VistaCNC P1A-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 iMach[III] P1A-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 rate, Spindle speed, and Step jogging size and rate change through MPG.
- Program Cycle Start and Spindle control buttons.
- LCD display with backlit.
- Large E-Stop button.
- 4 Axis selections.
- Extended E-STOP functions. (P1A-SE model).
- .

Driver and HAL file installation

Download the latest P1A-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. P1AS_LinuxCNC_FW_v --- FW for LinuxCNC
5. **P1A-S LinuxCNC Installation Instruction** --- for driver installation
6. 99-vistacnc-pendant.rules
7. vc-p1as --- driver file
8. vc-p1as.hal ---HAL file
9. Makefile --- to move 99-vistacnc-pendant.rules, vc-p1as, vc-p1as.hal into the corresponding folder.

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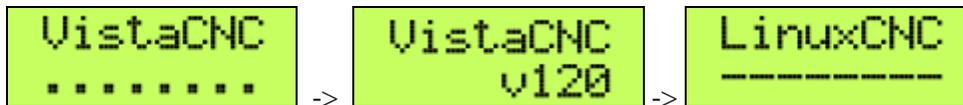
The upgrade application needs to be run under XP or Win7 PC.

Refer to "P1A-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

- Start LinuxCNC application.

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.

DECIMAL DIGITS   The number of decimal digits to display on axis DRO is defined in

**vc-p1as.hal** file. Settable number: 2, 3 and 4.
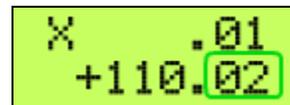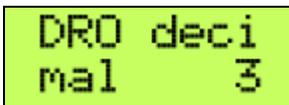
☐ 4 and 2 decimal digits.

2. MPG (Manual Pulse Generator) mode selection

2.1 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.

2.2 VELOCITY

In velocity mode Axis moves at 0 to 100% of maximum axis speed based on how fast the MPG wheel is turned.
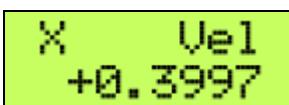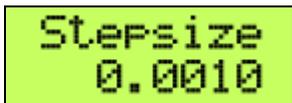
2.3 CONTINUOUS [C]

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

```
Y  (45.7%)
  +0.0232
```
□ Continuous rate

2.4 STEP SIZE [0.1 / 0.01]

Turn MPG one or few clicks clockwise or counterclockwise to select predefined step size. All step sizes are defined in **vc-p1as.hal** file.

```
Stepsize
   0.0010
```
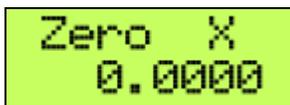
2.5 AXIS ZEROING ⊕

Turn MPG one or few clicks clockwise or counterclockwise to zero selected axis

```
Zero  X?
  +0.1529
```
->
```
Zero  X
   0.0000
```
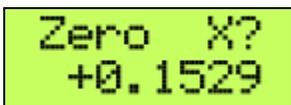
2.6 STEP JOG RATE [SCR] Turn MPG one or few clicks clockwise or counterclockwise to

set step jogging rate.

```
StepJog%
    49.7%
```

2.7 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.

2.8 CONTINUOUS RATE C%

In C% mode, turning MPG changes the speed used in CONTINUOUS mode.
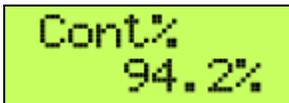
```
Cont%
    94.2%
```

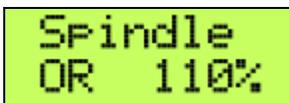## 2.9 FEED OVERRIDE F%

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

```
Feed
OR    50%
```

2.10 SPINDLE OVERRIDE S%

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

```
Spindle
OR   110%
```

3.   E-Stop switch button


5.1   E-Stop switch button in P1A-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 P1A-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.
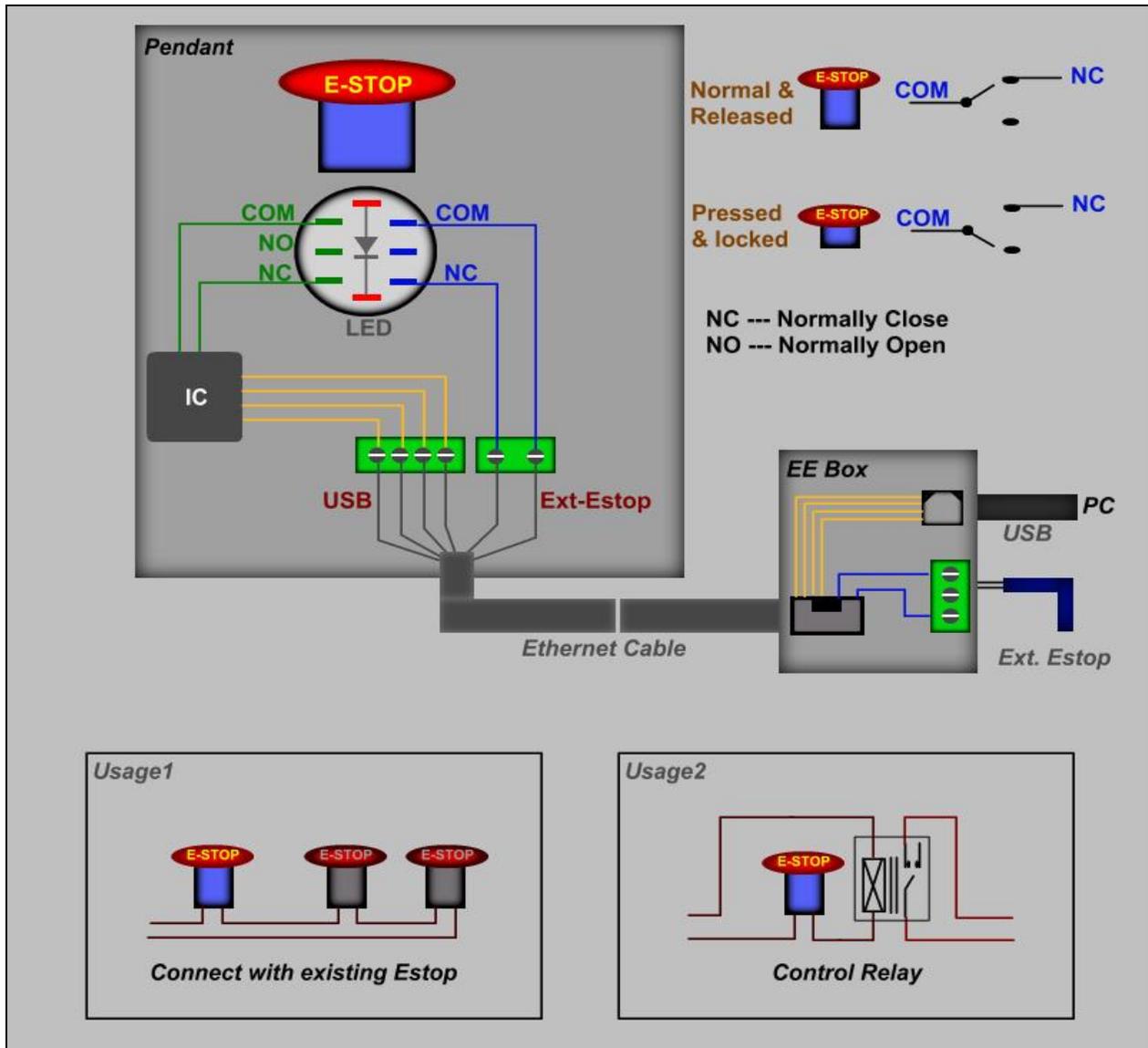
E-STOP switch and EE box connection in P1A-SE

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)