

LOOP CONTROL PARAMETERS

12 OCTOBER 2005

No:	NAME:	DESCRIPTION:	UNITS:	RANGE:
GENERAL LOOP SETTINGS				
*01	Kerf	Width of the saw cut.	0.1mm	0.0 – 100.0
*02	Loop Type	0 = Loop disabled. 1 = Open loop set; no position hold. 2 = Open loop set; PID position hold. 3 = Closed loop profile set; no position hold. 4 = Closed loop profile set; PID position hold.	1	0 – 4
*03	Park / Retract Distance	The target for the system when performing a "Park" or "Retract" operation	0.1mm	1.0 – 2000.0
*04	Offset Distance	The distance used on a carriage when performing an "Offset" operation	0.1mm	0.0 – 2000.0
*05	Set Type	1 = Normal mode (absolute set unless within "Minimum Set Distance" P*06) 2 = Always set forward 3 = Absolute setting in both directions 4 = Always set backwards	1	1 – 4
*06	Minimum Set Distance	When P*05 = 1, requested sets of a distance less than specified here will cause a backup and set forward to the target	0.1mm	0.0 – 100.0
*07	Backup Distance	Distance to backup when P*05 = 1 or 2	0.1mm	0.0 – 100.0
*08				
*09				
LIMIT PARAMETERS				
*10	Limit Type	1 = No limits 2 = Manual limits	1	1 – 2
*11	Back Limit	The maximum distance from the saw that the system can safely travel to	0.1mm	1.0 – 2000.0
*12	Forward Limit / Dogs In Limit	This is the forward limit of a resaw / breastbench networks. It is also the "Dogs In" limit for a carriage networks	0.1mm	0.0 – 2000.0
*13	Dogs Out Limit	This is the "Dogs Out" limit for a carriage networks	0.1mm	0.0 – 2000.0
*14	Flipper Limit	This is the "Flipper Extended" limit for a carriage networks	0.1mm	0.0 – 2000.0
*15	Half Dog Limit	This is the "Half Dogs" limit for a carriage networks	0.1mm	0.0 – 2000.0
*16	Taper Limit	This is the "Taper" limit for a carriage networks	0.1mm	0.0 – 2000.0
*17	Tong Dog Limit	This is the "Tong Dog" limit for a carriage networks	0.1mm	0.0 – 2000.0
*18				
*19				

PROBE PARAMETERS				
*20	Probe Type	0 = Simulate mode 1 = "P-Type" probe 2 = "L-Type" probe 3 = Stegmann encoder	1	0 – 3
*21	Probe Invert	0 = Normal probe (extended = small position) 1 = Inverted probe (extended = large position)	1	0 – 1
*22	Probe Offset	The distance to the saw at maximum extension	0.1mm	0.0 – 2000.0
*23	Probe Stroke	The distance covered by the probe / encoder when travelling between "Probe Max Counts" and "Probe Min Counts"	0.1mm	0.0 – 2000.0
*24	Probe Max Counts	The maximum number of counts the probe / encoder will receive when in operation	1	100 - 50000
*25	Probe Min Counts	The minimum number of counts the probe / encoder will receive when in operation	1	100 - 50000
*26	Loop Negative Offset	Used when Loop is able to travel through the saw line, and as such go to a negative position.	0.1mm	0.0 – 2000.0
*27				
*28				
*29				
GENERAL DRIVE PARAMETERS				
*30	Output Drive Select	1 = Relay 2 = PWM 3 = Bipolar Analog (-10V to +10V) 4 = Unipolar Analog (0V to +10V)	1	1 - 4
*31	Drive Output Invert	0 = Normal drive output 1 = Inverted drive output	1	0 – 1
*32	Valve Dither	Amount of physical dither added to the output drive signal	0.1%	0.0 – 100.0
*33	Ramp Up Boost	Extra % added to drive output when accelerating. Only used if P*02 = 1 or 2.	0.1%	0.0 – 100.0
*34	Ramp Down Boost	Extra % added to drive output when decelerating. Only used if P*02 = 1 or 2.	0.1%	0.0 – 100.0
*35	Jog Limit Ramp	Ramp down deceleration used when jogging toward a limit	0.1m/s/s	0.1 – 10.0
*36	Taper Left Scale Factor	Percentage used to scale the speed of the axis when implemented as a middle knee of a carriage. This value is inverted for Taper Right operations.	0.1%	0.1 – 100.0
*37				
*38				
*39				

FORWARD DRIVE PARAMETERS				
*40	Forward Drift	In "Open Loop" this will set the drift distance for the system when setting forward. In "Closed Loop" this will define the PID position hold region	0.1mm	0.0 – 100.0
*41	Forward Deadband	Forward deadband % drive of the system	0.1%	0.0 – 100.0
*42	Forward Null	Constant bias added to the forward drive output when in "Open Loop Position Hold" (P*02 = 1 or 3). This parameter should be set to zero if P*52 is set.	0.1%	0.0 – 100.0
*43	Maximum Forward Drive	Limits the forward drive output	0.1%	0.0 – 100.0
*44	Forward Ramp Up	Acceleration rate when setting or jogging forward		0.1 – 10.0
*45	Forward Maximum Speed	Target forward speed when setting		0.05 – 5.00
*46	Forward Ramp Down	Deceleration rate when setting forward		0.1 – 10.0
*47	Jog Forward Ramp Down	Deceleration rate when jogging forward		0.1 – 10.0
*48	Jog Forward Maximum Speed	Target forward speed when jogging		0.05 – 5.00
*49	Jog Forward Slow Speed	Target speed when performing a "Slow" jog forward operation		0.05 – 5.00
BACK DRIVE PARAMETERS				
*50	Back Drift	In "Open Loop" this will set the drift distance for the system when setting back. In "Closed Loop" this will define the PID position hold region	0.1mm	0.0 – 100.0
*51	Back Deadband	Back deadband % drive of the system	0.1%	0.0 – 100.0
*52	Back Null	Constant bias added to the back drive output when in "Open Loop Position Hold" (P*02 = 1 or 3). This parameter should be set to zero if P*42 is set.	0.1%	0.0 – 100.0
*53	Maximum Back Drive	Limits the back drive output	0.1%	0.0 – 100.0
*54	Back Ramp Up	Acceleration rate when setting or jogging back		0.1 – 10.0
*55	Back Maximum Speed	Target back speed when setting		0.05 – 5.00
*56	Back Ramp Down	Deceleration rate when setting back		0.1 – 10.0
*57	Jog Back Ramp Down	Deceleration rate when jogging back		0.1 – 10.0
*58	Jog Back Maximum Speed	Target back speed when jogging		0.05 – 5.00
*59	Jog Back Slow Speed	Target speed when performing a "Slow" jog back operation		0.05 – 5.00

SETTING GAIN PARAMETERS (ONLY USED IF P*02 = 3 OR 4)				
*60	Kp (setting)	The proportional gain factor used when setting forward		0 - 1000
*61	Kp Limit (setting)	Limits the amount that the proportional gain factor (P*60) can become in the PID calculations		0 - 1000
*62	Ki (setting)	The integral gain factor used when setting fwd		0 - 1000
*63	Ki Limit (setting)	Limits the amount that the integral gain factor (P*62) can become in the PID calculations		0 - 1000
*64	F.F Ramp Up Forward	Feed-forward factor used when ramping up in the forward direction		0 – 1000
*65	F.F Ramp Up Backward	Feed-forward factor used when ramping up in the back direction		0 – 1000
*66	F.F Max Speed Forward	Feed-forward factor used when travelling at maximum speed in the forward direction		0 - 1000
*67	F.F Max Speed Back	Feed-forward factor used when travelling at maximum speed in the backward direction		0 – 1000
*68	F.F Ramp Down Forward	Feed-forward factor used when ramping down in the forward direction		0 – 1000
*69	F.F Ramp Down Backward	Feed-forward factor used when ramping down in the backward direction		0 - 1000
POSITION HOLD GAIN PARAMETERS (ONLY USED IF P*02 = 2 OR 4)				
*70	Kp (position hold)	The proportional gain factor used when holding position about a target in “Closed Loop”		0 – 1000
*71	Kp Limit (position hold)	Limits the amount that the proportional gain factor (P*70) can become in the PID calculations		0 - 1000
*72	Ki (position hold)	The integral gain factor used when holding position about a target in “Closed Loop”		0 – 1000
*73	Ki Limit (position hold)	Limits the amount that the integral gain factor (P*72) can become in the PID calculations		0 – 1000
*74				
*75				
*76				
*77				
*78				
*79				

SET PLOTTING PARAMETERS				
*80	Plot Sample Period	The length of time after a set is initiated that the system will record the data for the set plotting software.	1 sec	1 - 10
*81	Plot Curve 1 Data	Specifies the data to be recorded for curve 1 in the set plot: 0 = curve disabled (no data recorded) 1 = loop current position 2 = loop target position 3 = loop current speed 4 = loop target speed 5 = loop current drive output % 6 = motion control word 7 = system control word 8 = output control word 1 9 = output control word 2 10 = loop requested position 11 = loop final target position 12 = loop status word 13 = input status word 14 = output status word 1 15 = output status word 2 16 = communications error counter 17 = loop probe counts 18 = probe error type 19 = <i>spare</i> 20 = <i>spare</i>	1	1 - 20
*82	Plot Curve 2 Data	Specifies the data to be recorded for curve 2 in the set plot.	1	1 - 20
*83	Plot Curve 3 Data	Specifies the data to be recorded for curve 3 in the set plot.	1	1 - 20
*84	Plot Curve 4 Data	Specifies the data to be recorded for curve 4 in the set plot.	1	1 - 20
*85	Plot Curve 5 Data	Specifies the data to be recorded for curve 5 in the set plot.	1	1 - 20
*86				
*87				
*88				
*89				

DIAGNOSTIC PARAMETERS				
*90				
*91				
*92	Software Version	Displays the version number of the software running in the loop controller.	0.01	-
*93				
*94				
*95				
*96				
*97	Probe Error Type	Explains the reason for the probe error: 0 = No probe error present for this axis 1 = No probe / encoder present 2 = Too many magnets detected 3 = No magnet detected on the probe 4 = Encoder Error 5 = Counts received exceed maximum 6 = Counts received less than minimum	1	0 – 5
*98	Probe Scale	The calculated scale used by the loop control to convert from counts to mm	0.01	-
*99	Raw Probe Counts	The current reading from the probe / encoder in counts.	1	-