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1 # Generated by PNCconf at Sun Jul 26 08:44:12 2020
2 # Using LinuxCNC version: UNAVAILABLE
3 # If you make changes to this file, they will be
4 # overwritten when you run PNCconf again
5
6 loadrt [KINS]KINEMATICS
7 loadrt [EMCMOT]EMCMOT servo_period_nsec=[EMCMOT]SERVO_PERIOD num_joints=[KINS]JOINTS
8 loadrt hostmot2
9 loadrt hm2_eth board_ip="10.10.10.10" config=" num_encoders=1 num_pwmgens=0
  num_stepgens=3 sserial_port_0=200xxx"
10 setp hm2_7i92.0.watchdog.timeout_ns 5000000
11 loadrt pid names=pid.x,pid.y,pid.z,pid.s
12
13 addf hm2_7i92.0.read servo-thread
14 addf motion-command-handler servo-thread
15 addf motion-controller servo-thread
16 addf pid.x.do-pid-calcs servo-thread
17 addf pid.y.do-pid-calcs servo-thread
18 addf pid.z.do-pid-calcs servo-thread
19 addf pid.s.do-pid-calcs servo-thread
20 addf hm2_7i92.0.write servo-thread
21 setp hm2_7i92.0.dpll.01.timer-us -50
22 setp hm2_7i92.0.stepgen.timer-number 1
23
24 # external output signals
25
26
27 # external input signals
28
29
30 #####
31
32 # --- BOTH-X ---
33 #net both-x <= hm2_7i92.0.7i76.0.0.input-01
34 # --- BOTH-Y ---
35 #net both-y <= hm2_7i92.0.7i76.0.0.input-02
36 # --- BOTH-Z ---
37 # both-z <= hm2_7i92.0.7i76.0.0.input-03
38 # --- HOME-X ---
39 #net home-x <= hm2_7i92.0.7i76.0.0.input-04
40 # --- HOME-Y ---
41 #net home-y <= hm2_7i92.0.7i76.0.0.input-05
42 # --- HOME-Z ---
43 #net home-z <= hm2_7i92.0.7i76.0.0.input-06
44
45 #####
46
47 # --- HOME-X ---
48 net home-x <= hm2_7i92.0.7i76.0.0.input-01-not
49
50 # --- HOME-Y ---
51 net home-y <= hm2_7i92.0.7i76.0.0.input-02-not
52
53 # --- HOME-Z ---
54 net home-z <= hm2_7i92.0.7i76.0.0.input-14
55
56 # --- MIN-X ---
57 net min-x <= hm2_7i92.0.7i76.0.0.input-04-not
58
59 # --- MAX-X ---
60 net max-x <= hm2_7i92.0.7i76.0.0.input-05-not
61
62 # --- MIN-Y ---
63 net min-y <= hm2_7i92.0.7i76.0.0.input-06-not
64
65 # --- MAX-Y ---
66 net max-y <= hm2_7i92.0.7i76.0.0.input-07-not
67
68 # --- MIN-Z ---
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69 net both-z      <= hm2_7i92.0.7i76.0.0.input-15
70
71 # --- MAX-Z ---
72 #et max-z      <= hm2_7i92.0.7i76.0.0.input-09
73
74 #####
75
76 #*****
77 #  AXIS X JOINT 0
78 #*****
79
80 setp  pid.x.Pgain      [JOINT_0]P
81 setp  pid.x.Igain      [JOINT_0]I
82 setp  pid.x.Dgain      [JOINT_0]D
83 setp  pid.x.bias       [JOINT_0]BIAS
84 setp  pid.x.FF0        [JOINT_0]FF0
85 setp  pid.x.FF1        [JOINT_0]FF1
86 setp  pid.x.FF2        [JOINT_0]FF2
87 setp  pid.x.deadband   [JOINT_0]DEADBAND
88 setp  pid.x.maxoutput  [JOINT_0]MAX_OUTPUT
89 setp  pid.x.error-previous-target true
90 setp  pid.x.maxerror   .0005
91
92 net x-index-enable <=> pid.x.index-enable
93 net x-enable       => pid.x.enable
94 net x-pos-cmd      => pid.x.command
95 net x-pos-fb       => pid.x.feedback
96 net x-output       <= pid.x.output
97
98 # Step Gen signals/setup
99
100 setp  hm2_7i92.0.stepgen.00.dirsetup      [JOINT_0]DIRSETUP
101 setp  hm2_7i92.0.stepgen.00.dirhold      [JOINT_0]DIRHOLD
102 setp  hm2_7i92.0.stepgen.00.steplen      [JOINT_0]STEPLEN
103 setp  hm2_7i92.0.stepgen.00.stepspace    [JOINT_0]STEPSPACE
104 setp  hm2_7i92.0.stepgen.00.position-scale [JOINT_0]STEP_SCALE
105 setp  hm2_7i92.0.stepgen.00.step_type    0
106 setp  hm2_7i92.0.stepgen.00.control-type 1
107 setp  hm2_7i92.0.stepgen.00.maxaccel     [JOINT_0]STEPGEN_MAXACCEL
108 setp  hm2_7i92.0.stepgen.00.maxvel      [JOINT_0]STEPGEN_MAXVEL
109
110 # ---closedloop stepper signals---
111
112 net x-pos-cmd      <= joint.0.motor-pos-cmd
113 net x-vel-cmd      <= joint.0.vel-cmd
114 net x-output       <= hm2_7i92.0.stepgen.00.velocity-cmd
115 net x-pos-fb       <= hm2_7i92.0.stepgen.00.position-fb
116 net x-pos-fb       => joint.0.motor-pos-fb
117 net x-enable       <= joint.0.amp-enable-out
118 net x-enable       => hm2_7i92.0.stepgen.00.enable
119
120 # ---setup home / limit switch signals---
121
122 net home-x         => joint.0.home-sw-in
123 #net both-x       => joint.0.neg-lim-sw-in
124 #net both-x       => joint.0.pos-lim-sw-in
125 net min-x          => joint.0.neg-lim-sw-in
126 net max-x          => joint.0.pos-lim-sw-in
127
128
129 #*****
130 #  AXIS Y JOINT 1
131 #*****
132
133 setp  pid.y.Pgain      [JOINT_1]P
134 setp  pid.y.Igain      [JOINT_1]I
135 setp  pid.y.Dgain      [JOINT_1]D
136 setp  pid.y.bias       [JOINT_1]BIAS
137 setp  pid.y.FF0        [JOINT_1]FF0

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138 setp pid.y.FF1 [JOINT_1]FF1
139 setp pid.y.FF2 [JOINT_1]FF2
140 setp pid.y.deadband [JOINT_1]DEADBAND
141 setp pid.y.maxoutput [JOINT_1]MAX_OUTPUT
142 setp pid.y.error-previous-target true
143 setp pid.y.maxerror .0005
144
145 net y-index-enable <=> pid.y.index-enable
146 net y-enable => pid.y.enable
147 net y-pos-cmd => pid.y.command
148 net y-pos-fb => pid.y.feedback
149 net y-output <= pid.y.output
150
151 # Step Gen signals/setup
152
153 setp hm2_7i92.0.stepgen.01.dirsetup [JOINT_1]DIRSETUP
154 setp hm2_7i92.0.stepgen.01.dirhold [JOINT_1]DIRHOLD
155 setp hm2_7i92.0.stepgen.01.steplen [JOINT_1]STEPLEN
156 setp hm2_7i92.0.stepgen.01.stepspace [JOINT_1]STEPSPACE
157 setp hm2_7i92.0.stepgen.01.position-scale [JOINT_1]STEP_SCALE
158 setp hm2_7i92.0.stepgen.01.step_type 0
159 setp hm2_7i92.0.stepgen.01.control-type 1
160 setp hm2_7i92.0.stepgen.01.maxaccel [JOINT_1]STEPGEN_MAXACCEL
161 setp hm2_7i92.0.stepgen.01.maxvel [JOINT_1]STEPGEN_MAXVEL
162
163 # ---closedloop stepper signals---
164
165 net y-pos-cmd <= joint.1.motor-pos-cmd
166 net y-vel-cmd <= joint.1.vel-cmd
167 net y-output <= hm2_7i92.0.stepgen.01.velocity-cmd
168 net y-pos-fb <= hm2_7i92.0.stepgen.01.position-fb
169 net y-pos-fb => joint.1.motor-pos-fb
170 net y-enable <= joint.1.amp-enable-out
171 net y-enable => hm2_7i92.0.stepgen.01.enable
172
173 # ---setup home / limit switch signals---
174
175 net home-y => joint.1.home-sw-in
176 net min-y => joint.1.neg-lim-sw-in
177 net max-y => joint.1.pos-lim-sw-in
178
179 #*****
180 # AXIS Z JOINT 2
181 #*****
182
183 setp pid.z.Pgain [JOINT_2]P
184 setp pid.z.Igain [JOINT_2]I
185 setp pid.z.Dgain [JOINT_2]D
186 setp pid.z.bias [JOINT_2]BIAS
187 setp pid.z.FF0 [JOINT_2]FF0
188 setp pid.z.FF1 [JOINT_2]FF1
189 setp pid.z.FF2 [JOINT_2]FF2
190 setp pid.z.deadband [JOINT_2]DEADBAND
191 setp pid.z.maxoutput [JOINT_2]MAX_OUTPUT
192 setp pid.z.error-previous-target true
193 setp pid.z.maxerror .0005
194
195 net z-index-enable <=> pid.z.index-enable
196 net z-enable => pid.z.enable
197 net z-pos-cmd => pid.z.command
198 net z-pos-fb => pid.z.feedback
199 net z-output <= pid.z.output
200
201 # Step Gen signals/setup
202
203 setp hm2_7i92.0.stepgen.02.dirsetup [JOINT_2]DIRSETUP
204 setp hm2_7i92.0.stepgen.02.dirhold [JOINT_2]DIRHOLD
205 setp hm2_7i92.0.stepgen.02.steplen [JOINT_2]STEPLEN
206 setp hm2_7i92.0.stepgen.02.stepspace [JOINT_2]STEPSPACE

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207 setp   hm2_7i92.0.stepgen.02.position-scale [JOINT_2]STEP_SCALE
208 setp   hm2_7i92.0.stepgen.02.step_type      0
209 setp   hm2_7i92.0.stepgen.02.control-type   1
210 setp   hm2_7i92.0.stepgen.02.maxaccel      [JOINT_2]STEPGEN_MAXACCEL
211 setp   hm2_7i92.0.stepgen.02.maxvel        [JOINT_2]STEPGEN_MAXVEL
212
213 # ---closedloop stepper signals---
214
215 net z-pos-cmd      <= joint.2.motor-pos-cmd
216 net z-vel-cmd      <= joint.2.vel-cmd
217 net z-output       <= hm2_7i92.0.stepgen.02.velocity-cmd
218 net z-pos-fb       <= hm2_7i92.0.stepgen.02.position-fb
219 net z-pos-fb       => joint.2.motor-pos-fb
220 net z-enable       <= joint.2.amp-enable-out
221 net z-enable       => hm2_7i92.0.stepgen.02.enable
222
223 # ---setup home / limit switch signals---
224
225 net home-z        => joint.2.home-sw-in
226 #net min-z        => joint.2.neg-lim-sw-in
227 #net max-z        => joint.2.pos-lim-sw-in
228
229 net both-z        => joint.2.neg-lim-sw-in
230 net both-z        => joint.2.pos-lim-sw-in
231
232 #*****
233 # SPINDLE
234 #*****
235
236 setp   pid.s.Pgain   [SPINDLE_0]P
237 setp   pid.s.Igain   [SPINDLE_0]I
238 setp   pid.s.Dgain   [SPINDLE_0]D
239 setp   pid.s.bias    [SPINDLE_0]BIAS
240 setp   pid.s.FF0     [SPINDLE_0]FF0
241 setp   pid.s.FF1     [SPINDLE_0]FF1
242 setp   pid.s.FF2     [SPINDLE_0]FF2
243 setp   pid.s.deadband [SPINDLE_0]DEADBAND
244 setp   pid.s.maxoutput [SPINDLE_0]MAX_OUTPUT
245 setp   pid.s.error-previous-target true
246
247 net spindle-index-enable <=> pid.s.index-enable
248 net spindle-enable      => pid.s.enable
249 net spindle-vel-cmd-rpm => pid.s.command
250 net spindle-vel-fb-rpm  => pid.s.feedback
251 net spindle-output      <= pid.s.output
252
253 net spindle-enable hm2_7i92.0.7i76.0.0.output-11
254
255 # ---setup spindle control signals---
256
257 net spindle-vel-cmd-rps      <= spindle.0.speed-out-rps
258 net spindle-vel-cmd-rps-abs <= spindle.0.speed-out-rps-abs
259 net spindle-vel-cmd-rpm     <= spindle.0.speed-out
260 net spindle-vel-cmd-rpm-abs <= spindle.0.speed-out-abs
261 net spindle-enable         <= spindle.0.on
262 net spindle-cw             <= spindle.0.forward
263 net spindle-ccw           <= spindle.0.reverse
264 net spindle-brake         <= spindle.0.brake
265 net spindle-revs         => spindle.0.revs
266 net spindle-at-speed      => spindle.0.at-speed
267 net spindle-vel-fb-rps    => spindle.0.speed-in
268 net spindle-index-enable  <=> spindle.0.index-enable
269
270 # ---Setup spindle at speed signals---
271
272 sets spindle-at-speed true
273
274 #####
275

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276 setp hm2_7i92.0.7i76.0.0.spinout-scalemax 24000
277 setp hm2_7i92.0.7i76.0.0.spinout-maxlim 24000
278 setp hm2_7i92.0.7i76.0.0.spinout-minlim 0
279
280 #sets spindle-at-speed true
281
282 #loadrt timedelay count=1
283 #addf timedelay.0 servo-thread
284 #setp timedelay.0.on-delay 10
285 #setp timedelay.0.off-delay 0
286 #net spindle-enable => timedelay.0.in
287 #net spindle-ready <= timedelay.0.out
288 #net spindle-ready => spindle.0.at-speed
289
290
291
292 net spindle-enable hm2_7i92.0.7i76.0.0.spinena
293 net spindle-vel-cmd-rpm hm2_7i92.0.7i76.0.0.spinout
294
295
296
297 #####
298
299
300 #*****
301 # connect miscellaneous signals
302 #*****
303
304 # ---HALUI signals---
305
306 net axis-select-x halui.axis.x.select
307 net jog-x-pos halui.axis.x.plus
308 net jog-x-neg halui.axis.x.minus
309 net jog-x-analog halui.axis.x.analog
310 net x-is-homed halui.joint.0.is-homed
311 net axis-select-y halui.axis.y.select
312 net jog-y-pos halui.axis.y.plus
313 net jog-y-neg halui.axis.y.minus
314 net jog-y-analog halui.axis.y.analog
315 net y-is-homed halui.joint.1.is-homed
316 net axis-select-z halui.axis.z.select
317 net jog-z-pos halui.axis.z.plus
318 net jog-z-neg halui.axis.z.minus
319 net jog-z-analog halui.axis.z.analog
320 net z-is-homed halui.joint.2.is-homed
321 net jog-selected-pos halui.axis.selected.plus
322 net jog-selected-neg halui.axis.selected.minus
323 net spindle-manual-cw halui.spindle.0.forward
324 net spindle-manual-ccw halui.spindle.0.reverse
325 net spindle-manual-stop halui.spindle.0.stop
326 net machine-is-on halui.machine.is-on
327 net jog-speed halui.axis.jog-speed
328 net MDI-mode halui.mode.is-mdi
329
330 # ---coolant signals---
331
332 #net coolant-mist <= iocontrol.0.coolant-mist
333 #net coolant-flood <= iocontrol.0.coolant-flood
334
335 # ---probe signal---
336
337 net probe-in => motion.probe-input
338
339 # ---motion control signals---
340
341 net in-position <= motion.in-position
342 net machine-is-enabled <= motion.motion-enabled
343
344 # ---digital in / out signals---

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345
346 # ---estop signals---
347
348 #net estop-out      <=  ioccontrol.0.user-enable-out
349 #net estop-out      =>  ioccontrol.0.emc-enable-in
350
351 loadrt estop_latch
352 addf estop-latch.0 servo-thread
353 net estop-loopout ioccontrol.0.emc-enable-in <= estop-latch.0.ok-out
354 net estop-loopin ioccontrol.0.user-enable-out => estop-latch.0.ok-in
355 net estop-reset ioccontrol.0.user-request-enable => estop-latch.0.reset
356 net remote-estop estop-latch.0.fault-in <=  hm2_7i92.0.7i76.0.0.input-00-not
357
358
359 # ---manual tool change signals---
360
361 # in case they were linked already
362 unlinkp ioccontrol.0.tool-change
363 unlinkp ioccontrol.0.tool-changed
364
365 net tool-change  ioccontrol.0.tool-change  ioccontrol.0.tool-changed
366
367 #loadusr -W hal_manualtoolchange
368 #net tool-change-request      ioccontrol.0.tool-change      =>
369 hal_manualtoolchange.change
369 #net tool-change-confirmed    ioccontrol.0.tool-changed    <=
370 hal_manualtoolchange.changed
370 #net tool-number              ioccontrol.0.tool-prep-number =>
371 hal_manualtoolchange.number
371 #net tool-prepare-loopback    ioccontrol.0.tool-prepare    =>  ioccontrol.0.tool-prepared
372
373
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