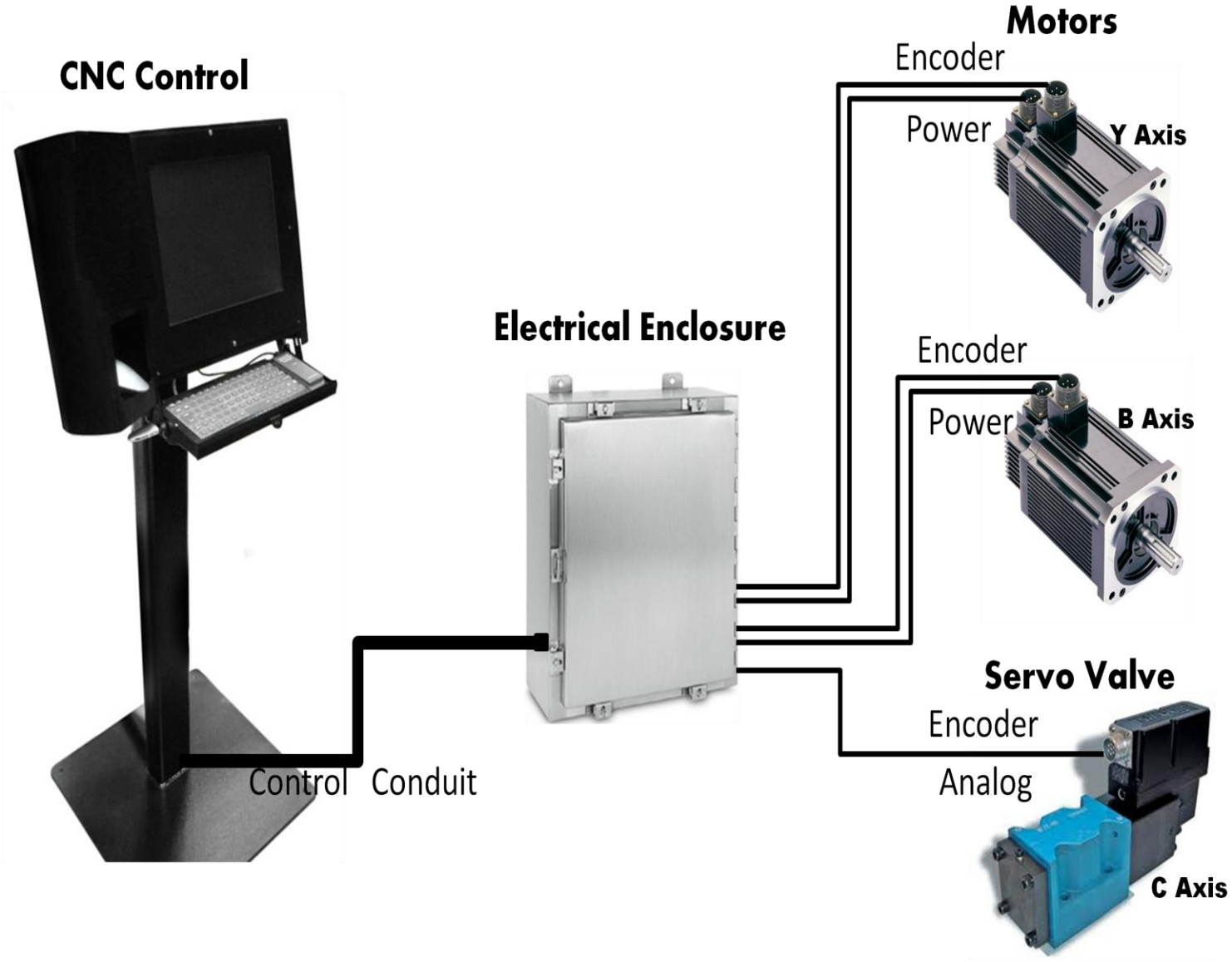
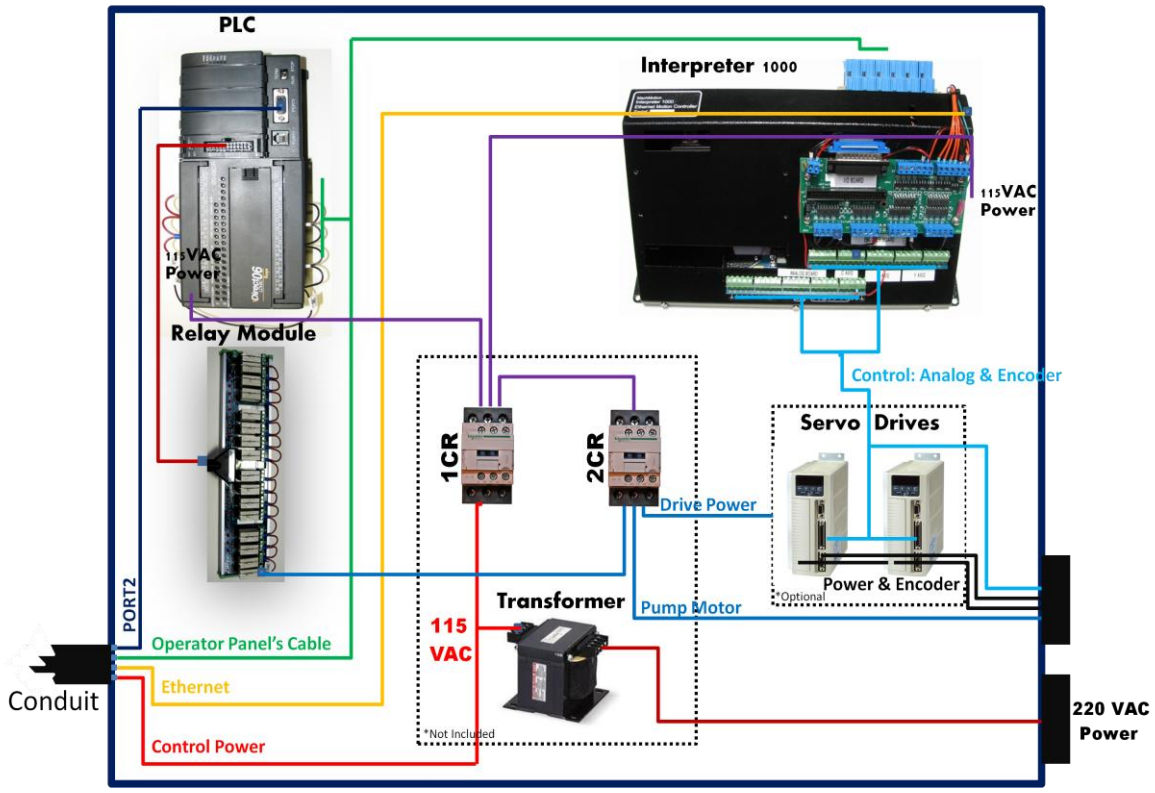
Tube Bender Control
X15-250-300

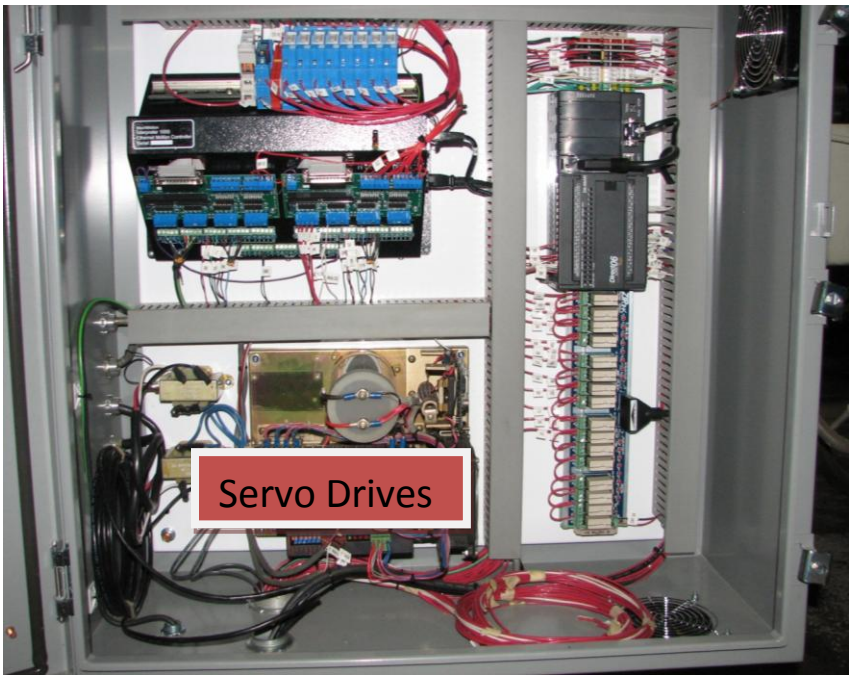


Everything you need to know to wire up your X15-250-300 tube bender control.

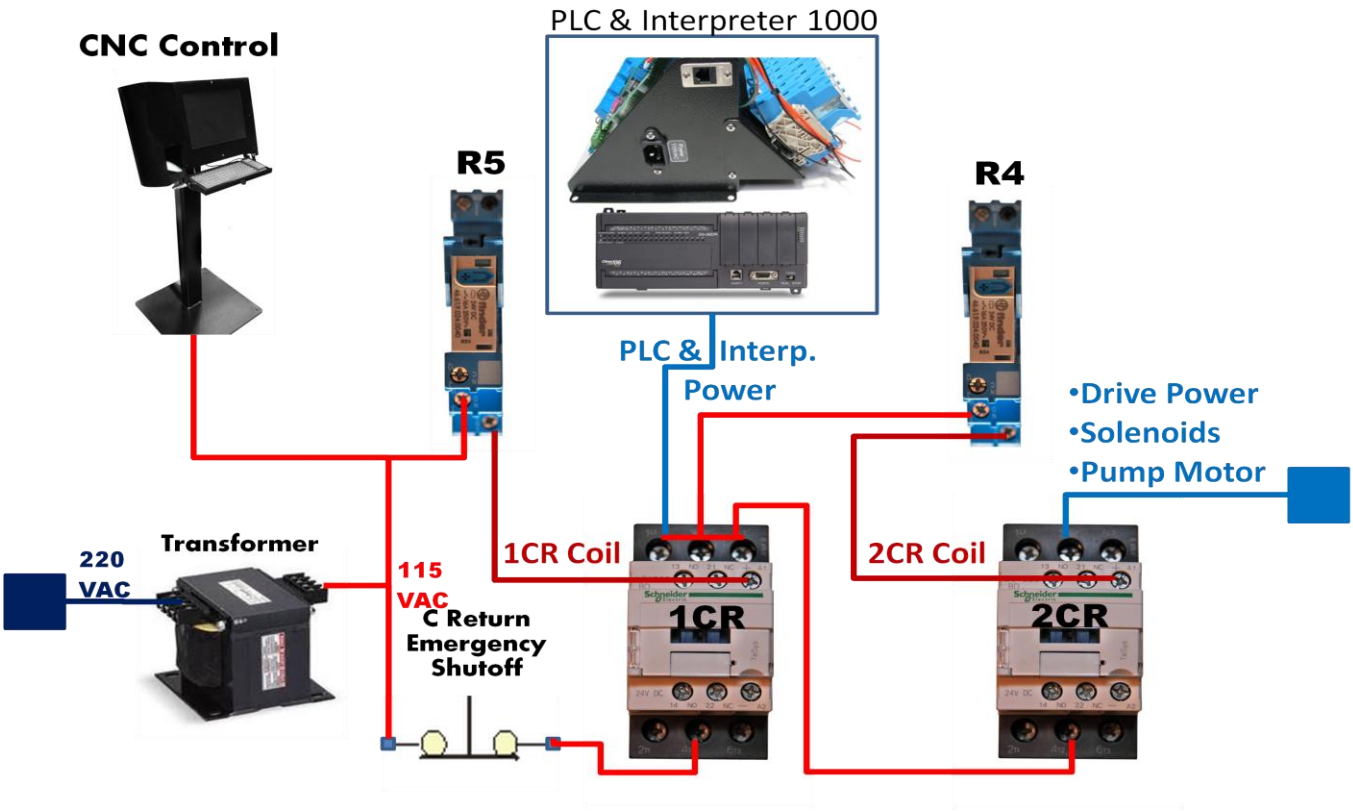
Electrical Enclosure



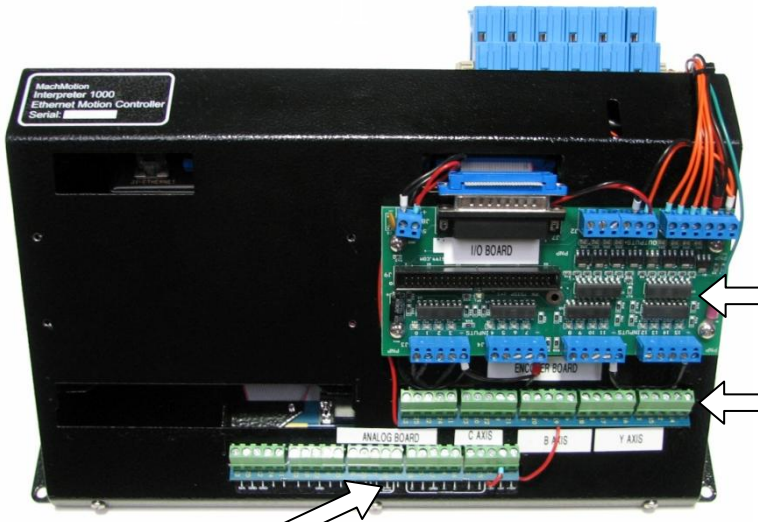
Electrical Enclosure Example



Power Circuit



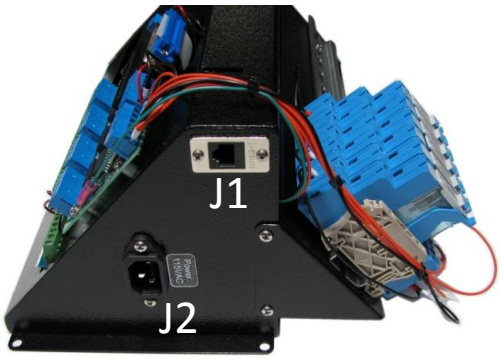
Interpreter 1000



I/O Board

Encoder Board

Analog Board

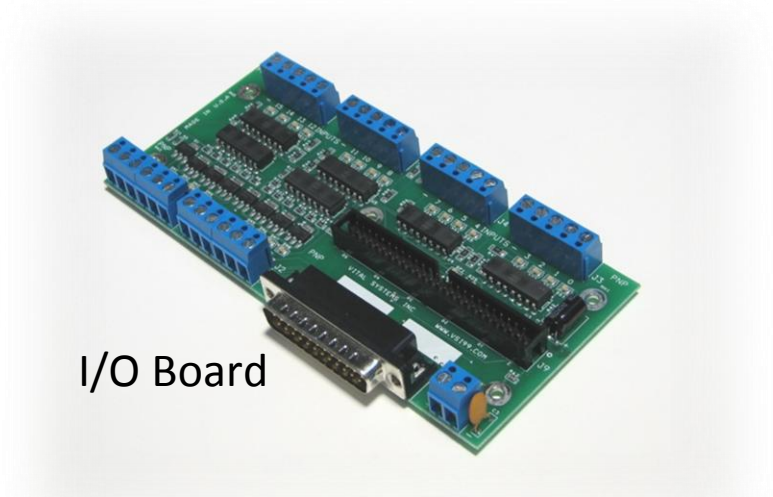


J1

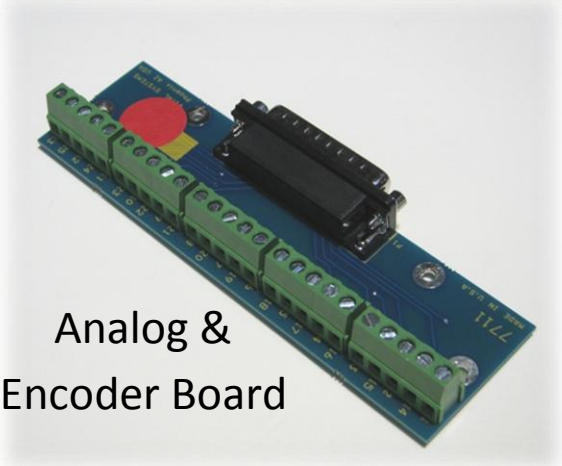
Connect J1 to the cable in the control's conduit labeled *Ethernet*.

J2

Connect J2 to 115 VAC from the 1CR Relay (See Power Circuit).

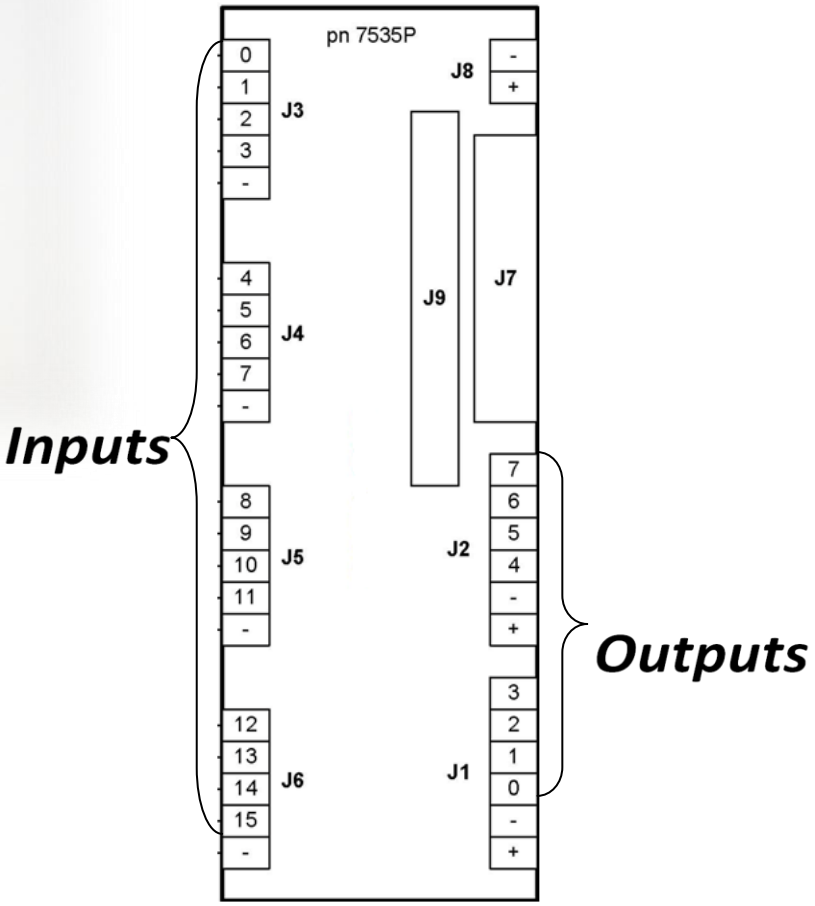


I/O Board



Analog & Encoder Board

I/O Board



24 VDC Inputs

Pin Number	Connector	Function
0	J3	Y & B Alarm
1		N.A.
2		Front Y Limit Switch
3		Back Y Limit Switch
-		GND
4	J4	Black/Green* E-Stop
5		N.A.
6		N.A.
7		N.A.
-		GND
8	J5	N.A.
9		N.A.
10		N.A.
11		N.A.
-		GND
12	J6	N.A.
13		N.A.
14		N.A.
15		N.A.
-		GND

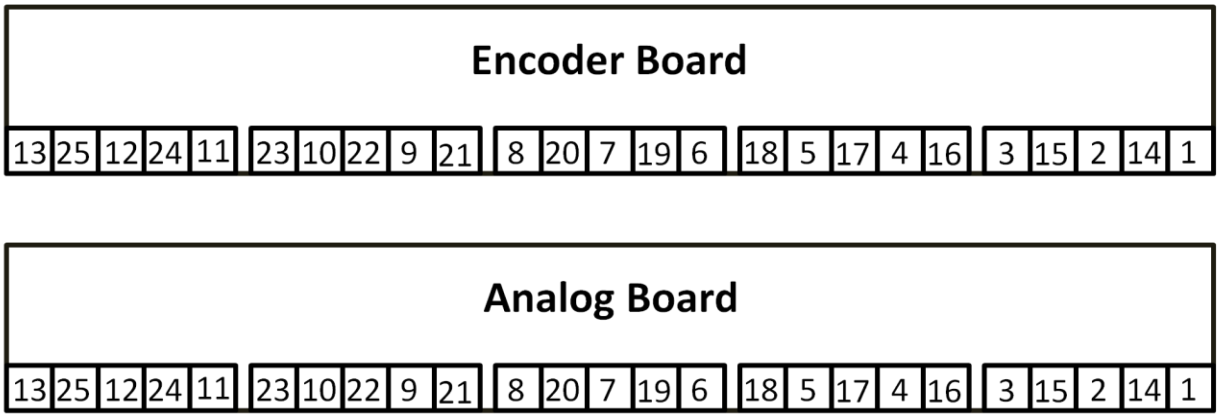
*This wire is from the Operator Panel's Cable located in the conduit that goes from the electrical enclosure to the control.

24 VDC Outputs

Pin Number	Connector	Function
+	J1	24VDC
-		GND
0		R1 from Relay Bank
1		R2 from Relay Bank
2		R3 from Relay Bank
3		R6 from Relay Bank
+	J2	24VDC
-		GND
4		N.A.
5		N.A.
6		N.A.
7		N.A.

Note: 1: All the outputs for the Interpreter 1000 are already wired.

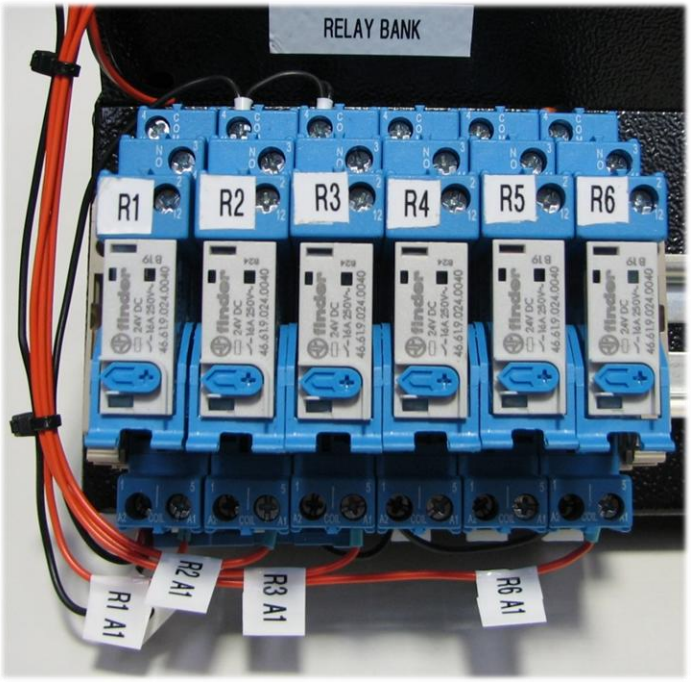
Encoder and Analog Board



Encoder Board	
Pin Number	**Function**
1	N.A.
14	N.A.
2	N.A.
15	N.A.
3	Y Analog +/-10V
16	N.A.
4	N.A.
17	Y Analog GND
5	B Analog +/-10V
18	C Analog +/-10V
6	N.A.
19	N.A.
7	B Analog GND
20	N.A.
8	N.A.
21	N.A.
9	N.A.
22	C Analog GND
10	N.A.
23	N.A.
11	N.A.
24	N.A.
12	N.A.
25	N.A.
13	N.A.

Analog Board		
Pin Number	**Function**	**Axis**
1	A+	Y Axis
14	A-	
2	B+	
15	B-	
3	Z+	
16	Z-	
4	+5V	
17	GND	
5	A+	B Axis
18	A-	
6	B+	
19	B-	
7	Z+	
20	Z-	
8	+5V	
21	GND	
9	A+	C Axis
22	A-	
10	B+	
23	B-	
11	Z+	
24	Z-	
12	+5V	
25	GND	
13	NA	

Relay Bank

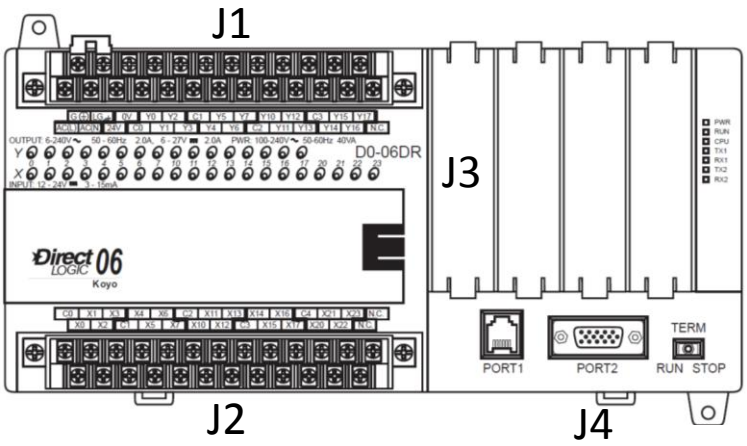


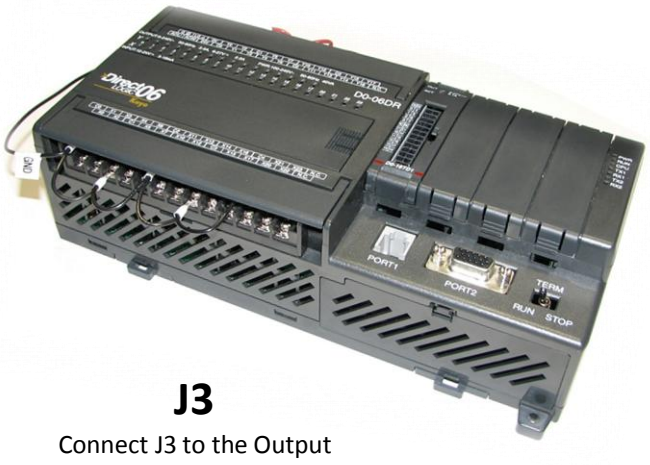
Relay Name	A1 (Coil)	A2 (Coil)	COM	NO	NC
R1	Interpreter Output 0	GND	GND	C Enable	N.A.
R2	Interpreter Output 1	GND	GND	B Enable	N.A.
R3	Interpreter Output 2	GND	GND	Y Enable	N.A.
R4	Green/Black*	GND	115V from 1CR Relay	2CR Relay Coil	N.A.
R5	Brown/Black*	Black/Brown*	115V from Transformer	1CR Relay Coil	N.A.
R6	Interpreter Output 3	GND	GND	Torque Mode	N.A.

*These wires are from the Operator Panel's Cable located in the conduit that goes from the electrical enclosure to the control.

Note: 1: 1CR and 2CR are in the Power Circuit. See diagrams above for more details.
2: Torque mode allows the Y axis to follow the pipe during a C Bend.

Automation Direct DL-06 PLC





J3

Connect J3 to the Output Module with the ZIPLink Cable. See Figure 1.

J4

Connect J4 to the cable in the control's conduit labeled *Port2*.

PLC Outputs

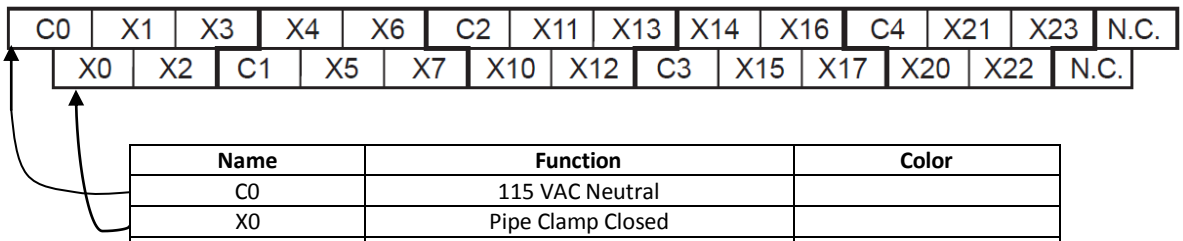
J1

G	LG	0V	Y0	Y2	C1	Y5	Y7	Y10	Y12	C3	Y15	Y17	
AC(L)	AC(N)	24V	C0	Y1	Y3	Y4	Y6	C2	Y11	Y13	Y14	Y16	N.C.

Power Terminals	Function
AC(L)	115 VAC from 1CR Relay
AC(N)	115 VAC Neutral
0V	GND
24V	24 VDC Power Supply
Name	**Function**
C0	115 VAC from the 2CR Relay
Y0	N.A.
Y1	Mandrel Lubricator Output
Y2	N.A.
Y3	N.A.
C1	115 VAC
Y4	System Pressure Output
Y5	Warm Up Valve Output
Y6	N.A.
Y7	N.A.
C2	115 VAC
Y10	N.A.
Y11	N.A.
Y12	N.A.
Y13	N.A.

C3	N.A.
Y14	N.A.
Y15	N.A.
Y16	N.A.
Y17	N.A.

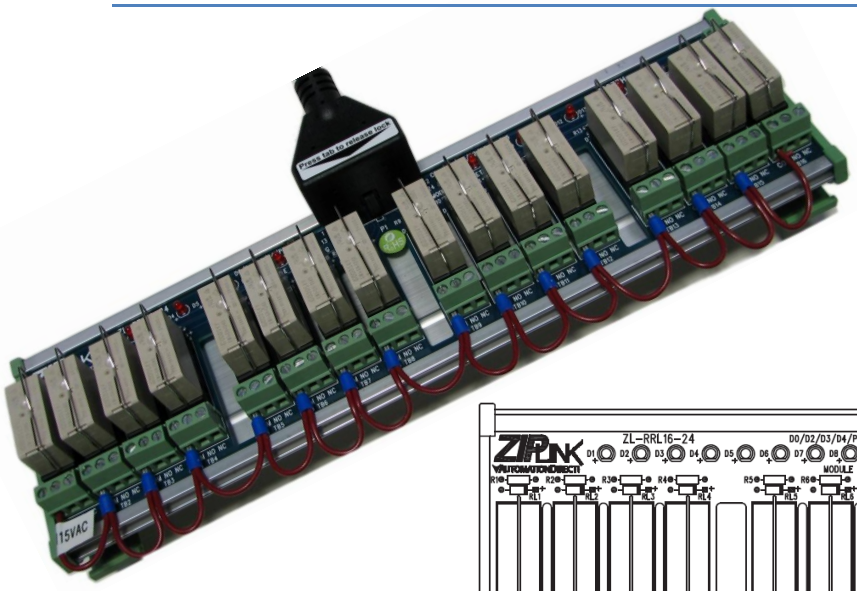
PLC Inputs
J2



Name	Function	Color
C0	115 VAC Neutral	
X0	Pipe Clamp Closed	
X1	Pressure Die Closed	
X2	Mandrel Advanced	
X3	Pressure Die Assist Returned	
C1	Neutral	
X4	Wiper Die Opened	
X5	Wiper Die Closed	
X6	Load	Yellow/Black*
X7	Open/Close Collet	Black/Yellow*
C2	Neutral	
X10	Cycle Start1	Black/White*
X11	Feed Hold	White/Black*
X12	Collet Opened	
X13	Warmup Input	
C3	Neutral	
X14	Safety Mat	
X15	Oiler Overtemp	
X16	Cycle Start2	Black/Blue*
X17	N.A.	
C4	Neutral	
X20	N.A.	
X21	N.A.	
X22	N.A.	
X23	N.A.	

*These wires are from the Operator Panel's Cable located in the conduit that goes from the electrical enclosure to the control.

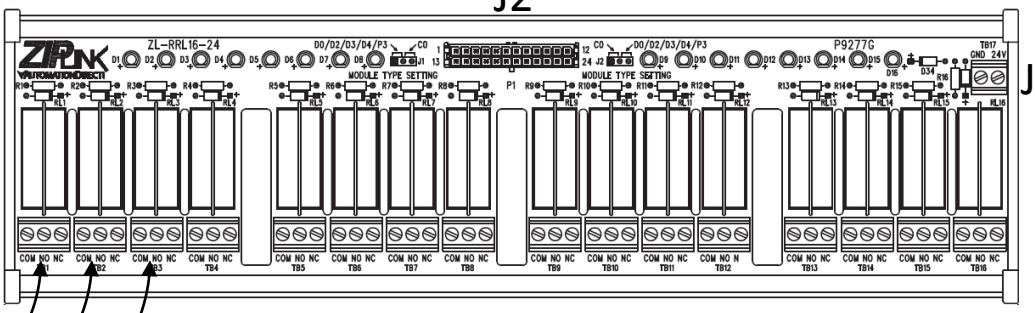
PLC Relay Output Module



J2

Connect J2 to PLC with ZIPLink Cable. See Figure 1.

Figure 1 ZIPLink Cable on PLC



J1

Relay Name	COM	NO (Normally Open)	NC (Normally Closed)
TB1	115 VAC from 2CR	Wiper Die Open	N.A.
TB2	115 VAC	Wiper Die Close	N.A.
TB3	115 VAC	Collet Open	N.A.
TB4	115 VAC	Collet Close	N.A.
TB5	115 VAC	Pressure Die Close	N.A.
TB6	115 VAC	Pressure Die Open	N.A.
TB7	115 VAC	Pipe Clamp Close	N.A.
TB8	115 VAC	Pipe Clamp Open	N.A.
TB9	115 VAC	Pressure Die Assist Return	N.A.
TB10	115 VAC	N.A.	N.A.
TB11	115 VAC	N.A.	N.A.
TB12	115 VAC	N.A.	N.A.
TB13	115 VAC	N.A.	N.A.
TB14	115 VAC	Mandrel Advance	N.A.
TB15	115 VAC	Mandrel Extract	N.A.
TB16	115 VAC	Pressure Die Assist Forward	N.A.

Note: 1: All commons (COM) are wired together.
2: Make sure to supply 115 VAC from 2CR which is located in the Power Circuit.
3: For a single output collet (where a closed contact closes the collet and an open contact opens the collet), just wire the collet into TB3.

J3

24VDC	24VDC from PLC
GND	0V from PLC