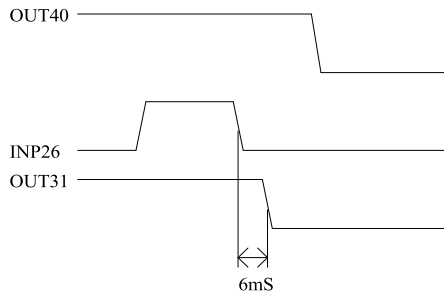
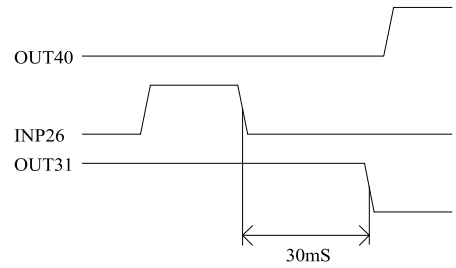


Timing Diagram - Fast I/O Enabled



Timing Diagram - Normal PLC Operation



DC3IO I/O MAP

Input Specification				Input Location	
Number	Function	Type	Use	Connector	Pin
1	X- Limit	Sourcing	Dedicated	H14	1
2	X+ Limit	Sourcing	Dedicated	H14	2
3	Y- Limit	Sourcing	Dedicated	H14	4
4	Y+ Limit	Sourcing	Dedicated	H14	5
5	Z- Limit	Sourcing	Dedicated	H14	7
6	Z+ Limit	Sourcing	Dedicated	H14	8
7	W- Limit	Configurable	General	H9	1
8	W+ Limit	Configurable	General	H9	2
9	Range	Sourcing	General	H13	11
10	5th+ Limit	Configurable	General	H9	4
11	Emergency Stop	Sourcing	Dedicated	H14	10
12	Servo Drive Fault	Internal	Dedicated	N/A	N/A
13	TTI	Sourcing	General	H14	11
14	Probe	Sourcing	General	H13	1
15	Probe Detect	Sourcing	General	H13	2
16	Error Check	Internal	Dedicated	N/A	N/A
17	Door Interlock	Configurable	General	H9	5
18	Low Lube	Sourcing	General	H13	4
19	Spindle Zero Speed	Configurable	General	H9	6
20	Spindle At Speed	Configurable	General	H12	1
21	Spindle Orient Complete	Configurable	General	H12	2
22	Tool Clamped	Configurable	General	H12	3
23	NOT USED	N/A	N/A	N/A	N/A
24	Tool Release Switch	Sourcing	General	H13	5
25	Spindle Drive Fault	Sourcing	General	H13	7
26	Tool Counter *	Configurable	General	H12	4
27	Carousel Out / TP Up	Configurable	General	H12	5
28	Carousel In / TP Dwn	Configurable	General	H12	6
29	NOT USED	N/A	N/A	N/A	N/A
30	Rotary Home	Sourcing	General	H13	8
31	Rotary Clamped	Sourcing	General	H13	10
32	Air Pressure Low	Configurable	General	H9	3
33	NOT USED	N/A	N/A	N/A	N/A
34	NOT USED	N/A	N/A	N/A	N/A
35	NOT USED	N/A	N/A	N/A	N/A
36	NOT USED	N/A	N/A	N/A	N/A
37	NOT USED	N/A	N/A	N/A	N/A
38	NOT USED	N/A	N/A	N/A	N/A
39	NOT USED	N/A	N/A	N/A	N/A
40	NOT USED	N/A	N/A	N/A	N/A
41	NOT USED	N/A	N/A	N/A	N/A
42	NOT USED	N/A	N/A	N/A	N/A
43	NOT USED	N/A	N/A	N/A	N/A
44	NOT USED	N/A	N/A	N/A	N/A
45	NOT USED	N/A	N/A	N/A	N/A
46	NOT USED	N/A	N/A	N/A	N/A
47	NOT USED	N/A	N/A	N/A	N/A

Output Specification			Output Location	
Number	Function	Type	Connector	Pin
1	Emergency Stop	Open Collector	H7	1
2	Lube Pump	Fused Relay SPST	H9	7,8
3	Flood Pump	Fused Relay SPST	H10	9,10
4	Mist Solenoid	Fused Relay SPST	H11	7,8
5	Carousel Direction	Open Collector	H7	2
6	Carousel Out Solenoid	Open Collector	H7	3
7	Tool Clamp Solenoid	Open Collector	H7	4
8	Air Blow Through	Open Collector	H7	5
9	Carousel In Solenoid	Open Collector	H7	6
10	Orient	Open Collector	H7	7
11	Spindle Chiller	Open Collector	H7	8
12	Spindle Cooling Fan	Open Collector	H6	1
13	Spindle Direction	Signal Relay SPDT	H10	1,2,3
14	Spindle Enable	Signal Relay SPDT	H10	4,5,6
15	Inverter Reset	Signal Relay SPDT	H11	1,2,3
16	Error Check	Internal	N/A	N/A
17	Spin. Speed Bit 0	Internal	N/A	N/A
18	Spin. Speed Bit 1	Internal	N/A	N/A
19	Spin. Speed Bit 2	Internal	N/A	N/A
20	Spin. Speed Bit 3	Internal	N/A	N/A
21	Spin. Speed Bit 4	Internal	N/A	N/A
22	Spin. Speed Bit 5	Internal	N/A	N/A
23	Spin. Speed Bit 6	Internal	N/A	N/A
24	Spin. Speed Bit 7	Internal	N/A	N/A
25	Spin. Speed Bit 8	Internal	N/A	N/A
26	Spin. Speed Bit 9	Internal	N/A	N/A
27	Spin. Speed Bit 10	Internal	N/A	N/A
28	Spin. Speed Bit 11	Internal	N/A	N/A
29	Gear Change	Open Collector	H6	2
30	Rotary Clamp Solenoid	Fused Relay SPDT	H11	4,5,6
31	Carousel Enable *	Open Collector	H6	3
32	Red Light	Open Collector	H6	4
33	Green Light	Open Collector	H6	5
34	Yellow Light	Open Collector	H6	6
35	Work light	Open Collector	H6	7
36	Auxiliary 1	Open Collector	H6	8
37	Auxiliary 2	Open Collector	H4	1
38	Auxiliary 3	Open Collector	H4	2
39	Auxiliary 4	Open Collector	H4	3
40	Fast I/O Enable *	N/A	N/A	N/A
41	NOT USED	N/A	N/A	N/A
42	NOT USED	N/A	N/A	N/A
43	NOT USED	N/A	N/A	N/A
44	NOT USED	N/A	N/A	N/A
45	NOT USED	N/A	N/A	N/A
46	NOT USED	N/A	N/A	N/A
47	NOT USED	N/A	N/A	N/A

48	NOT USED	N/A	N/A	N/A	N/A
49	NOT USED	N/A	N/A	N/A	N/A
50	NOT USED	N/A	N/A	N/A	N/A
51	NOT USED	N/A	N/A	N/A	N/A
52	NOT USED	N/A	N/A	N/A	N/A
53	NOT USED	N/A	N/A	N/A	N/A
54	NOT USED	N/A	N/A	N/A	N/A
55	NOT USED	N/A	N/A	N/A	N/A
56	NOT USED	N/A	N/A	N/A	N/A
57	NOT USED	N/A	N/A	N/A	N/A
58	NOT USED	N/A	N/A	N/A	N/A
59	NOT USED	N/A	N/A	N/A	N/A
60	NOT USED	N/A	N/A	N/A	N/A
61	NOT USED	N/A	N/A	N/A	N/A
62	NOT USED	N/A	N/A	N/A	N/A

* Fast I/O Related

48	NOT USED	N/A	N/A	N/A
49	NOT USED	N/A	N/A	N/A
50	NOT USED	N/A	N/A	N/A
51	NOT USED	N/A	N/A	N/A
52	NOT USED	N/A	N/A	N/A
53	NOT USED	N/A	N/A	N/A
54	NOT USED	N/A	N/A	N/A
55	NOT USED	N/A	N/A	N/A
56	NOT USED	N/A	N/A	N/A
57	NOT USED	N/A	N/A	N/A
58	NOT USED	N/A	N/A	N/A
59	Auxiliary 13	Open Collector	H4	4
60	Auxiliary 14	Open Collector	H4	5
61	Auxiliary 15	Open Collector	H4	6
62	Auxiliary 16	Open Collector	H4	7
	Drive Fault	Power Relay SPST	H11	9,10
	X Brake	Open Collector	H3	1
	Y Brake	Open Collector	H3	2
	Z Brake	Open Collector	H3	3

DC3IO Specifications

Characteristic	Min.	Typ.	Max.	Unit
5 Volt Supply Current	2	-	-	A
12 Volt Supply Current	0.5	-	-	A
Input Pullup Voltage	-	5	-	V
Power Relay Output Current	0.01	-	10	A @ 125 Vac
Power Relay Output Current	0.01	-	5	A @ 30 Vdc
Signal Relay Output Current	0.001	-	0.5	A @ 125 Vac
Signal Relay Output Current	0.001	-	1	A @ 24 Vdc
Open Collector Output Current	-	-	500	mA
Open Collector Output Voltage	-	5	-	V
Input Operating current	9	11	15	mA
Analog Output Resolution	-	12	-	bits
Analog Output Voltage	0	-	10	V
Analog Output Current	0	1	20	mA
Motor Output Current	6	12	15	A
Motor Supply Voltage	30	115	130	V
Dimensions: 16 * 8 * 5.25 (W*D*H)				Inches

DC3IO Troubleshooting

Symptom	Possible Cause	Corrective Action
All status LEDs out	Logic power not applied	Measure +5 Volt and +12 Volt at the connector, correct wiring or supply problems
USV LED out	No motor voltage	Measure voltage at input terminals, check contactors, wiring, and fuses accordingly
	Insufficient motor voltage	Voltage should be over 30 Vdc
DF LED out	Motion control card hasn't booted up	Start software, wait for the main screen to load
	Fibers 4 and 5 connected incorrectly or faulty	Check connections one at a time, swap with a known good set of fibers
	"Servo Power Removed" due to fault	Restart system to reset runaway or other serious fault condition
	Incorrect .HEX file	Make sure CNC8.HEX is loading
PLC OK LED out	Motion control card hasn't booted up	Start software, wait for the main screen to load
	Fibers 1, 2, or 3 connected incorrectly or faulty	Check connections one at a time, swap with a known good set of fibers
	Incorrect PIC on CPU10	Install IO2PIC
LEDs on, but motor doesn't run	Axis Fuse blown	Check fuses with a meter, replace as necessary
	Limits tripped	Push down the limit defeat switches
No analog output or non-linear output	Incorrect Parameter 31 setting	Set P31 to -1
XVCC LED out	Overload has damaged PLC section	Return for Repair
+12, -12, or +5 LED out	Overload has damaged analog section	Return for Repair
Input doesn't work with sensor	Incorrect wiring	Correct wiring for sensor type (sinking or sourcing), check that SIP values are appropriate for the input voltage
	Voltage drop across sensor is too high	Use 3-wire sensors with lower voltage drop spec.