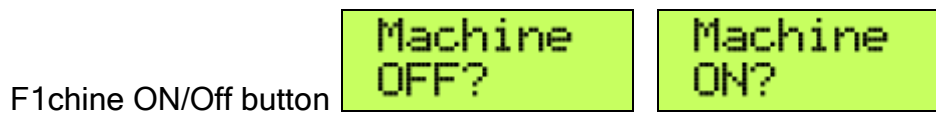
## 2.5 AXIS ZEROING

Turn axis selection knob to select an axis and double click  to zero selected axis




## 2.6 FUNCTION F1, F2, F3, F4 button

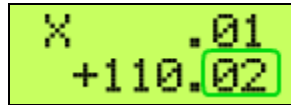
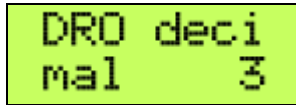
Turn axis selection knob to select an axis and double click  execute the function.



## 2.7 OFFLINE and DECIMAL PLACE

OFFLINE When the pendant is in Offline mode, any MPG signals are not sent to LinuxCNC application. Offline mode can be used to align the MPG wheel to a specific number with no axis movement.

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

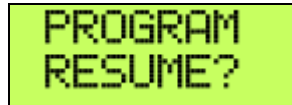
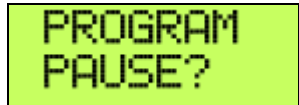
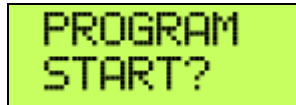


4 and 2 decimal digits.

### 3. Operation Controls

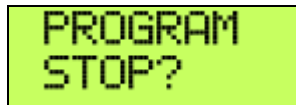
START / HOLD button 

Double click  execute the function



STOP button 

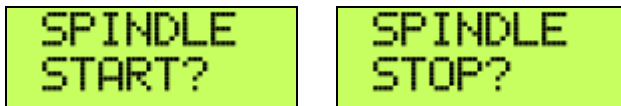
Double click  execute the function



SPINDLE ON / OFF button 

Double click  execute the function





## 4. E-Stop switch button



### 5.1 E-Stop switch button in P2-S model

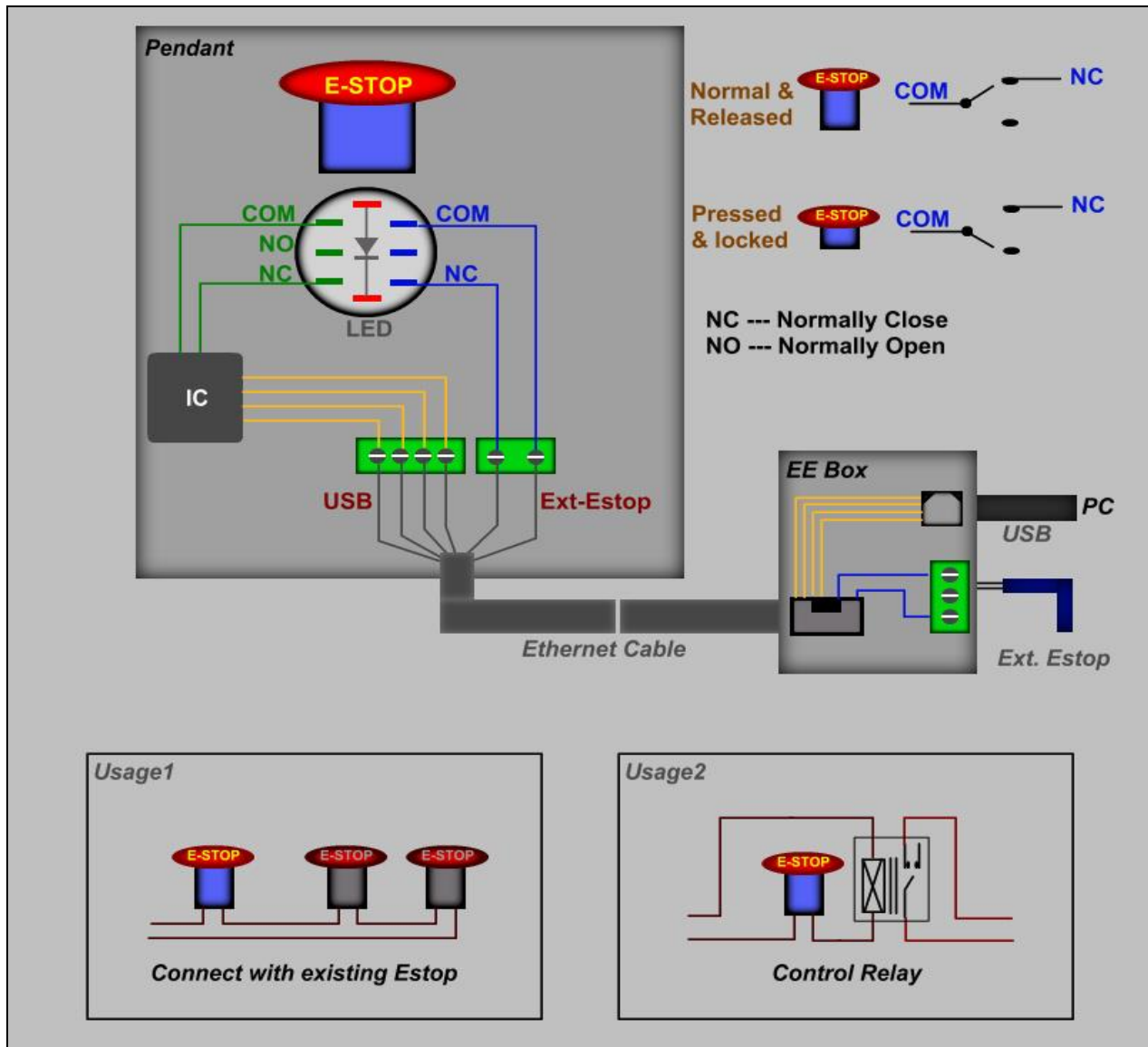
- Press E-STOP switch button to send out E-Stop signal to LinuxCNC application and activate Emergency Mode in LinuxCNC.



- 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 P2-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 P2-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)