

```
# Generated by PNCconf at Tue Aug 31 17:53:11 2010
# If you make changes to this file, they will be
# overwritten when you run PNCconf again
```

```
loadrt trivkins
loadrt [EMCMOT]EMCMOT servo_period_nsec=[EMCMOT]SERVO_PERIOD num_joints=[TRAJ]AXES
loadrt probe_parport
loadrt hostmot2
loadrt hm2_pci config="firmware=hm2/5i20/SVST8_4.BIT num_encoders=4 num_pwmgens=4 num_stepgens=0"
  setp hm2_5i20.0.pwmgen.pwm_frequency 100000
  setp hm2_5i20.0.pwmgen.pdm_frequency 100000
  setp hm2_5i20.0.watchdog.timeout_ns 10000000
loadrt abs_names=abs.spindle,abs.0
loadrt near
```

```
addf hm2_5i20.0.read servo-thread
addf motion-command-handler servo-thread
addf motion-controller servo-thread
loadrt pid num_chan=4
addf pid.0.do-pid-calcs servo-thread
addf pid.1.do-pid-calcs servo-thread
addf pid.2.do-pid-calcs servo-thread
addf pid.3.do-pid-calcs servo-thread
alias pin pid.0.Pgain pid.x.Pgain
alias pin pid.0.Igain pid.x.Igain
alias pin pid.0.Dgain pid.x.Dgain
alias pin pid.0.bias pid.x.bias
alias pin pid.0.FF0 pid.x.FF0
alias pin pid.0.FF1 pid.x.FF1
alias pin pid.0.FF2 pid.x.FF2
alias pin pid.0.deadband pid.x.deadband
alias pin pid.0.maxoutput pid.x.maxoutput
alias pin pid.0.enable pid.x.enable
alias pin pid.0.command pid.x.command
alias pin pid.0.feedback pid.x.feedback
alias pin pid.0.output pid.x.output
alias pin pid.0.index-enable pid.x.index-enable
```

```
alias pin pid.1.Pgain pid.y.Pgain
alias pin pid.1.Igain pid.y.Igain
alias pin pid.1.Dgain pid.y.Dgain
alias pin pid.1.bias pid.y.bias
alias pin pid.1.FF0 pid.y.FF0
alias pin pid.1.FF1 pid.y.FF1
alias pin pid.1.FF2 pid.y.FF2
alias pin pid.1.deadband pid.y.deadband
alias pin pid.1.maxoutput pid.y.maxoutput
alias pin pid.1.enable pid.y.enable
alias pin pid.1.command pid.y.command
alias pin pid.1.feedback pid.y.feedback
alias pin pid.1.output pid.y.output
alias pin pid.1.index-enable pid.y.index-enable
```

```
alias pin pid.2.Pgain pid.z.Pgain
alias pin pid.2.Igain pid.z.Igain
alias pin pid.2.Dgain pid.z.Dgain
alias pin pid.2.bias pid.z.bias
alias pin pid.2.FF0 pid.z.FF0
alias pin pid.2.FF1 pid.z.FF1
alias pin pid.2.FF2 pid.z.FF2
alias pin pid.2.deadband pid.z.deadband
alias pin pid.2.maxoutput pid.z.maxoutput
alias pin pid.2.enable pid.z.enable
```

```
alias pin pid.2.command pid.z.command
alias pin pid.2.feedback pid.z.feedback
alias pin pid.2.output pid.z.output
alias pin pid.2.index-enable pid.z.index-enable
```

```
alias pin pid.3.Pgain pid.a.Pgain
alias pin pid.3.Igain pid.a.Igain
alias pin pid.3.Dgain pid.a.Dgain
alias pin pid.3.bias pid.a.bias
alias pin pid.3.FF0 pid.a.FF0
alias pin pid.3.FF1 pid.a.FF1
alias pin pid.3.FF2 pid.a.FF2
alias pin pid.3.deadband pid.a.deadband
alias pin pid.3.maxoutput pid.a.maxoutput
alias pin pid.3.enable pid.a.enable
alias pin pid.3.command pid.a.command
alias pin pid.3.feedback pid.a.feedback
alias pin pid.3.output pid.a.output
alias pin pid.3.index-enable pid.a.index-enable
```

```
addf abs.spindle servo-thread
addf abs.0 servo-thread
addf near.0 servo-thread
addf hm2_5i20.0.write servo-thread
addf hm2_5i20.0.pet_watchdog servo-thread
```

```
# external output signals
```

```
# external input signals
```

```
#####
# AXIS X
#####
```

```
setp pid.x.Pgain [AXIS_0]P
setp pid.x.Igain [AXIS_0]I
setp pid.x.Dgain [AXIS_0]D
setp pid.x.bias [AXIS_0]BIAS
setp pid.x.FF0 [AXIS_0]FF0
setp pid.x.FF1 [AXIS_0]FF1
setp pid.x.FF2 [AXIS_0]FF2
setp pid.x.deadband [AXIS_0]DEADBAND
setp pid.x.maxoutput [AXIS_0]MAX_OUTPUT
net x-index-enable <=> pid.x.index-enable
```

```
# PWM Generator signals/setup
```

```
setp hm2_5i20.0.pwmgen.00.output-type 1
setp hm2_5i20.0.pwmgen.00.scale [AXIS_0]OUTPUT_SCALE
net xenable => pid.x.enable
net xoutput pid.x.output => hm2_5i20.0.pwmgen.00.value
net xpos-cmd axis.0.motor-pos-cmd => pid.x.command
net xenable axis.0.amp-enable-out => hm2_5i20.0.pwmgen.00.enable
```

```
# ---Encoder feedback signals/setup---
```

```
setp hm2_5i20.0.encoder.00.counter-mode 0
setp hm2_5i20.0.encoder.00.filter 1
setp hm2_5i20.0.encoder.00.index-invert 0
```

```
setp hm2_5i20.0.encoder.00.index-mask 0
setp hm2_5i20.0.encoder.00.index-mask-invert 0
setp hm2_5i20.0.encoder.00.scale [AXIS_0]INPUT_SCALE
net xpos-fb      <= hm2_5i20.0.encoder.00.position
net xpos-fb      => pid.x.feedback
net xpos-fb      => axis.0.motor-pos-fb
net x-index-enable  axis.0.index-enable <=> hm2_5i20.0.encoder.00.index-enable
```

```
# ---setup home / limit switch signals---
```

```
net x-home-sw    => axis.0.home-sw-in
net x-neg-limit  => axis.0.neg-lim-sw-in
net x-pos-limit  => axis.0.pos-lim-sw-in
```

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```
# AXIS Y
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```
setp pid.y.Pgain [AXIS_1]P
setp pid.y.Igain [AXIS_1]I
setp pid.y.Dgain [AXIS_1]D
setp pid.y.bias  [AXIS_1]BIAS
setp pid.y.FF0   [AXIS_1]FF0
setp pid.y.FF1   [AXIS_1]FF1
setp pid.y.FF2   [AXIS_1]FF2
setp pid.y.deadband [AXIS_1]DEADBAND
setp pid.y.maxoutput [AXIS_1]MAX_OUTPUT
net y-index-enable <=> pid.y.index-enable
```

```
# PWM Generator signals/setup
```

```
setp hm2_5i20.0.pwmgen.03.output-type 1
setp hm2_5i20.0.pwmgen.03.scale [AXIS_1]OUTPUT_SCALE
net yenable    => pid.y.enable
net youtput    pid.y.output    => hm2_5i20.0.pwmgen.03.value
net ypos-cmd   axis.1.motor-pos-cmd => pid.y.command
net yenable    axis.1.amp-enable-out => hm2_5i20.0.pwmgen.03.enable
```

```
# ---Encoder feedback signals/setup---
```

```
setp hm2_5i20.0.encoder.03.counter-mode 0
setp hm2_5i20.0.encoder.03.filter 1
setp hm2_5i20.0.encoder.03.index-invert 0
setp hm2_5i20.0.encoder.03.index-mask 0
setp hm2_5i20.0.encoder.03.index-mask-invert 0
setp hm2_5i20.0.encoder.03.scale [AXIS_1]INPUT_SCALE
net ypos-fb      <= hm2_5i20.0.encoder.03.position
net ypos-fb      => pid.y.feedback
net ypos-fb      => axis.1.motor-pos-fb
net y-index-enable  axis.1.index-enable <=> hm2_5i20.0.encoder.03.index-enable
```

```
# ---setup home / limit switch signals---
```

```
net y-home-sw    => axis.1.home-sw-in
net y-neg-limit  => axis.1.neg-lim-sw-in
net y-pos-limit  => axis.1.pos-lim-sw-in
```

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```
# AXIS Z
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```

```
setp pid.z.Pgain [AXIS_2]P
setp pid.z.Igain [AXIS_2]I
```

```
setp pid.z.Dgain [AXIS_2]D
setp pid.z.bias [AXIS_2]BIAS
setp pid.z.FF0 [AXIS_2]FF0
setp pid.z.FF1 [AXIS_2]FF1
setp pid.z.FF2 [AXIS_2]FF2
setp pid.z.deadband [AXIS_2]DEADBAND
setp pid.z.maxoutput [AXIS_2]MAX_OUTPUT
net z-index-enable <=> pid.z.index-enable
```

```
# PWM Generator signals/setup
```

```
setp hm2_5i20.0.pwmgen.02.output-type 1
setp hm2_5i20.0.pwmgen.02.scale [AXIS_2]OUTPUT_SCALE
net zenable => pid.z.enable
net zoutput pid.z.output => hm2_5i20.0.pwmgen.02.value
net zpos-cmd axis.2.motor-pos-cmd => pid.z.command
net zenable axis.2.amp-enable-out => hm2_5i20.0.pwmgen.02.enable
```

```
# ---Encoder feedback signals/setup---
```

```
setp hm2_5i20.0.encoder.02.counter-mode 0
setp hm2_5i20.0.encoder.02.filter 1
setp hm2_5i20.0.encoder.02.index-invert 0
setp hm2_5i20.0.encoder.02.index-mask 0
setp hm2_5i20.0.encoder.02.index-mask-invert 0
setp hm2_5i20.0.encoder.02.scale [AXIS_2]INPUT_SCALE
net zpos-fb <= hm2_5i20.0.encoder.02.position
net zpos-fb => pid.z.feedback
net zpos-fb => axis.2.motor-pos-fb
net z-index-enable axis.2.index-enable <=> hm2_5i20.0.encoder.02.index-enable
```

```
# ---setup home / limit switch signals---
```

```
net z-home-sw => axis.2.home-sw-in
net z-neg-limit => axis.2.neg-lim-sw-in
net z-pos-limit => axis.2.pos-lim-sw-in
```

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```
# AXIS A
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```

```
setp pid.a.Pgain [AXIS_3]P
setp pid.a.Igain [AXIS_3]I
setp pid.a.Dgain [AXIS_3]D
setp pid.a.bias [AXIS_3]BIAS
setp pid.a.FF0 [AXIS_3]FF0
setp pid.a.FF1 [AXIS_3]FF1
setp pid.a.FF2 [AXIS_3]FF2
setp pid.a.deadband [AXIS_3]DEADBAND
setp pid.a.maxoutput [AXIS_3]MAX_OUTPUT
net a-index-enable <=> pid.a.index-enable
```

```
# PWM Generator signals/setup
```

```
setp hm2_5i20.0.pwmgen.01.output-type 1
setp hm2_5i20.0.pwmgen.01.scale [AXIS_3]OUTPUT_SCALE
net aenable => pid.a.enable
net aoutput pid.a.output => hm2_5i20.0.pwmgen.01.value
net apos-cmd axis.3.motor-pos-cmd => pid.a.command
net aenable axis.3.amp-enable-out => hm2_5i20.0.pwmgen.01.enable
```

```
# ---Encoder feedback signals/setup---
```

```
setp hm2_5i20.0.encoder.01.counter-mode 0
setp hm2_5i20.0.encoder.01.filter 1
setp hm2_5i20.0.encoder.01.index-invert 0
setp hm2_5i20.0.encoder.01.index-mask 0
setp hm2_5i20.0.encoder.01.index-mask-invert 0
setp hm2_5i20.0.encoder.01.scale [AXIS_3]INPUT_SCALE
net apos-fb      <= hm2_5i20.0.encoder.01.position
net apos-fb      => pid.a.feedback
net apos-fb      => axis.3.motor-pos-fb
net a-index-enable  axis.3.index-enable <=> hm2_5i20.0.encoder.01.index-enable
```

```
# ---setup home / limit switch signals---
```

```
net a-home-sw    => axis.3.home-sw-in
net a-neg-limit  => axis.3.neg-lim-sw-in
net a-pos-limit  => axis.3.pos-lim-sw-in
```

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```
# SPINDLE S
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```
# ---setup spindle control signals---
```

```
net spindle-vel-cmd-rps <= motion.spindle-speed-out-rps
net spindle-vel-cmd    <= motion.spindle-speed-out
net spindle-enable     <= motion.spindle-on
net spindle-cw        <= motion.spindle-forward
net spindle-ccw       <= motion.spindle-reverse
net spindle-brake     <= motion.spindle-brake
net spindle-revs      => motion.spindle-revs
net spindle-at-speed  => motion.spindle-at-speed
net spindle-vel-fb    => motion.spindle-speed-in
net spindle-index-enable <=> motion.spindle-index-enable
```

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```
# connect miscellaneous signals
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```
# ---coolant signals---
```

```
net coolant-mist <= iocontrol.0.coolant-mist
net coolant-flood <= iocontrol.0.coolant-flood
```

```
# ---probe signal---
```

```
net probe-in => motion.probe-input
```

```
# ---digital in / out signals---
```

```
# ---estop signals---
```

```
net estop-out <= iocontrol.0.user-enable-out
net estop-out => iocontrol.0.emc-enable-in
```

```
# ---toolchange signals for custom tool changer---
```

```
net tool-number      <= iocontrol.0.tool-prep-number
net tool-change-request <= iocontrol.0.tool-change
net tool-change-confirmed => iocontrol.0.tool-changed
net tool-prepare-request <= iocontrol.0.tool-prepare
net tool-prepare-confirmed => iocontrol.0.tool-prepared
```