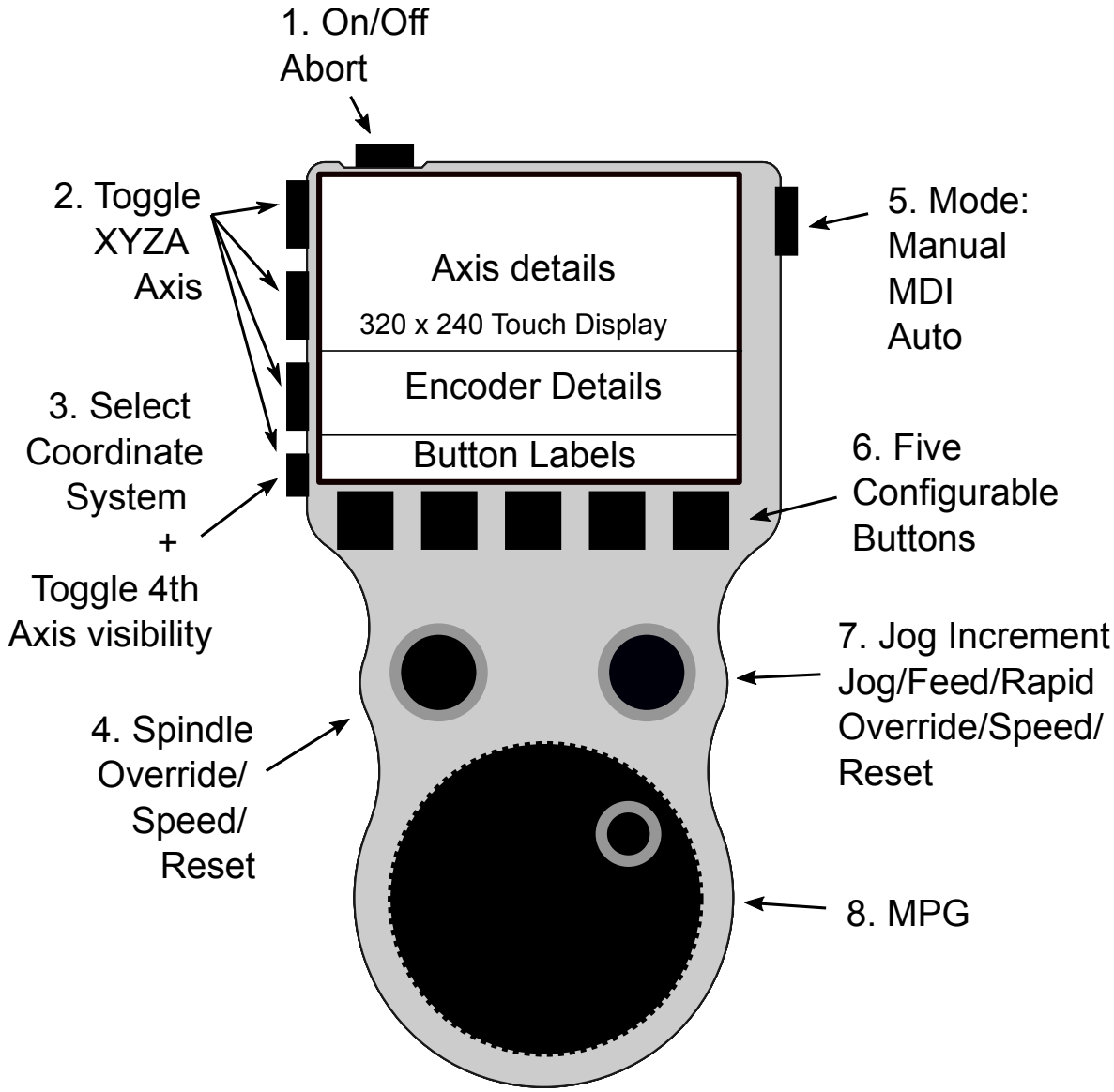
Manualmatic CNCMPG/Pendant User Guide



Description

Teensy based CNC pendant primarily for the user space Python LinuxCNC interface.

Theoretically will require copying just two files to config directory (or globally?) and adding a single line to `custom.hal`.

Table of Contents

@TODO: Rewrite required. This document was written to provide development guidance and currently just describes the functions of each control rather than describing how to perform specific tasks.

Operation

Machine State

Most controls are inactive unless machine is on and homed.

On/off button is active at all times.

Spindle and feed knobs have acceleration enabled – if you turn the encoder fast it will increment in with larger values.

Many ini values are now read from the specified ini file to better match the GUI.

@TODO – work out how to do homing sequence via the Python interface (or MDI) – especially when number of joints != number of axis.

Mode: Manual

Control the CNC in manual mode – set offsets and perform manual machining, including spindle control.

1. On/Off Button

Click to turn machine on.

Long press to turn machine off.

When machine is on, click to send an Abort command (eg to stop a slow jog)

2. Axis Selectors

Toggle selection of axis X, Y, Z & A.

Deselecting an axis will also send a ‘jog stop’ command.

3. ‘A’ Button (Coordinate System)

Click to toggle selection of A axis if displayed

Double click to toggle between display of Abs and G5x coordinate system

Triple click to display DTG

Long press to toggle visibility of 4th axis

4. Spindle Encoder

Turn to set spindle RPM directly - once spindle is running, this control changes to override %

Double click to arm spindle - click button 5 to confirm start spindle or button 1 to cancel (click or double click of spindle encoder will also cancel)

Click to stop spindle – button 5 to confirm spindle stop, button 1 to cancel (ie spindle will keep running)

Long press to reset spindle override and (if not running) pendant to default spindle speed

5. Mode Button

Switch mode to MDI or Auto.

6. Configurable Buttons

1. Set G5x offset for selected axis

Only active when an axis is selected.

2. ~Half selected axis

Not yet implemented (may add to offset screen instead)

3. Toggle Coolant

Click to toggle coolant/mist. Double click to toggle flood.

7. Feed Encoder

Rotate to change jog velocity

Press+rotate to change jog increments

Click to toggle between high and low range jog velocity

Long press to reset to default jog velocity

8. MPG Encoder

Jog selected axis

9. Joystick

Click to arm primary axes (default is X/Y). Double click to arm secondary axes (default is Z). These axis are set in ManualmaticConfig.h.

Move in the desired direction – max jog velocity is determined by the value set by the feed encoder above. There are 8 increments between min and max velocity (this can be changed in ManualmaticConfig.h but may be read from an ini setting in the future).

Mode: Auto

Control the CNC machine in auto mode. Start, stop, pause and single step a loaded program. Adjust feed, rapid and spindle rates.

1. On/Off Button

Click to turn machine on.

Long press to turn machine off.

When machine is on, click will send Abort command.

2. Axis Selectors

Not enabled in auto mode.

3. ‘A’ Button (Coordinate System)

Double click to toggle between display of Abs and G5x coordinate system

Triple click to display DTG

Long press to toggle visibility of 4th axis

4. Spindle Speed/Override

Turn to adjust spindle override

Long press to reset spindle override

5. Mode Button

Switch mode to Manual or MDI only when program is not loaded or stopped

6. Configurable Buttons

1. Halt running program

Active when program is running, paused or single stepping.

3. Toggle Coolant

As per manual mode.

4. Single step through program

Active when program has not yet started or is paused, single step through program.

5. Run/Pause Program

Active/displayed when program is not loaded, paused or in single step, press to start running the program.

Active/displayed when program is running (or while a single step is not yet complete) to pause the program.

7. Feed Encoder

Rotate to adjust feed override

Press+Rotate to adjust rapid override

Long press to reset to default feed/rapid velocity

Mode: MDI

Not currently implemented. This will likely become the ‘conversational’ part of the pendant if that need arises.