DS/RS Installation & Wiring

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1. Installing the ASB and RS Rack

The ASB and the RS Rack are rated at 24 Vdc (20 to 30 Vdc), 1.5 Amps maximum current at 24 Vdc (excluding all I/O); operating temperature of 0 to 55°C (32 to 131°F); storage temperature of -40 to 85°C (-40 to 185°F); 0 to 95% rh, non-condensing @ 55°C (131°F).

These controllers are Installation Category 3 and Pollution Degree 2 devices. They are intended for panel mounting only.

Where external power supplies are required, a CE recognized supply must be used. Test results on CE power supplies have shown that they may emit noise above 30 MHZ. Install a ferrite bead suitable for power cord use at the output terminals of the supply.

“Bonding” requires the removal of all non-conductive plating or coatings between the surfaces to be bonded (as well as the application of pressure).

Include a switch or circuit breaker in the installation. It must be placed in close proximity to the equipment, within easy reach of the operator and must be marked as the disconnecting device for the equipment.

A.1

CAUTION:
Risk of Electric Shock - More than one disconnect switch may be required to deenergize the equipment before servicing.

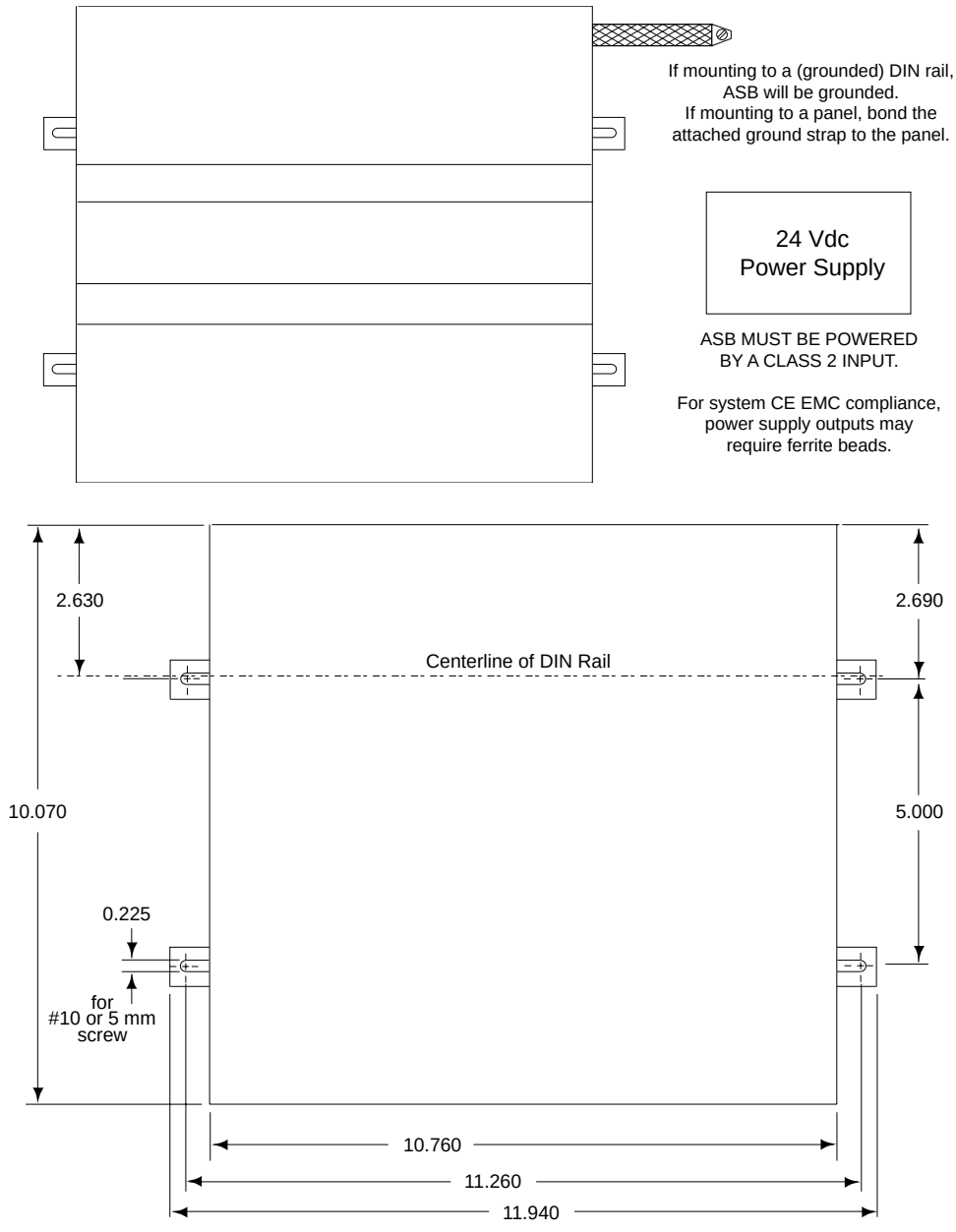
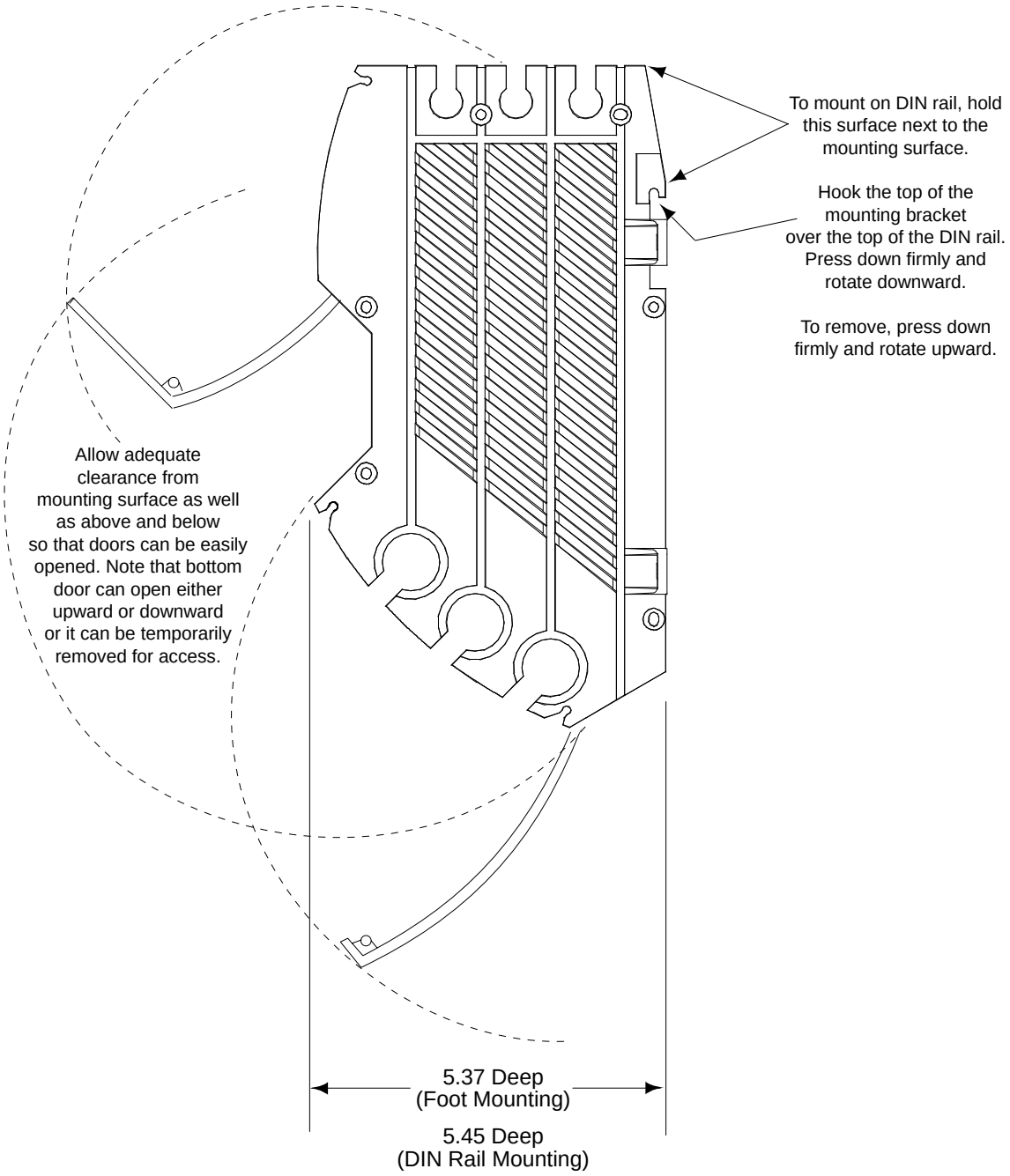


Figure 1. ASB Mounting (front view)



B.1

CAUTION:
Do Not Operate Without Cover in Place. Cover must be in place both for operator safety and to insure proper cooling of internal components.

Figure 2. ASB Mounting (side view)

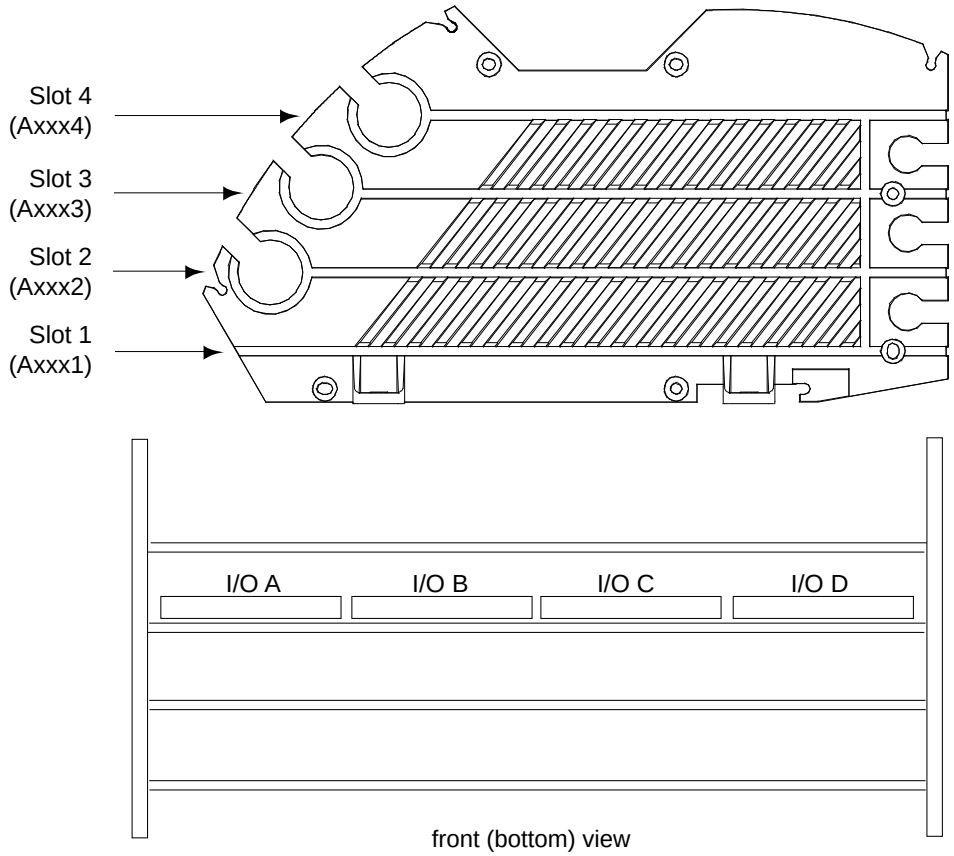


Figure 3. ASB Slot Numbering

Include a switch or circuit breaker in the installation. It must be placed in close proximity to the equipment, within easy reach of the operator and must be marked as the disconnecting device for the equipment.

A.1

CAUTION:
Risk of Electric Shock - More than one disconnect switch may be required to deenergize the equipment before servicing.

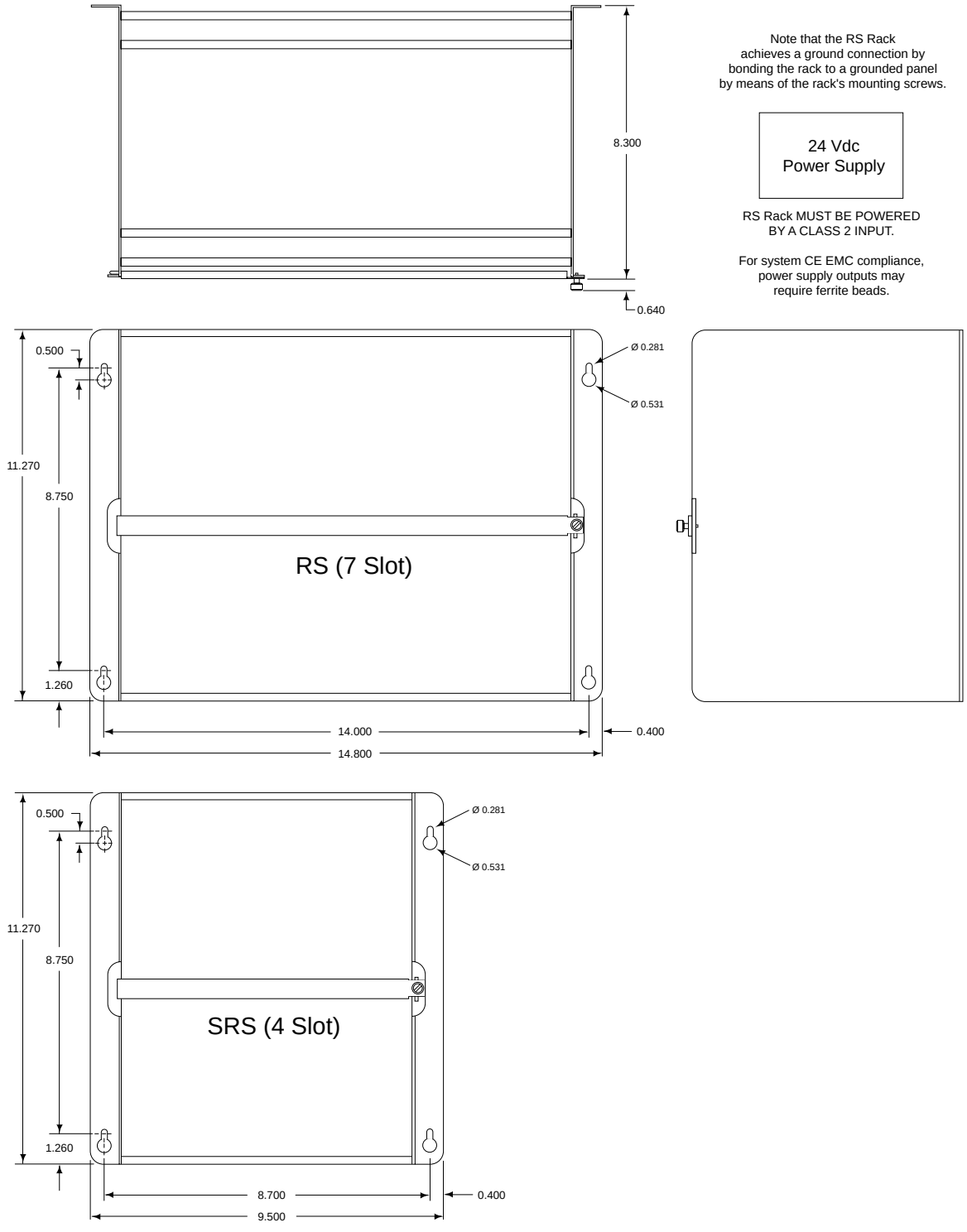


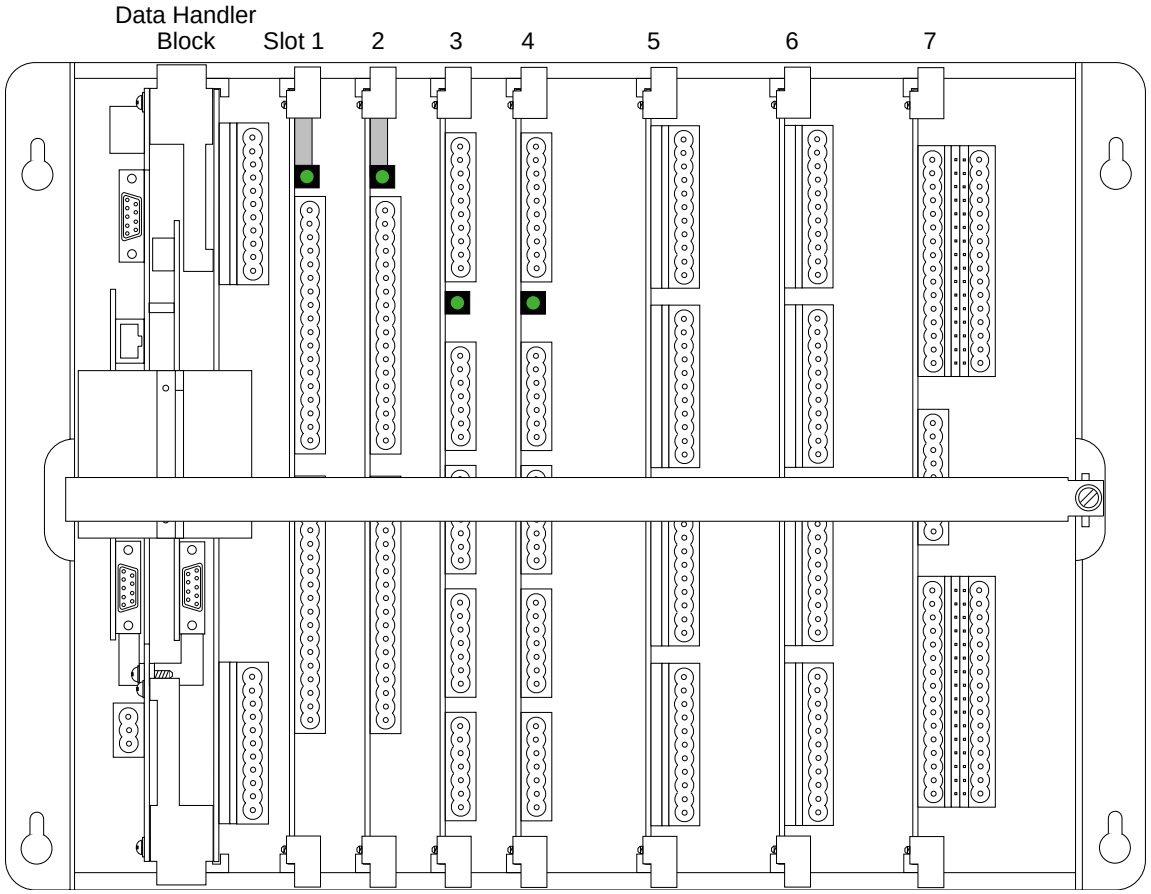
Figure 4. RS and SRS Rack Mounting

I/O Numbering

Sequence
Carrier Board

Slot B	Slot 3	Slot 5	Slot 7
Input 161-168	Input 1-32	Input 65-96	Input 129-160
Output 161-168	Output 1-32	Output 65-96	Output 129-160

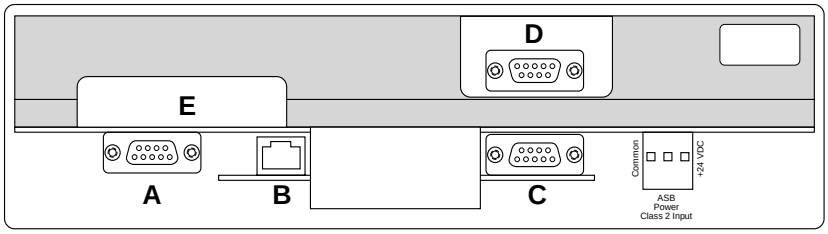
Slot C	Slot 4	Slot 6
Input 169-176	Input 33-64	Input 97-128
Output 169-176	Output 33-64	Output 97-128



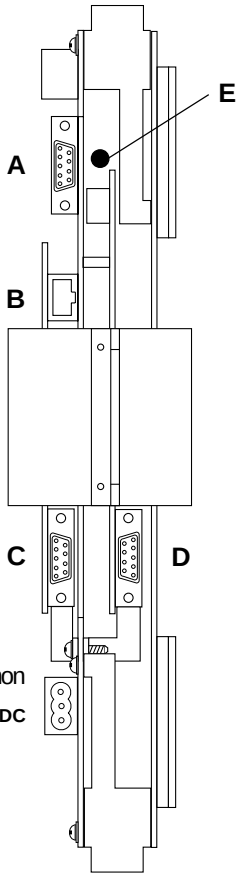
Notes:

1. Slots 1-4 can be T/C-Analog, maximum of 4 per rack.
2. Slots 2-4 can be Parison, EZ PRO, Injection or Extrusion, maximum of 2 per rack.
3. Slots 3-7 can be 32 I/O or 24 I/O Card assemblies.
4. Slots 3-7 can be 4-slot Carrier Boards, maximum of 2 Carrier Boards per rack.

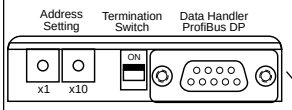
Figure 5. RS Rack Slot Numbering



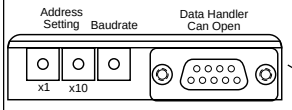
ASB Port Locations



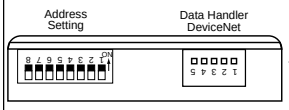
RS Rack Port Locations (Data Handler Block)



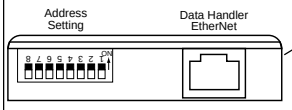
Profibus



Can Open



DeviceNet



EtherNet

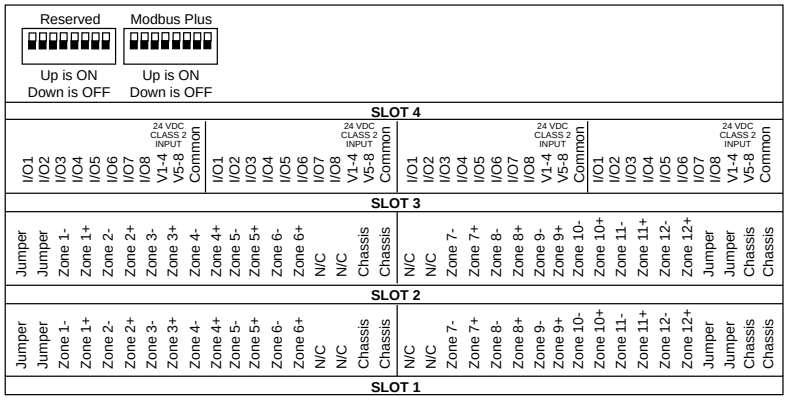
Communication Options*	
Model Number Field 6 for ASB Field 5 for RS	**Port E**
0	(none)
A	MACO-Net
B	Profibus
C	Can Open
D	DeviceNet
E	EtherNet
F	Modbus

* Except for MACO-Net, Field 9 cannot be C, E or G.

Processor Options					
Model Number RS Rack (Field 4)	**Model Number ASB (Field 9)**	**Port A**	**Port B**	**Port C**	**Port D**
A	A	Data Handler Modbus Plus	(none)	(none)	(none)
C*	C*		Processor Modbus RS-232	Processor Interbus-S	Processor Modbus Plus
D	D		Processor Modbus RS-232	Processor Interbus-S	(none)
E*	E*		Processor Ethernet	Processor RS-485	Processor Modbus Plus
F	F		Processor Ethernet	Processor RS-485	(none)
G*	G*		Processor Ethernet	Processor Interbus-S	Processor Modbus Plus
H	H		Processor Ethernet	Processor Interbus-S	(none)

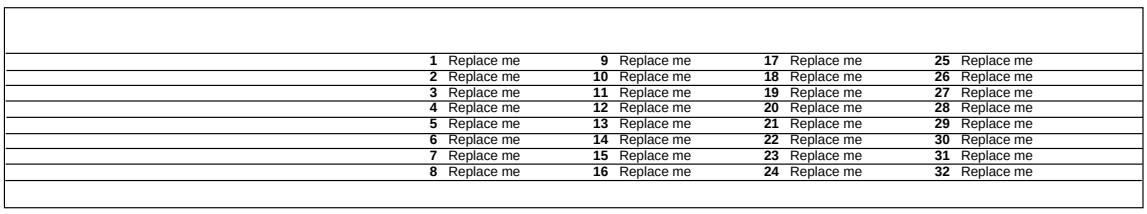
* Communications Options (Field 6 of ASB; Field 5 of RS Rack) must be 0.

Figure 6. Processor and Communication Options



Each ASB is supplied with a correct generic label, depending on the boards ordered. A template for creating your own specific labels is included on this CD (in Microsoft Word format). Locate the Label Templates in the macodsindex. Open the template, make whatever changes are necessary, print the label on heavy paper (or “laser label” stock), and cut on the dotted line.

Figure 7. ASB Front Door Label



A clear overlay template for creating your own specific LED labels is included on this CD (in Microsoft Word format). Locate the Label Templates in the macodsindex. There are 2 similar label templates provided. Open the appropriate template, make whatever changes are necessary, print the label on transparency film and cut on the dotted line.

Figure 8. ASB Front Clear Overlay

2. Wiring the Data Handler Board

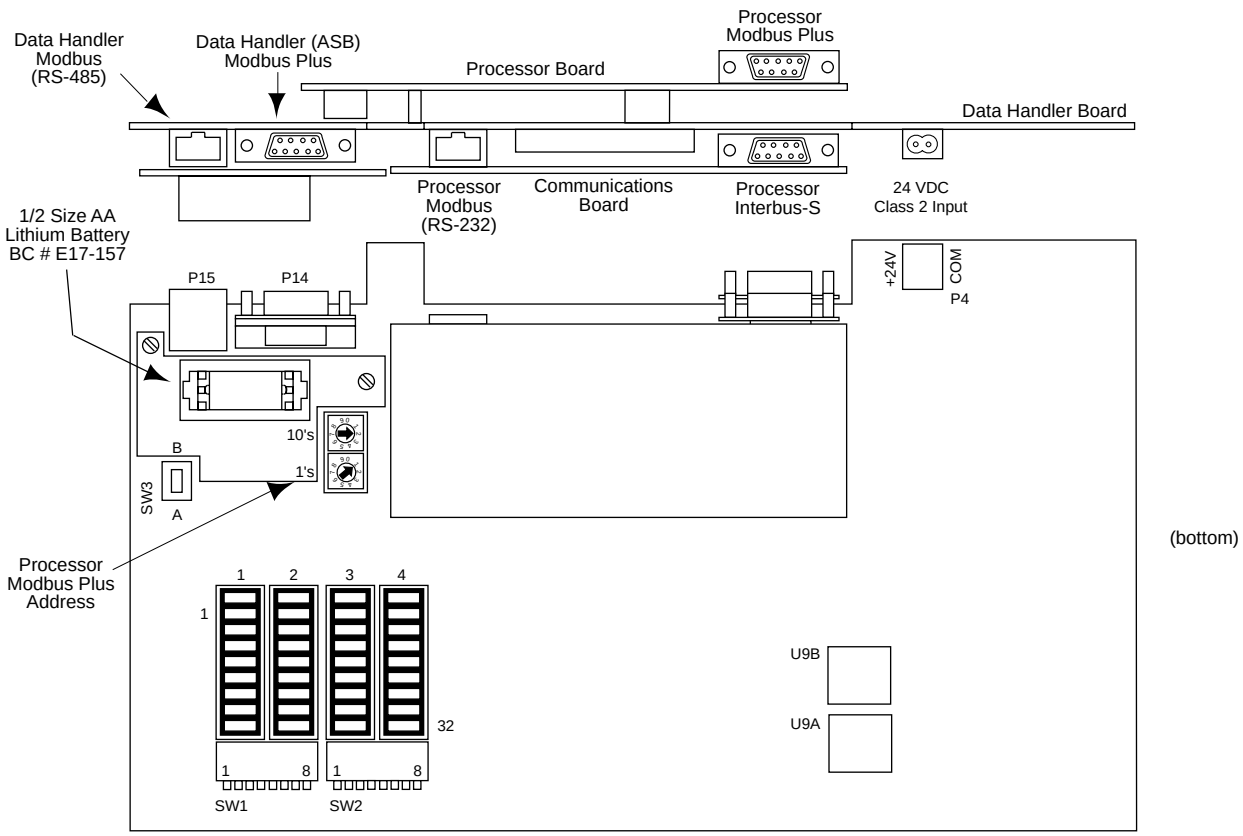
Check all switch settings. See page 4 or 7 for power supply requirements.

C.1

WARNING:
Use of improper battery could present a risk of fire or explosion of the battery.

Address Number (binary + 1)	Switch 1 (bit 0)	Switch 2 (bit 1)	Switch 3 (bit 2)	Switch 4 (bit 3)	Switch 5 (bit 4)	Switch 6 (bit 5)
1	Off	Off	Off	Off	Off	Off
2	On	Off	Off	Off	Off	Off
3	Off	On	Off	Off	Off	Off
4	On	On	Off	Off	Off	Off
5	Off	Off	On	Off	Off	Off
6	On	Off	On	Off	Off	Off
7	Off	On	On	Off	Off	Off
8	On	On	On	Off	Off	Off
9	Off	Off	Off	On	Off	Off
10	On	Off	Off	On	Off	Off
11	Off	On	Off	On	Off	Off
12	On	On	Off	On	Off	Off
13	Off	Off	On	On	Off	Off
14	On	Off	On	On	Off	Off
15	Off	On	On	On	Off	Off
16	On	On	On	On	Off	Off
17	Off	Off	Off	Off	On	Off
18	On	Off	Off	Off	On	Off
19	Off	On	Off	Off	On	Off
20	On	On	Off	Off	On	Off

Table 1. Switch Settings for Modbus and Modbus Plus Addressing



SW1 (ASB Modbus Address)	
Switch Number	**Assignment**
1	bit 0 (On = 1; Off = 0)
2	bit 1 (On = 1; Off = 0)
3	bit 2 (On = 1; Off = 0)
4	bit 3 (On = 1; Off = 0)
5	bit 4 (On = 1; Off = 0)
6	bit 5 (On = 1; Off = 0)
7	not used
8	not used
Address = binary total + 1	

SW2 (ASB Modbus Plus Address)	
Switch Number	**Assignment**
1	bit 0 (On = 1; Off = 0)
2	bit 1 (On = 1; Off = 0)
3	bit 2 (On = 1; Off = 0)
4	bit 3 (On = 1; Off = 0)
5	bit 4 (On = 1; Off = 0)
6	bit 5 (On = 1; Off = 0)
7	not used
8	not used
Address = binary total + 1	

SW3 (Data Handler Modbus Termination)	
Switch Position	**Assignment**
A	unterminated
B	terminated

P4	
Pin Number	**Assignment**
1	COM
2	+24 VDC
Mating Connector	E24-1497

LED's			
+5V ON	ASB Modbus Plus Active	ASB Modbus Active	ASB Control Fault Active
LED_01	LED_09	LED_17	LED_25
LED_02	LED_10	LED_18	LED_26
LED_03	LED_11	LED_19	LED_27
LED_04	LED_12	LED_20	LED_28
LED_05	LED_13	LED_21	LED_29
LED_06	LED_14	LED_22	LED_30
LED_07	LED_15	LED_23	LED_31
LED_08	LED_16	LED_24	LED_32

Modbus Plus Addresses:

(ASB's = 1-20)
ASB #1 = Address 1
ASB #2 = Address 2
ASB #3 = Address 3
ASB #4 = Address 4
" "

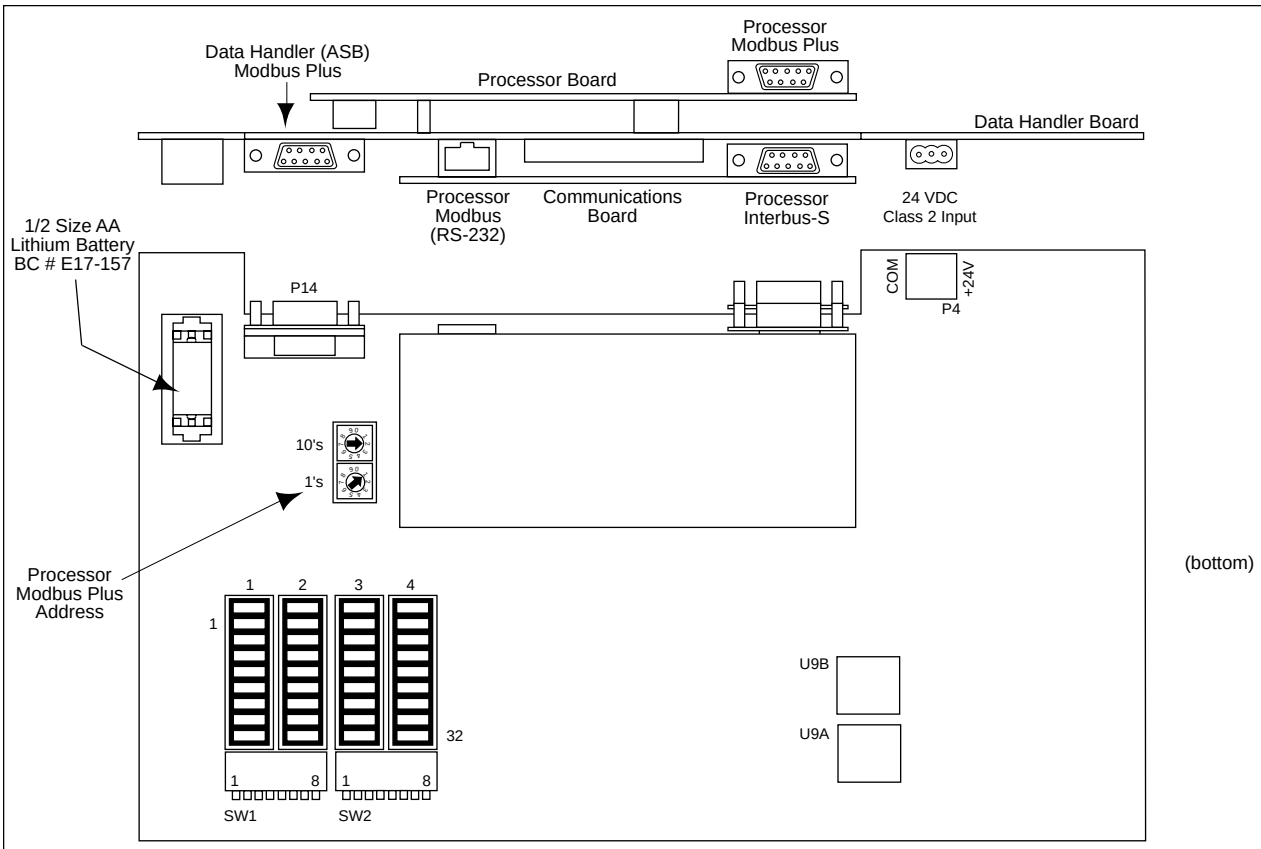
(Internal PLC's = 21-40)
Internal PLC (Processor) #1 = Address 21
Internal PLC (Processor) #2 = Address 22
Internal PLC (Processor) #3 = Address 23
Internal PLC (Processor) #4 = Address 24
" "

(External PLC's and Other = 41-60)
External PLC (Processor) #1 = Address 41
External PLC (Processor) #2 = Address 42
External PLC (Processor) #3 = Address 43
External PLC (Processor) #4 = Address 44
" "

(OPtima PC = 61)

(Other Operator Stations = 62-64)

Figure 9.1 Data Handler Card A-60134-xx1



SW1	
Modbus Address	
Switch Number	**Assignment**
1	bit 0 (On = 1; Off = 0)
2	bit 1 (On = 1; Off = 0)
3	bit 2 (On = 1; Off = 0)
4	bit 3 (On = 1; Off = 0)
5	bit 4 (On = 1; Off = 0)
6	bit 5 (On = 1; Off = 0)
Address = binary total + 1	
7	not used
Controller Type	
8	Off = DS, On = RS

SW2	
Modbus Plus Address	
Switch Number	**Assignment**
1	bit 0 (On = 1; Off = 0)
2	bit 1 (On = 1; Off = 0)
3	bit 2 (On = 1; Off = 0)
4	bit 3 (On = 1; Off = 0)
5	bit 4 (On = 1; Off = 0)
6	bit 5 (On = 1; Off = 0)
Address = binary total + 1	
7	not used
8	not used

P4	
Pin Number	**Assignment**
1	+24 VDC
2	Not Used
3	COM
Mating Connector	E24-1134-003

LED's			
+5V ON	ASB Modbus Plus Active	ASB Modbus Active	ASB Control Fault Active
LED_01	LED_09	LED_17	LED_25
LED_02	LED_10	LED_18	LED_26
LED_03	LED_11	LED_19	LED_27
LED_04	LED_12	LED_20	LED_28
LED_05	LED_13	LED_21	LED_29
LED_06	LED_14	LED_22	LED_30
LED_07	LED_15	LED_23	LED_31
LED_08	LED_16	LED_24	LED_32

Modbus Plus Addresses:

(ASB's = 1-20)
ASB #1 = Address 1
ASB #2 = Address 2
ASB #3 = Address 3
ASB #4 = Address 4
" "

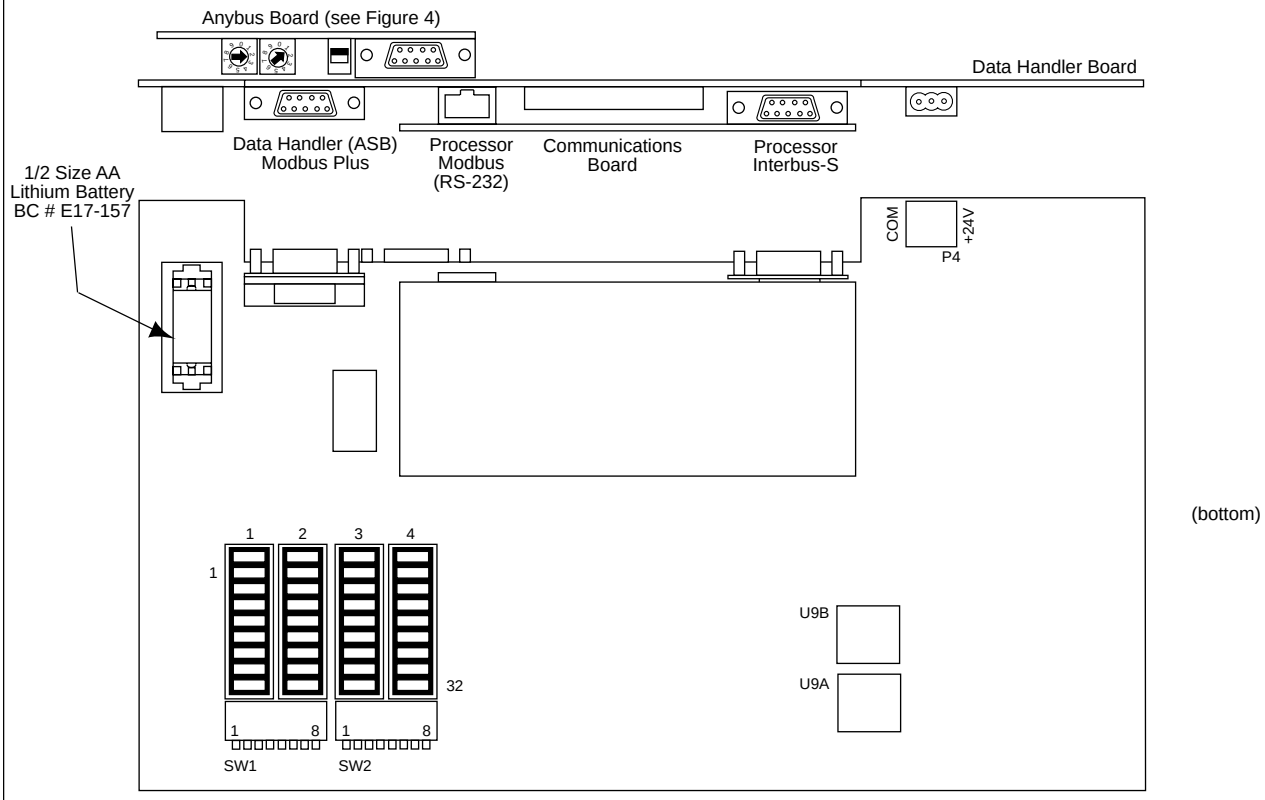
(Internal PLC's = 21-40)
Internal PLC (Processor) #1 = Address 21
Internal PLC (Processor) #2 = Address 22
Internal PLC (Processor) #3 = Address 23
Internal PLC (Processor) #4 = Address 24
" "

(External PLC's and Other = 41-60)
External PLC (Processor) #1 = Address 41
External PLC (Processor) #2 = Address 42
External PLC (Processor) #3 = Address 43
External PLC (Processor) #4 = Address 44
" "

(OPtima PC = 61)

(Other Operator Stations = 62-64)

Figure 9.2 Data Handler Card A-60149 with Processor



SW1	
Modbus Address	
Switch Number	**Assignment**
1	bit 0 (On = 1; Off = 0)
2	bit 1 (On = 1; Off = 0)
3	bit 2 (On = 1; Off = 0)
4	bit 3 (On = 1; Off = 0)
5	bit 4 (On = 1; Off = 0)
6	bit 5 (On = 1; Off = 0)
Address = binary total + 1	
7	not used
Controller Type	
8	Off = DS, On = RS

SW2	
Modbus Plus Address	
Switch Number	**Assignment**
1	bit 0 (On = 1; Off = 0)
2	bit 1 (On = 1; Off = 0)
3	bit 2 (On = 1; Off = 0)
4	bit 3 (On = 1; Off = 0)
5	bit 4 (On = 1; Off = 0)
6	bit 5 (On = 1; Off = 0)
Address = binary total + 1	
7	not used
8	not used

P4	
Pin Number	**Assignment**
1	+24 VDC
2	Not Used
3	COM
Mating Connector	E24-1134-003

LED's			
+5V ON	ASB Modbus Plus Active	ASB Modbus Active	ASB Control Fault Active
LED_01	LED_09	LED_17	LED_25
LED_02	LED_10	LED_18	LED_26
LED_03	LED_11	LED_19	LED_27
LED_04	LED_12	LED_20	LED_28
LED_05	LED_13	LED_21	LED_29
LED_06	LED_14	LED_22	LED_30
LED_07	LED_15	LED_23	LED_31
LED_08	LED_16	LED_24	LED_32

Modbus Plus Addresses:

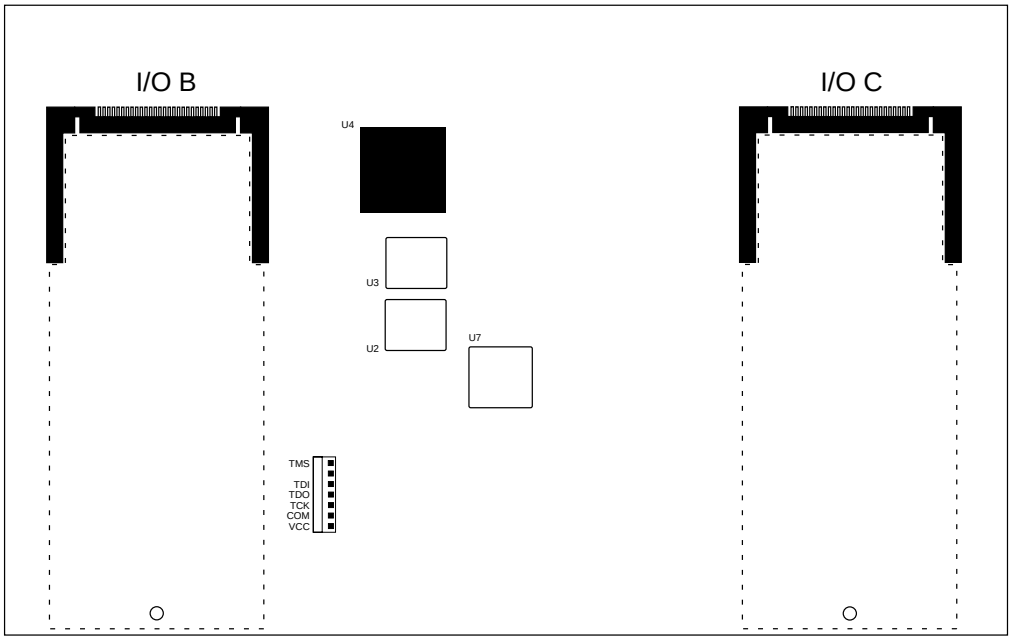
(ASB's = 1-20)
ASB #1 = Address 1
ASB #2 = Address 2
ASB #3 = Address 3
ASB #4 = Address 4
" "

(External PLC's and Other = 41-60)
External PLC (Processor) #1 = Address 41
External PLC (Processor) #2 = Address 42
External PLC (Processor) #3 = Address 43
External PLC (Processor) #4 = Address 44
" "

(OPtima PC = 61)

(Other Operator Stations = 62-64)

Figure 9.3 Data Handler Card A-60149 with Anybus Card



Slots B and C are normally used for communications boards (MACO-Net, Modbus), but can be used for any plug-in boards. If a MACO-Net card is used, it should reside Slot C of of this board in Node 1 of the system (and if the system consists of ASBs and Rack systems, a Rack system should be Node 1). Refer to the 4-slot carrier board for wiring details.

Figure 9.4 Two Slot Carrier/Sequence Board (Rack Systems only)

3. Wiring the T/C-Analog Board

Make certain to use the proper extension wire. Do NOT run extension wire in the same trough with power wiring.

Note that these boards cannot be calibrated in the field.

If the analog inputs are to be used as CURRENT inputs, first install one resistor (505 Ω, 1/2 W, 0.1%, 25 ppm) from kit number 71-975 across the plus and minus of each input and then wire to the terminals specified.

The A-60133-8xx board (with 3 analog inputs) is NOT meant to be used for milli-volt input on the 3 analog inputs. It is designed for a 0 to 10 Vdc input which is then INTERNALLY attenuated to 0 to 40 mVdc (note that the analog inputs can be converted to CURRENT inputs using the resistors described above). When configuring the board for use, enter a TC_Analog_Config_Z7_Z12 setpoint that is correct for Zones 7-9. In addition, enter a PID_Tuning_Selection setpoint of "4" for Zones 10-12.

T/C-Analog Card Specifications

Isolation:
Inputs are isolated channel to channel

Reference Accuracy:
0.25% of Span, ±1°C

Common Mode Rejection:
135 dB @ 230 Vac 60Hz

Range:
Type J, 0 to 700°C (32 to 1292°F)
Type J DIN, 0 to 700°C (32 to 1292°F)
Type K, 0 to 950°C (32 to 1742°F)
0 to 10 Vdc
0 to 20 mAdc (scalable)

Series Mode Rejection:
60 dB @ 150 mV 60 Hz

Control Zones:

A-60133-4XX	12 Zones of T/C Input
A-60133-5XX	12 Zones of Analog Input (Vdc or mAdc)
A-60133-6XX	Zones 1-6 Analog Input (Vdc or mAdc) Zones 7-12 T/C Input
A-60133-7XX	6 Zones of T/C Input
A-60133-8XX	Zones 1-9 T/C Input Zones 10-12 Analog In (Vdc)

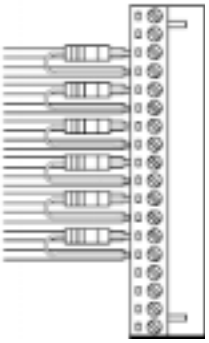
Alarms:
2 Process High/ 1 Process Low
Deviation +/-
Sensor Break
Heater Burnout (HBO, T/C inputs only)

Control Modes:
Auto-Tuned PID (T/C Inputs only)
Manual Tune (T/C Inputs only)

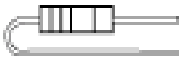
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Kit No. 71-975 consists of six 505 Ω, 1/2 W, 0.1%, 25 ppm resistors

T/C-Analog Assembly	No. of Kits
A-60133-5XX (12 Zones of Analog Input)	2 Kits (12 Resistors)
A-60133-6XX (6 Zones of Analog Input)	1 Kit (6 Resistors)

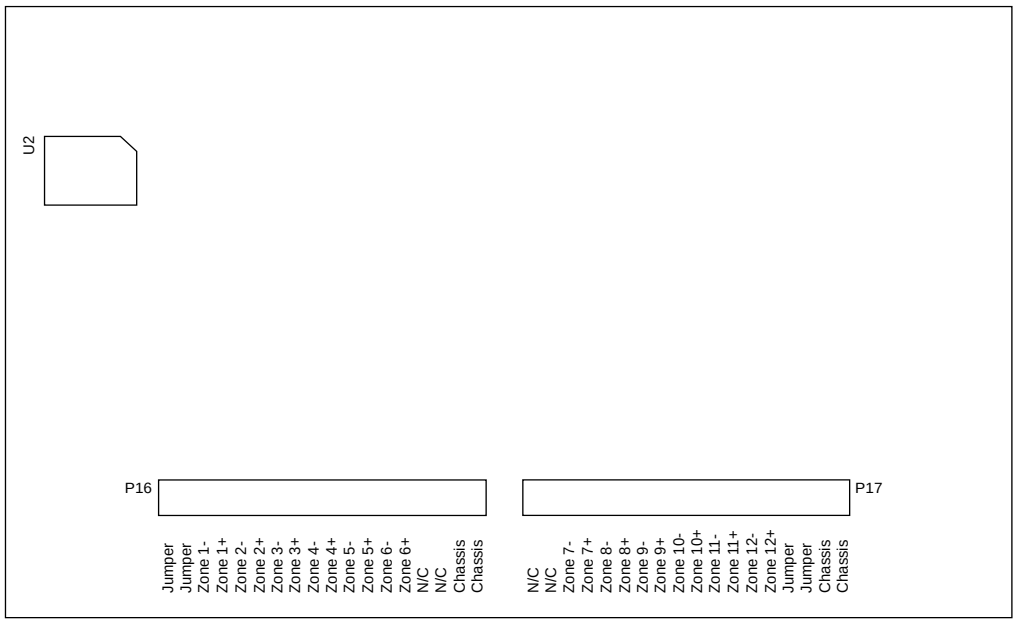


Install these resistors ONLY on the assemblies shown above AND ONLY if the inputs to the assembly are CURRENT (mAdc) instead of voltage.



Cut and form the resistors approximately as shown. Insert one resistor lead with the plus (+) side of the input and the other with the minus (-) side. Before applying power, examine all leads for possible short circuits.

Figure 10. Installing Resistors for Current Inputs



P16					
Pin Number	A-60133-4xx	A-60133-5xx	A-60133-6xx	A-60133-7xx	A-60133-8xx
	Assignment				
1	Not Used	Not Used	Not Used	Not Used	Not Used
2	Not Used	Not Used	Not Used	Not Used	Not Used
3	T/C 1 -	Ana 1 -	Ana 1 -	T/C 1 -	T/C 1 -
4	T/C 1 +	Ana 1 +	Ana 1 +	T/C 1 +	T/C 1 +
5	T/C 2 -	Ana 2 -	Ana 2 -	T/C 2 -	T/C 2 -
6	T/C 2 +	Ana 2 +	Ana 2 +	T/C 2 +	T/C 2 +
7	T/C 3 -	Ana 3 -	Ana 3 -	T/C 3 -	T/C 3 -
8	T/C 3 +	Ana 3 +	Ana 3 +	T/C 3 +	T/C 3 +
9	T/C 4 -	Ana 4 -	Ana 4 -	T/C 4 -	T/C 4 -
10	T/C 4 +	Ana 4 +	Ana 4 +	T/C 4 +	T/C 4 +
11	T/C 5 -	Ana 5 -	Ana 5 -	T/C 5 -	T/C 5 -
12	T/C 5 +	Ana 5 +	Ana 5 +	T/C 5 +	T/C 5 +
13	T/C 6 -	Ana 6 -	Ana 6 -	T/C 6 -	T/C 6 -
14	T/C 6 +	Ana 6 +	Ana 6 +	T/C 6 +	T/C 6 +
15	Jumper	Jumper	Jumper	Jumper	Jumper
16	Jumper	Jumper	Jumper	Jumper	Jumper
17	Chassis Ground (do NOT connect)				
18	Chassis Ground (do NOT connect)				
Mating Connector	E24-1134-018				

P17					
Pin Number	A-60133-4xx	A-60133-5xx	A-60133-6xx	A-60133-7xx	A-60133-8xx
	Assignment				
1	Not Used	Not Used	Not Used	Not Used	Not Used
2	Not Used	Not Used	Not Used	Not Used	Not Used
3	T/C 7 -	Ana 7 -	T/C 7 -	n/a	T/C 7 -
4	T/C 7 +	Ana 7 +	T/C 7 +	n/a	T/C 7 +
5	T/C 8 -	Ana 8 -	T/C 8 -	n/a	T/C 8 -
6	T/C 8 +	Ana 8 +	T/C 8 +	n/a	T/C 8 +
7	T/C 9 -	Ana 9 -	T/C 9 -	n/a	T/C 9 -
8	T/C 9 +	Ana 9 +	T/C 9 +	n/a	T/C 9 +
9	T/C 10 -	Ana 10 -	T/C 10 -	n/a	Ana 10 -
10	T/C 10 +	Ana 10 +	T/C 10 +	n/a	Ana 10 +
11	T/C 11 -	Ana 11 -	T/C 11 -	n/a	Ana 11 -
12	T/C 11 +	Ana 11 +	T/C 11 +	n/a	Ana 11 +
13	T/C 12 -	Ana 12 -	T/C 12 -	n/a	Ana 12 -
14	T/C 12 +	Ana 12 +	T/C 12 +	n/a	Ana 12 +
15	Jumper	Jumper	Jumper	Jumper	Jumper
16	Jumper	Jumper	Jumper	Jumper	Jumper
17	Chassis Ground (do NOT connect)				
18	Chassis Ground (do NOT connect)				
Mating Connector	E24-1134-018				

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 11. T/C-Analog Card A-60133-xx1

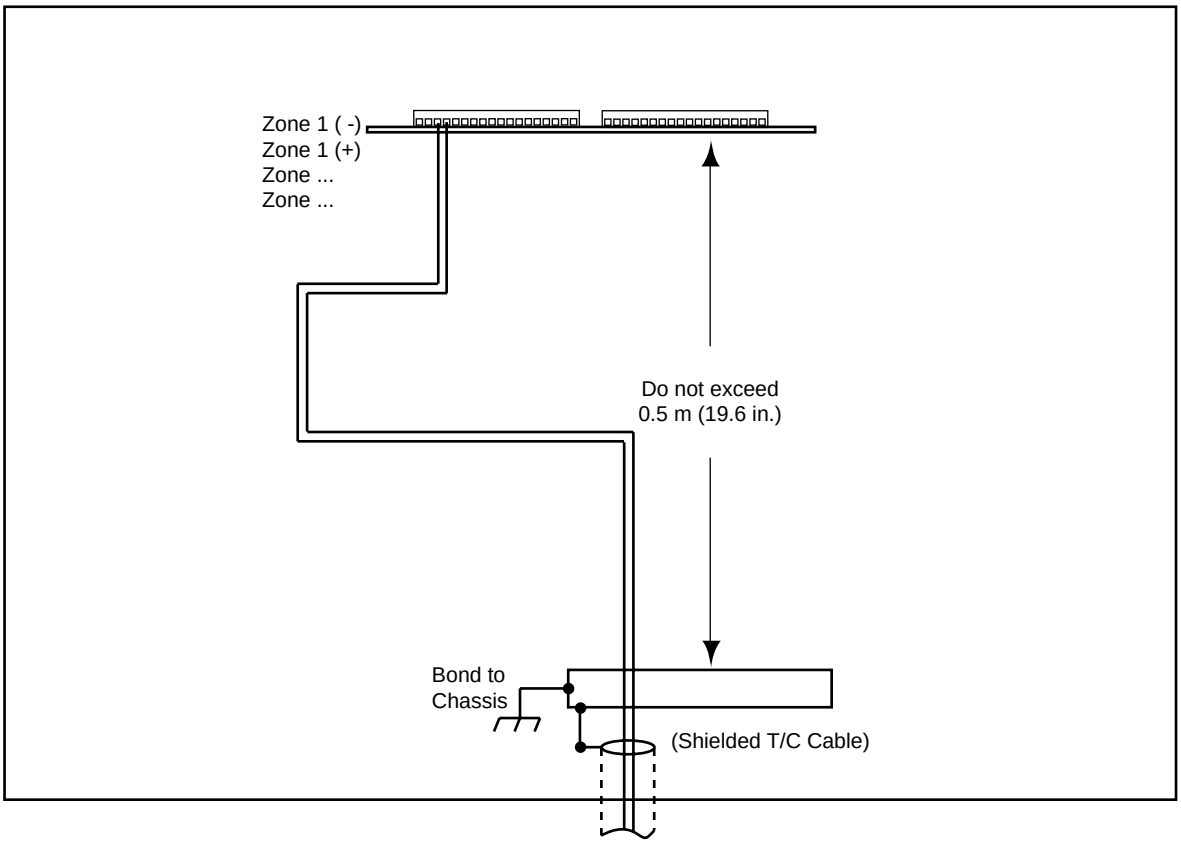


Figure 12. Wiring Thermocouple Inputs using the T/C-Analog Card

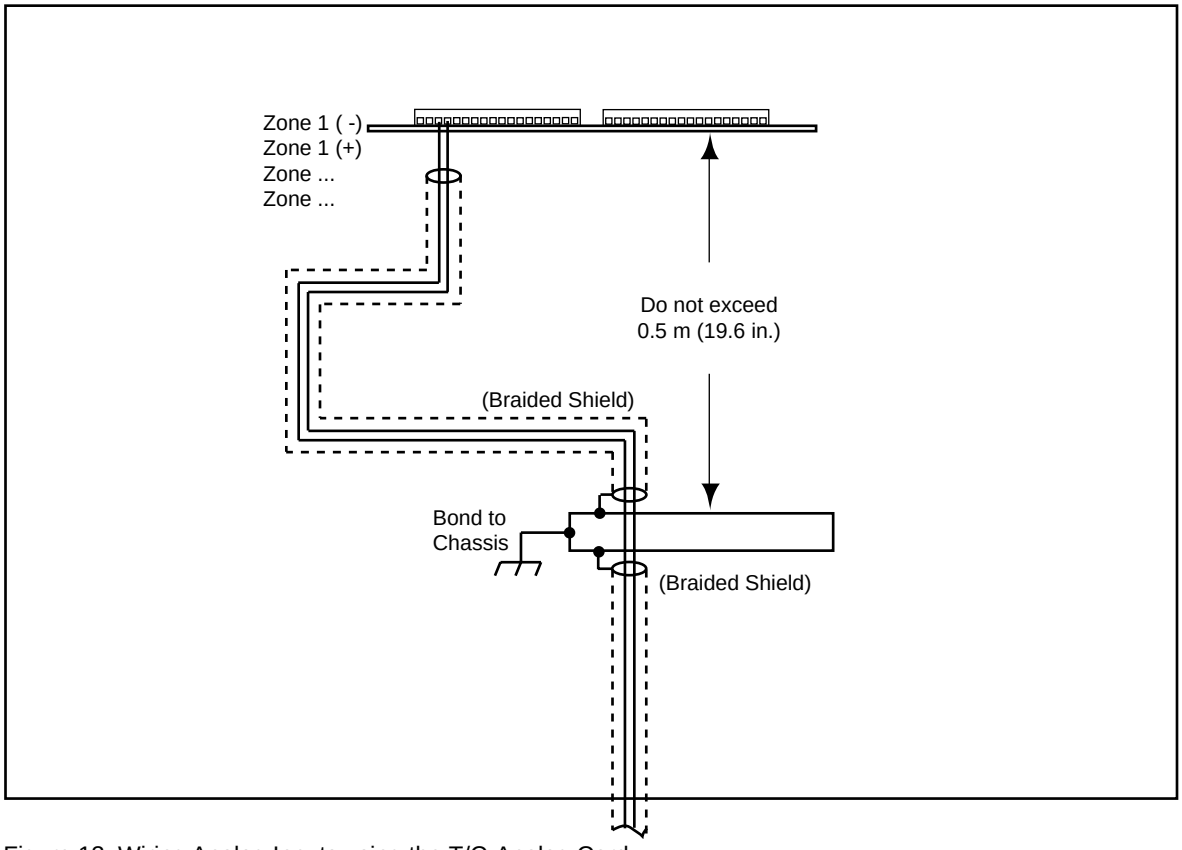


Figure 13. Wiring Analog Inputs using the T/C-Analog Card

4. Wiring the High Speed Analog (Parison, EZ PRO, Injection) Board

4.1 Introduction

The high speed analog card can be specified with 1, 2, or 4 channels of control. The number of channels required will depend on the amount of control needed by the process. Regardless of the number of channels specified, wiring from one channel to another will be similar (the difference being the type of sensor used to provide the input). Current or voltage inputs can be used. Outputs are voltage only and are intended for use with a drive package or amplifier.

4.2 Analog Input/Output Wiring Guidelines

1. Use braided shield cables on ALL analog inputs and outputs. Use separate cables for each function and keep cables less than 3 meters in length. If cables are over 3 meters long, an overbraid is required. If overbraid has been used, terminate both the internal braided shield and the overbraid at the ground distribution block.

2. Analog Input (-) must be connected to Analog Common at the sensing device to prevent ground loop currents.

3. Excitation voltage for potentiometers is provided by the card. Excitation voltage is +10 Vdc @ 20 mA. Potentiometer resistance should be 500Ω to 2kΩ.

4.2.1 Injection Control Ram Position and Ram Pressure Inputs

Normally:
ANA IN1 = Ram Position
ANA IN2 = Ram Pressure
ANA IN3 = Clamp Position
ANA IN4 = Ejector Position

(see text)

If this card is to be used for Injection Process Control, under normal conditions, the Ram Position Input must be connected to ANA IN1 and the Ram Pressure Input must be connected to ANA IN2. The exception would be if there were non-zero entries used for the Ram_Position_Reg_Id or Ram_Pressure_Reg_Id setpoints:

A zero (default) entry for the Ram_Position_Reg_Id setpoint causes the software to use ANA IN1 (the Loop_1_Process_Value) as the Ram Position input.

A non-zero entry for the Ram_Position_Reg_Id setpoint causes the software to use that non-zero entry (which is actually the item name minus 400,000) to locate the alternate source for the Ram Position input.

A zero (default) entry for the Ram_Velocity_Reg_Id setpoint causes the software to use the rate of change of ANA IN 1 as the Ram Velocity input.

A non-zero entry for the Ram_Velocity_Reg_Id setpoint causes the software to use that non-zero entry (which is actually the item name minus 400,000) to locate the alternate source for the Ram Velocity input. *Note that even if the Ram Position input has been redirected, Ram Velocity will STILL be derived from ANA IN 1 as long as the Ram_Velocity_Reg_Id setpoint is zero.*

A zero (default) entry for the Ram_Pressure_Reg_Id setpoint causes the software to use ANA IN2 (the Loop_2_Process_Value) as the Ram Pressure input.

A non-zero entry for the Ram_Pressure_Reg_Id setpoint causes the software to use that non-zero entry (which is actually the item name minus 400,000) to locate the alternate source for the Ram Pressure input.

4.2.2 EZ PRO Version 13.08 Changes Relating to Switch 3

If this card is to be used for position control (EZ PRO), note the following changes that occur with the advent of Version 13.08 firmware:

"Axis_n_Lock_Alarm" Action

The following changes were implemented in order to allow the selection of the course of action if an "Axis_n_Lock_Alarm" occurs for lockup timeout, lockup deviation, or sensor out of range.

Two conditions can cause a lock alarm:

Condition 1, the time from when creep begins until the lockup is achieved exceeds the "Axis_n_LckupTimOut" setpoint.

Condition 2, once lockup is achieved the "Axis_n_Lockup_Devn" setpoint is violated.

With previous firmware when either condition occurs the "Axis_n_Lock_Alarm" is set and the control determines a new target position to CLOSED LOOP POSITION control that will be near the position of the fault. Even though the control may have been in open loop lockup, if the alarm is set, control will revert to closed loop position control. This method remains the default action of the firmware.

Version 13.08 firmware allows for selection of an alternate reaction to the "Axis n Lock Alarm" conditions. For the first fault condition (not achieving lock position in time) the target for the position control remains as the target of the motion. For the second fault condition (an alarm caused by a lockup deviation violation) the loop maintains the open loop lock output.

Selection of the alternate actions is by one of two means:

First, if Switch 3 on the card is placed in the OPEN position, ALL axis on the card will use the alternate actions.

Second, the alternate action can be individually selected for each axis by setpoint. If the setpoint method is used, then the action for an alarm caused by "Axis_n LckupTimOut" is chosen by means of the "Axis_n_Creep_Mode_Sel" setpoint; the action for an alarm caused by "Axis_n_Lockup_Devn" is chosen by means of the "Axis_n_Lock_Mode_Sp_y" setpoint.

To select the alternate method using the "Axis_n_Creep_Mode_Sel" setpoint, simply add "8" to the previously defined numeric mode (i.e., if the "Axis_n_Creep _Mode_Sel" setpoint had been 3, and the alternate method of handling the alarm condition in creep is desired, an "11" would be entered).

To select the alternate method using the "Axis_n_Lock_Mode_Sp_y" setpoint, enter "2" as the setpoint. An entry of "1" (as in previous versions) enables open loop lock at the end of motion.

Axis_n_E-Stop_Mode_Sel

The following conditions can be selected to cause an internal E-STOP condition:

"Out_of_Range_n"
"Axis_n_Motion_Alarm"
"Axis_n_Lock_Alarm"
"BrkAwy_Timeout_n"

With an internal e-stop, the axis is handled as if the e-stop was applied. But once an internal e-stop occurs, the axis is latched into that state and will remain there until the internal e-stop is overridden by energizing either “E-Stop_Axis_n” or an “Axis_n_Override_y” for the axis. The application of the user e-stop or the axis override indicates to the control that user logic has taken control of the fault/alarm condition. If the axis is disabled the internal e-stop latch condition is also cleared.

Switch 3 on the card placed in the OPEN position enables the internal e-stop action for the “Out_of_Range_n” condition for all axis of the card.

Individual selection can be made by entries to the “Axis_n_E-Stop_Mode_Sel” setpoint. This new setpoint is a bit-weighted selection in which each bit enables the internal e-stop for one of the 4 alarms.

bit 0	“Out_of_Range_n”	(+1)
bit 1	“Axis_n_Motion_Alarm”	(+2)
bit 2	“Axis_n_Lock_Alarm”	(+4)
bit 3	“BrkAwy_Timeout n”	(+8)

For example, for axis 1, if the internal e-stop action is desired for “Out_of_Range _1” and the “Axis_1_Lock_Alarm” then the setpoint entry for “Axis_1_E-Stop _Mode_Sel” would be 1 + 4 = 5.

A setpoint entry of 0 for “Axis_n_E-Stop_Mode_Sel” with Switch 3 in the CLOSED position will also clear the internal e-stop condition.

4.3 Wiring DC Inputs & Outputs

The DC Input and Output functions require an external, regulated DC power supply capable of providing a nominal voltage of plus (+) 24 Vdc. The power supply must be CE recognized. The power supply and its ground distribution block must be located within 30 cm of the bottom of the controller chassis. There must be NO other (external) devices powered from the supply. The current rating of the power supply will depend on the loads being driven. Note that there are only four input and output functions and they are shared by all four channels if the card is so specified.

1. Connect (+)DC to Pin 5 of the top connector (P14). This supplies the voltage for the output circuits.

2. Connect (-)DC to Pin 6 of the same connector. This supplies DC Common for both the input and output circuits.

3. Connect the outputs to one side of the loads. Connect the other side of the loads to (-)DC.

18 gauge wire is recommended as a minimum, but make certain to satisfy all local and national code requirements.

4.4 Specifications

The following is a list of specifications that should be observed when installing and wiring this card. The specifications apply to all functions of the same type.

Analog Inputs

Input Signal:
±10 Vdc (nominal) or ±20 mA (nominal)(jumper selectable)

Input Impedance:
100kΩ minimum voltage input: 500Ω current input

Input Function:
Accumulator Position, Die Position, or Hydraulic Pressure (user configurable)

Analog Outputs

Output Signal:
±10 Vdc

Output Current:
4.5 mA maximum into a 2.2k ohm load

Input/Output Isolation:
Each Input/Output pair is isolated from all other pairs

DC Discrete Logic Inputs/Outputs

Isolation:
Optically isolated as a group

DC Inputs

Input Voltage:
-0.6 (minimum)
to 40 Vdc (maximum)

On Voltage:
10 Vdc

Off Voltage:
5 Vdc

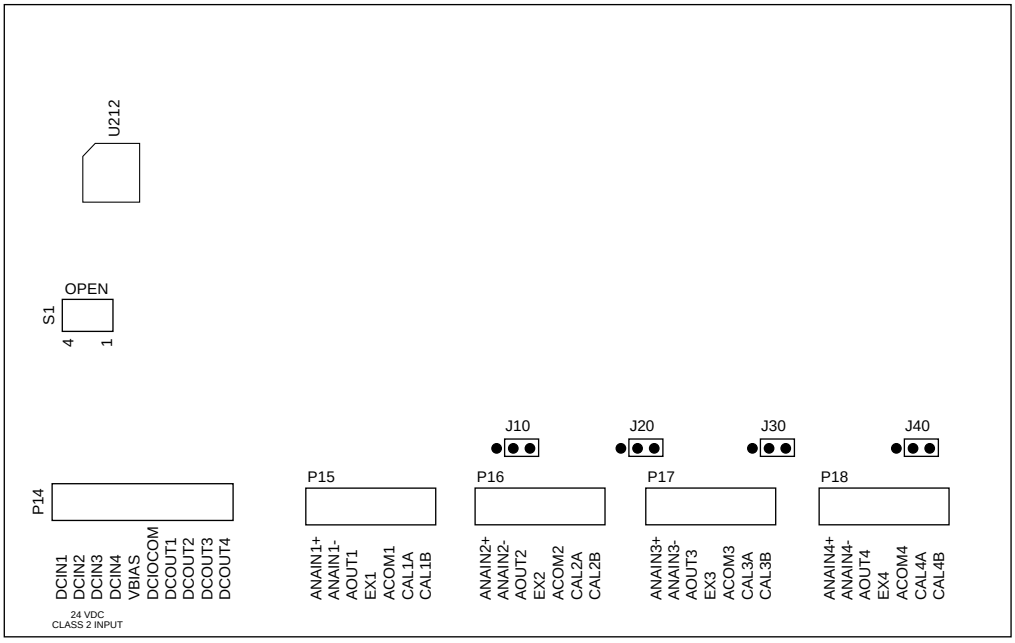
Input Current
Less than 10 mA
at 24 Vdc

DC Outputs (Requires External Supply)

Voltage:
24 Vdc maximum
switched voltage

Current:
20 mA maximum
switched current

Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



P14	
Pin Number	**Assignment**
1	DCIN1
2	DCIN2
3	DCIN3
4	DCIN4
5	VBIAS
6	DCIOCOM
7	DCOUT1
8	DCOUT2
9	DCOUT3
10	DCOUT4
Mating Connector	E24-1134-010

	P15	P16	P17	P18
Pin Number	**Assignment**	**Assignment**	**Assignment**	**Assignment**
1	ANAIN1+*	ANAIN2+*	ANAIN3+	ANAIN4+
2	ANAIN1-*	ANAIN2-*	ANAIN3-	ANAIN4-
3	AOUT1	AOUT2	AOUT3	AOUT4
4	EX1	EX2	EX3	EX4
5	ACOM1	ACOM2	ACOM3	ACOM4
6	CAL1A	CAL2A	CAL3A	CAL4A
7	CAL1B	CAL2B	CAL3B	CAL4B
Mating Connector	E24-1134-007			

*See text about using these inputs for Injection Process Control

Jumper Number	Analog Inputs
J10	ANAIN1 = ±10 Volts* or ±20 mA
J20	ANAIN2 = ±10 Volts* or ±20 mA
J30	ANAIN3 = ±10 Volts* or ±20 mA
J40	ANAIN4 = ±10 Volts* or ±20 mA
*as shipped	

Switch S1				
Switch Number	**Slot 1**	**Slot 2**	**Slot 3**	**Slot 4**
4	Open = Run; Closed = Factory Cal			
3	(Ignored except when used as EZ PRO) Open = Use ALL EZ PRO V13.08 Alternate Actions Closed = Use EZ PRO V13.08 Alternate Actions by Setpoint Selection (see text)			
2	Closed	Closed	Open	Open
1	Closed	Open	Closed	Open

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 14. High Speed Analog (Parison, EZ PRO, Injection) Card A-60136-xx0

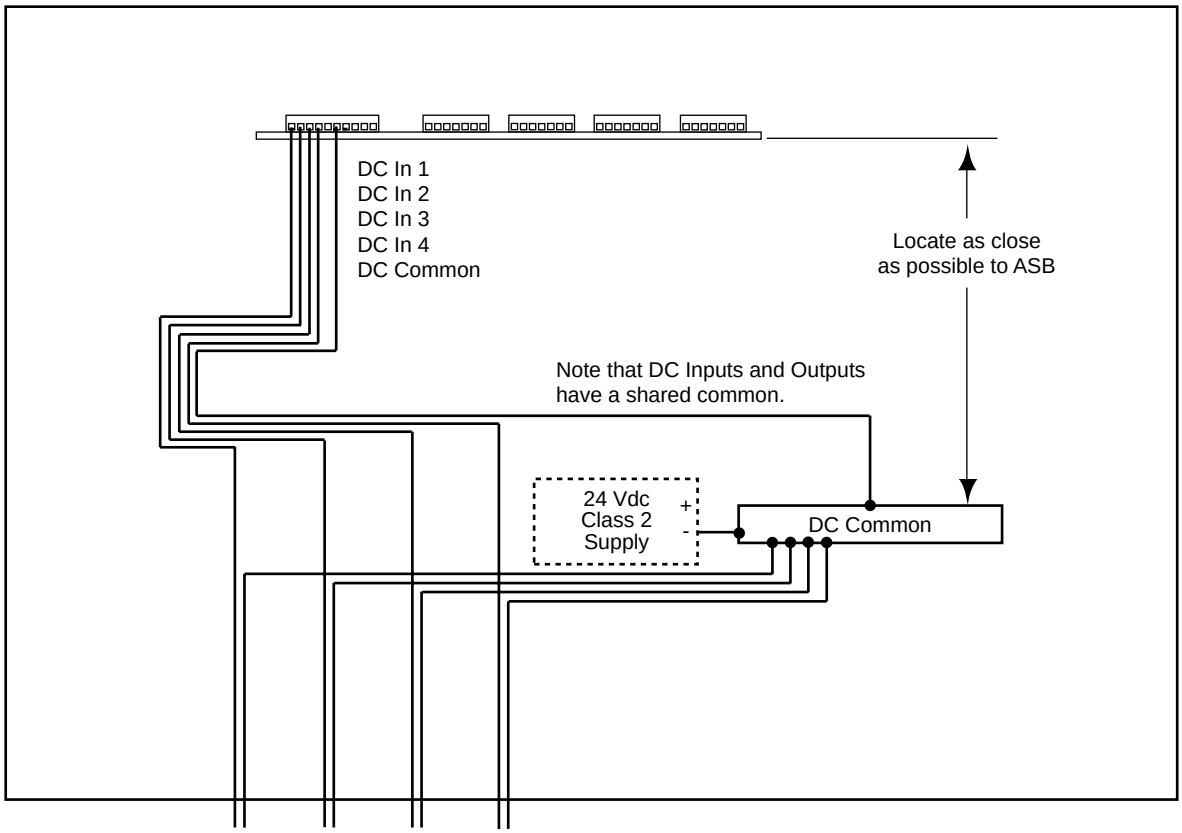


Figure 15. Wiring High Speed Analog Card DC Inputs

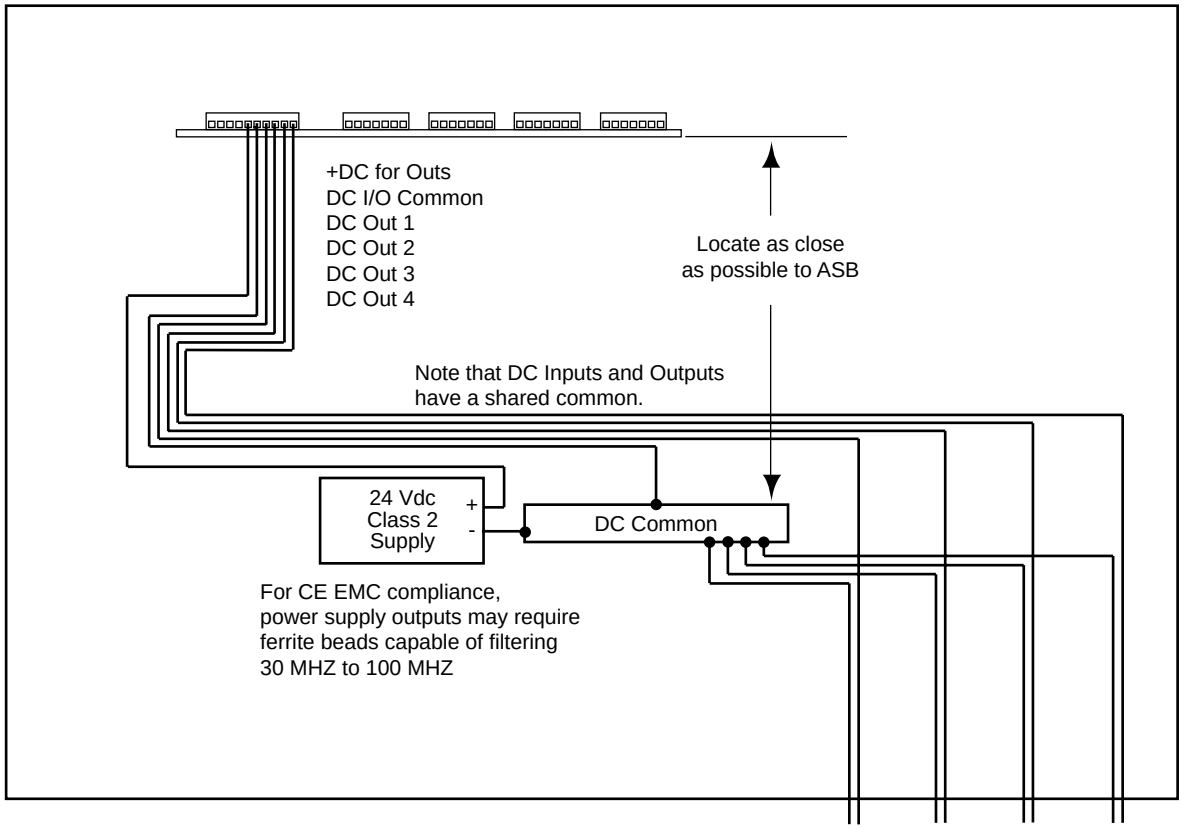


Figure 16. Wiring High Speed Analog Card DC Outputs

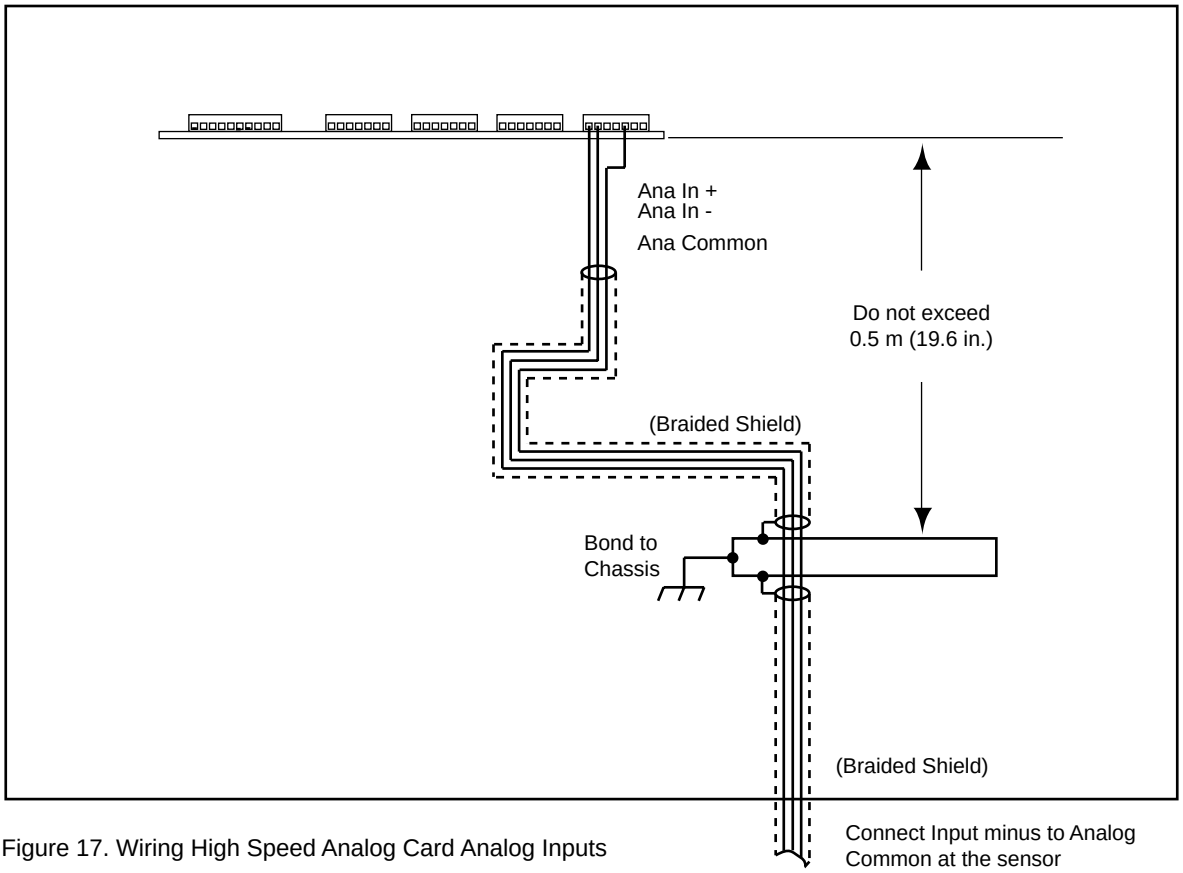


Figure 17. Wiring High Speed Analog Card Analog Inputs

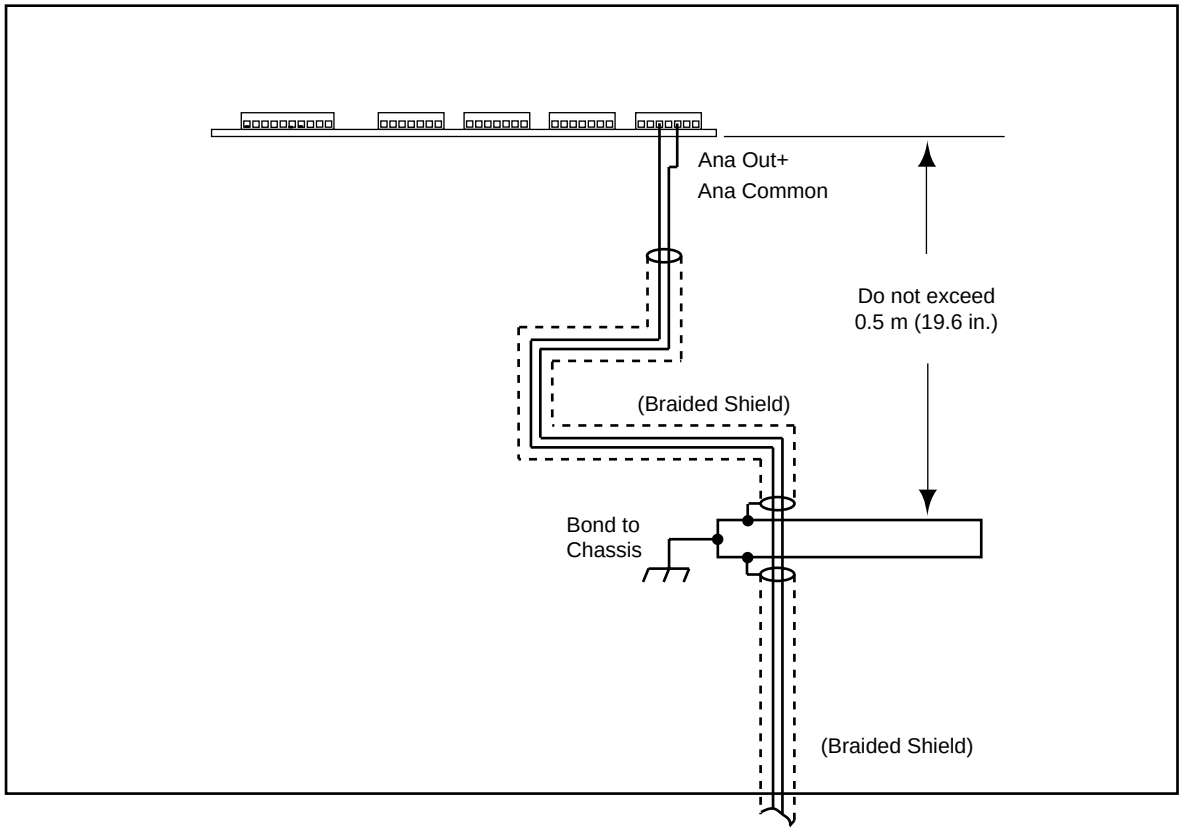


Figure 18. Wiring High Speed Analog Card Analog Outputs

Figure 19. High Speed Analog Sensor Wiring

Notes: 1. Excitation voltage from the parison card is limited to +10 Vdc @ 20 mA.

2. All shields must be connected directly to panel earth ground at one end only.

3. Input minus (-) must be connected to Analog Common at the sensing device - NOT at the parison card.

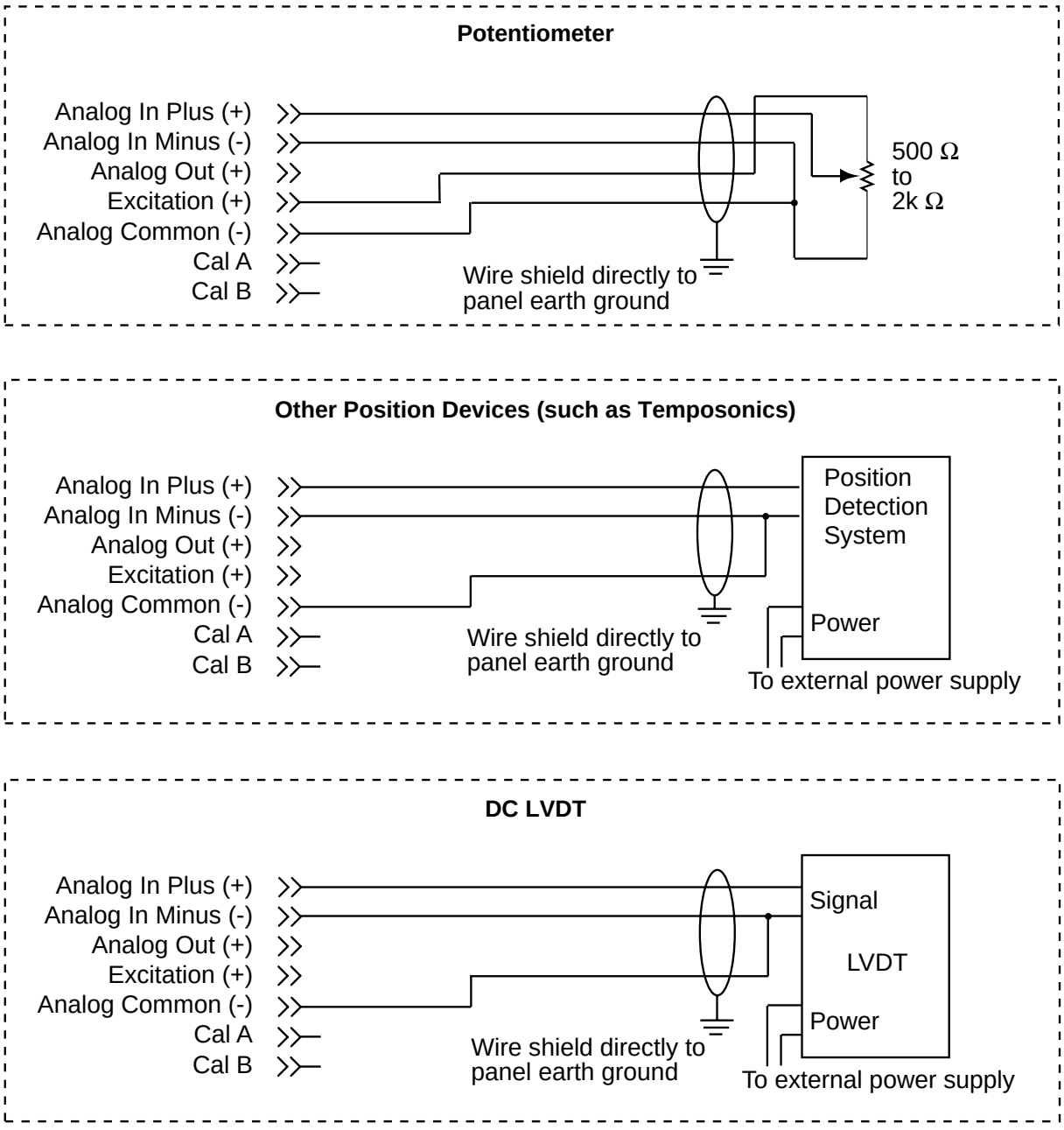
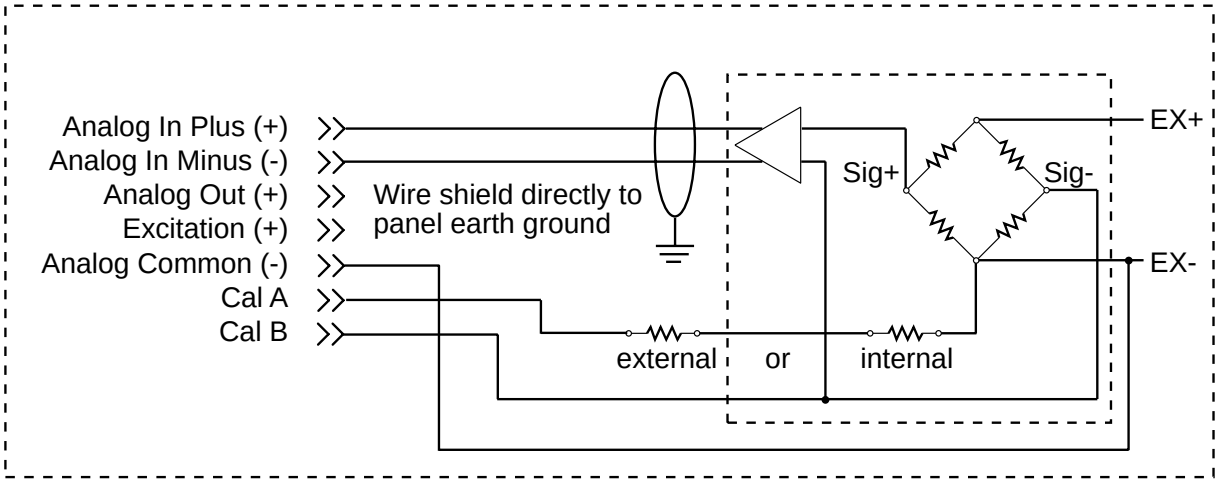


Figure 20. High Speed Analog Card Pressure Transducer Wiring



Notes:

1. High level excitation is from an external regulated power supply.
2. If the transducer does not have a built-in calibration resistor, insert resistor as shown between EX(-) and CAL terminal.
3. If resistor is not built-in, use value specified by manufacturer.

Figure 21. High Speed Analog Card DC Input and Output Wiring

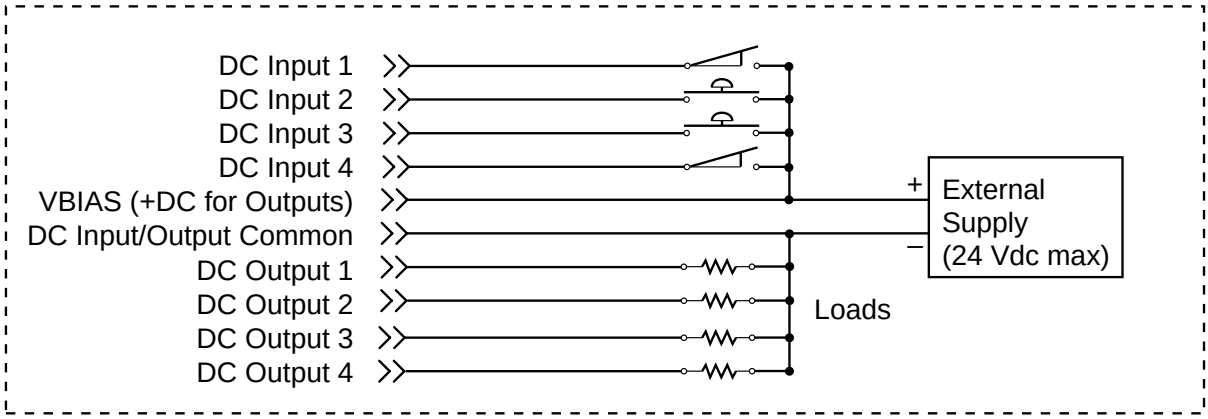
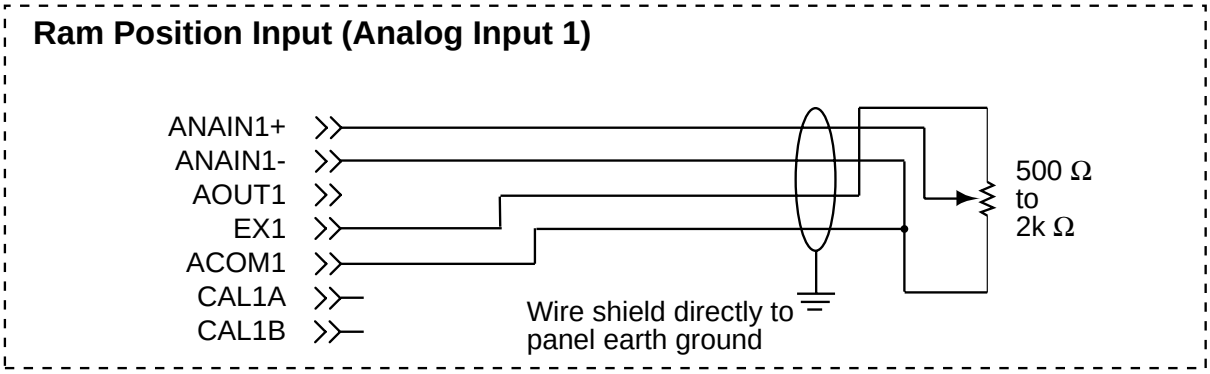


Figure XX. Sensor Wiring for Injection Control

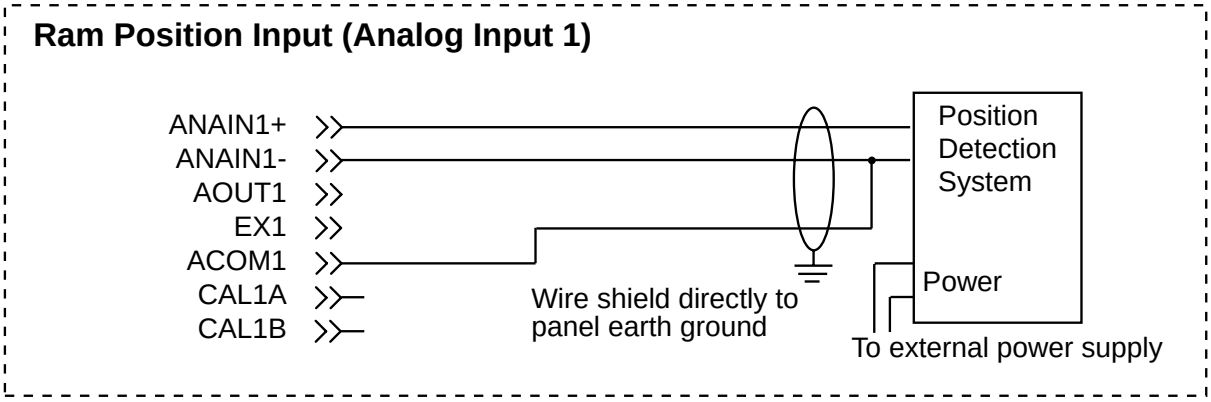
Notes: 1. Excitation voltage from the card is limited to +10 Vdc @ 20 mA.

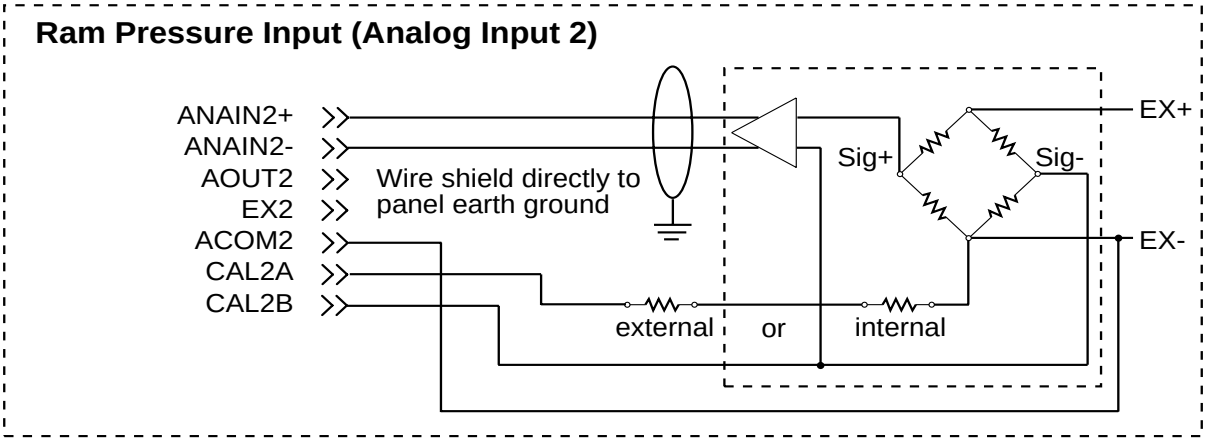
2. All shields must be connected directly to panel earth ground at one end only.

3. Input minus (-) must be connected to Analog Common at the sensing device - NOT at the card.

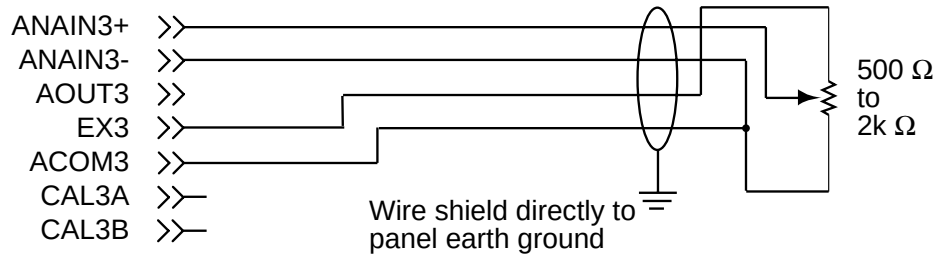


OR



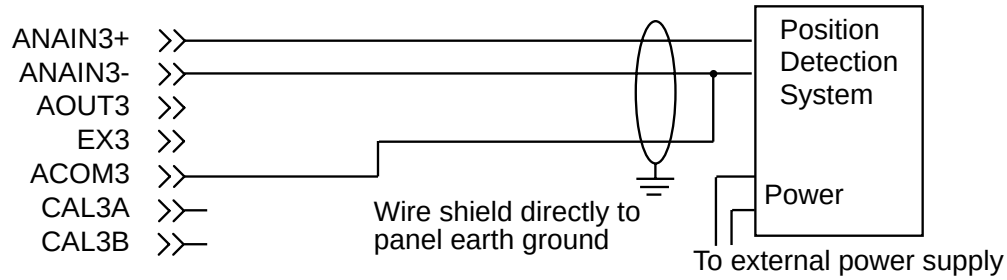


Clamp Position Input (Analog Input 3)

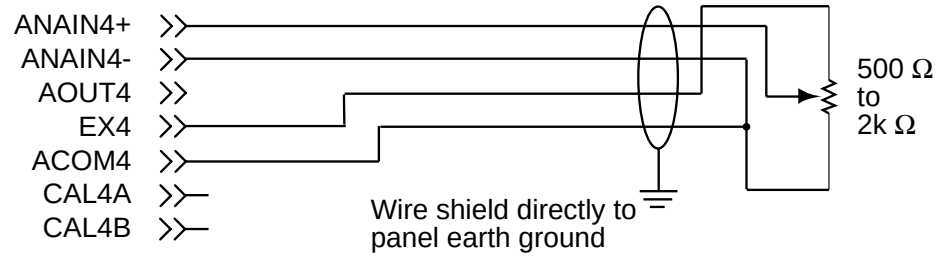


OR

Clamp Position Input (Analog Input 3)

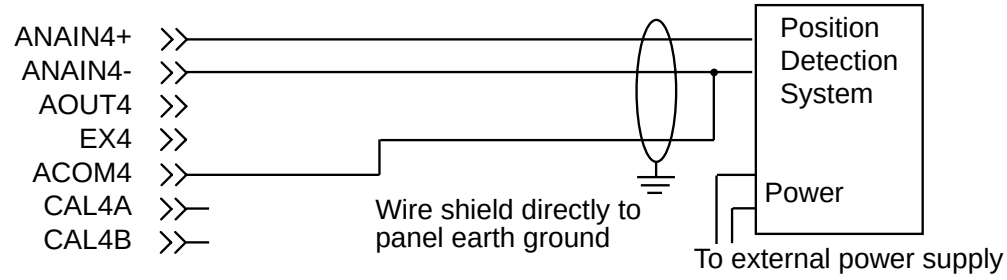


Ejector Position Input (Analog Input 4)

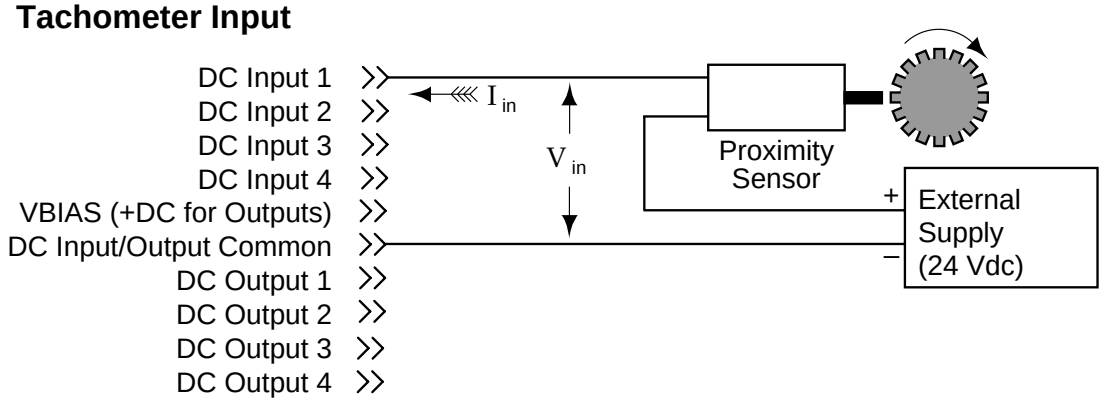


OR

Ejector Position Input (Analog Input 4)



Tachometer Input



A DC input used as a tachometer input will accept up to 40 Vdc at 1Khz. The measuring device typically puts out a series of pulses proportional to the shaft RPM to which it is mounted.

Logic levels for the input are 10 Vdc < V_{high} and V_{low} < 5 Vdc.

When used as a tach input, the minimum ON voltage should be increased to at least 12 Vdc. The driving device must be capable of sourcing 10mA to the input. The ON and OFF times for the input pulse must EACH be greater than 400ns (a waveform of 100ns ON and 900ns OFF even though it is 1KHz does NOT meet the specification). The signal level for the logic high must be at or above the required level for the minimum required time in order to be counted.

V_{in} > 10V = ON

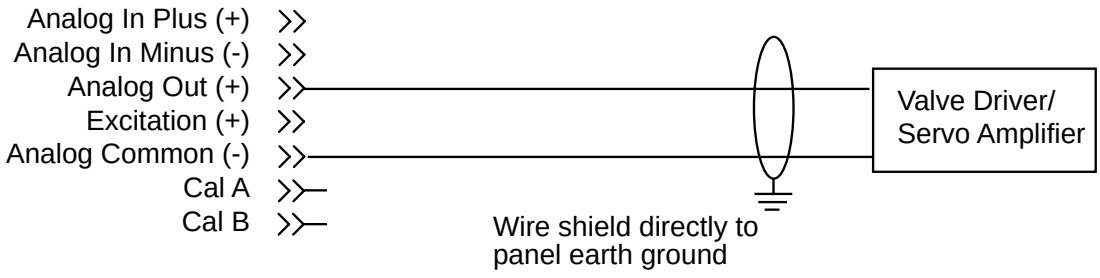
V_{in} < 5V = OFF

$I_{in\ on}$ = ~10mA

$t_{on\ min}$ = 400ns

$t_{off\ min}$ = 400ns

Analog Outputs



Analog Outputs can be either 0 to -10 Vdc or 0 to +10 Vdc (by Injection Control Relay – see Programming and Setup).

Figure 22. One-Head Time-Based Machine with B-C Servo Amp

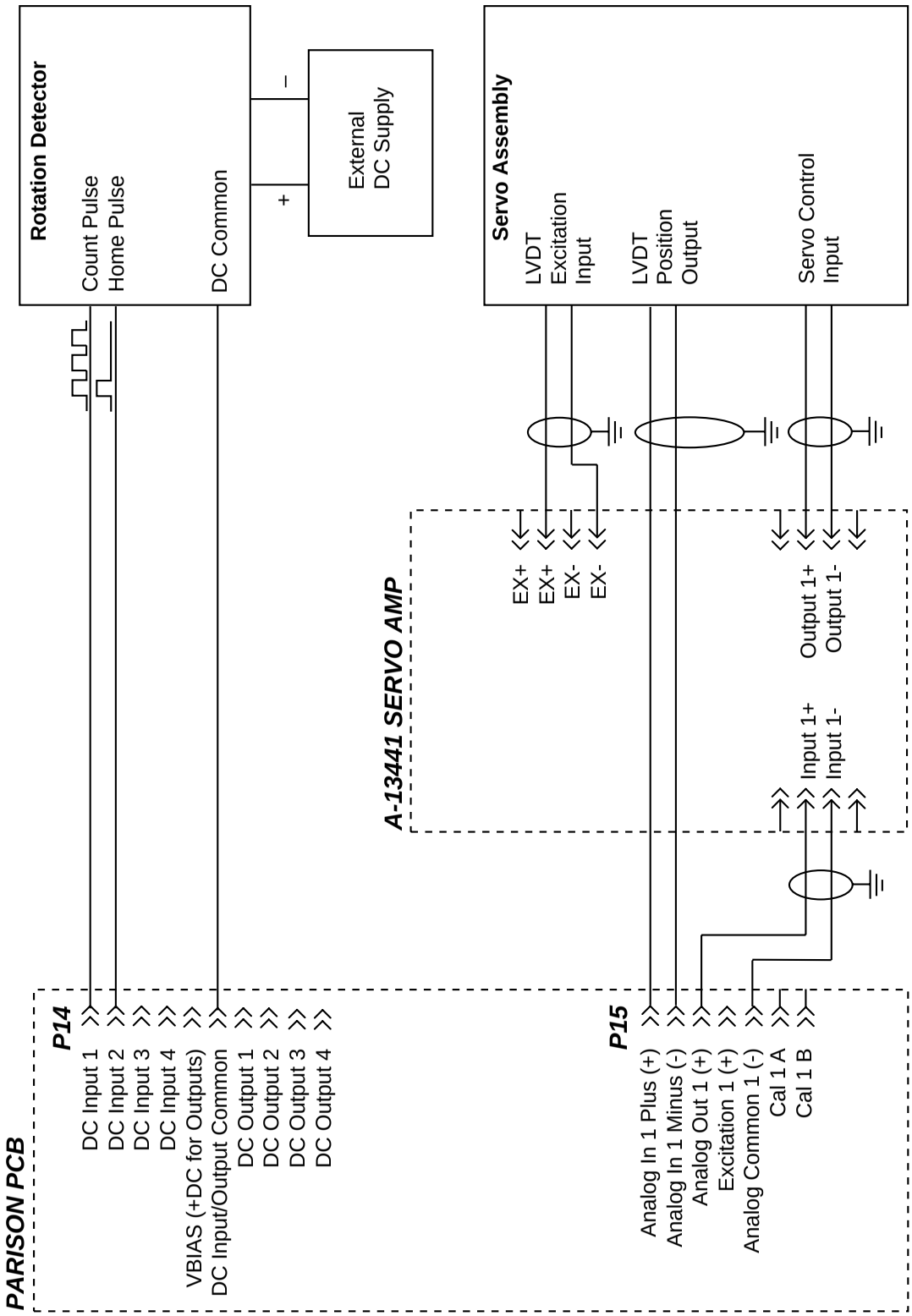


Figure 23. Two-Head Time-Based Machine with B-C Servo Amp

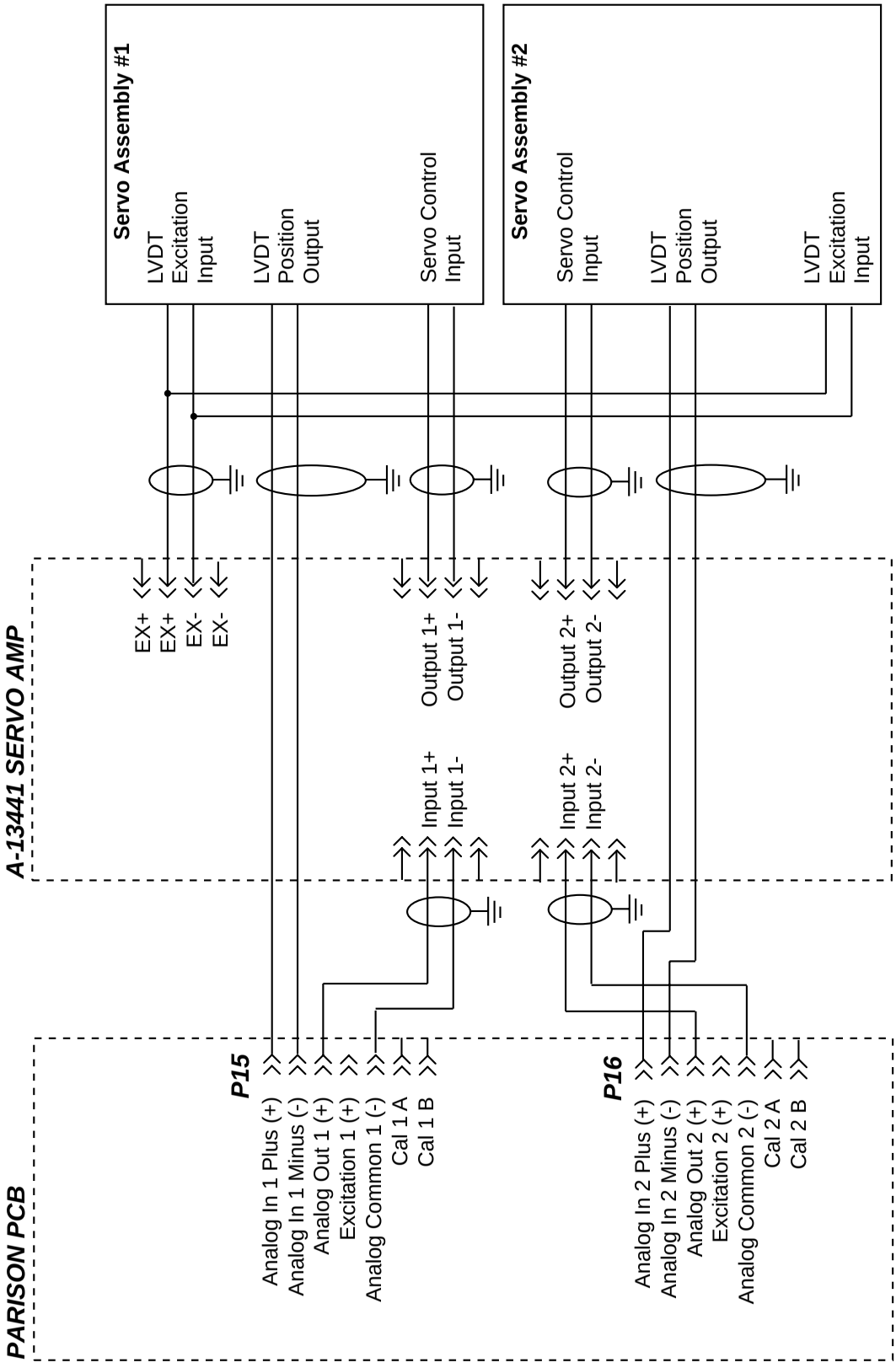


Figure 24. Two-Head Position-Based Machine with B-C Servo Amp

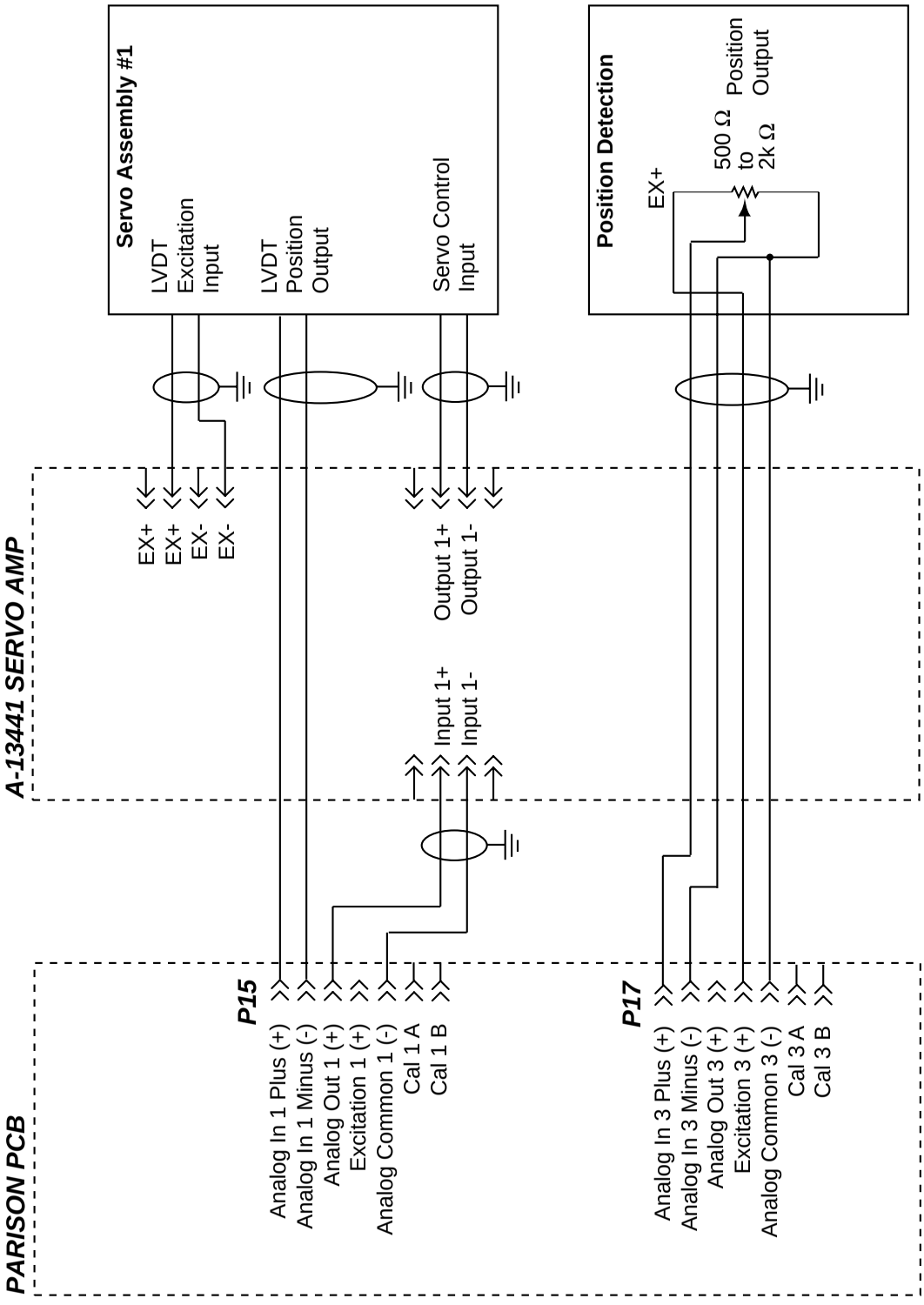


Figure 25. Two-Head Position-Based Machine with Pushout and B-C Servo Amp

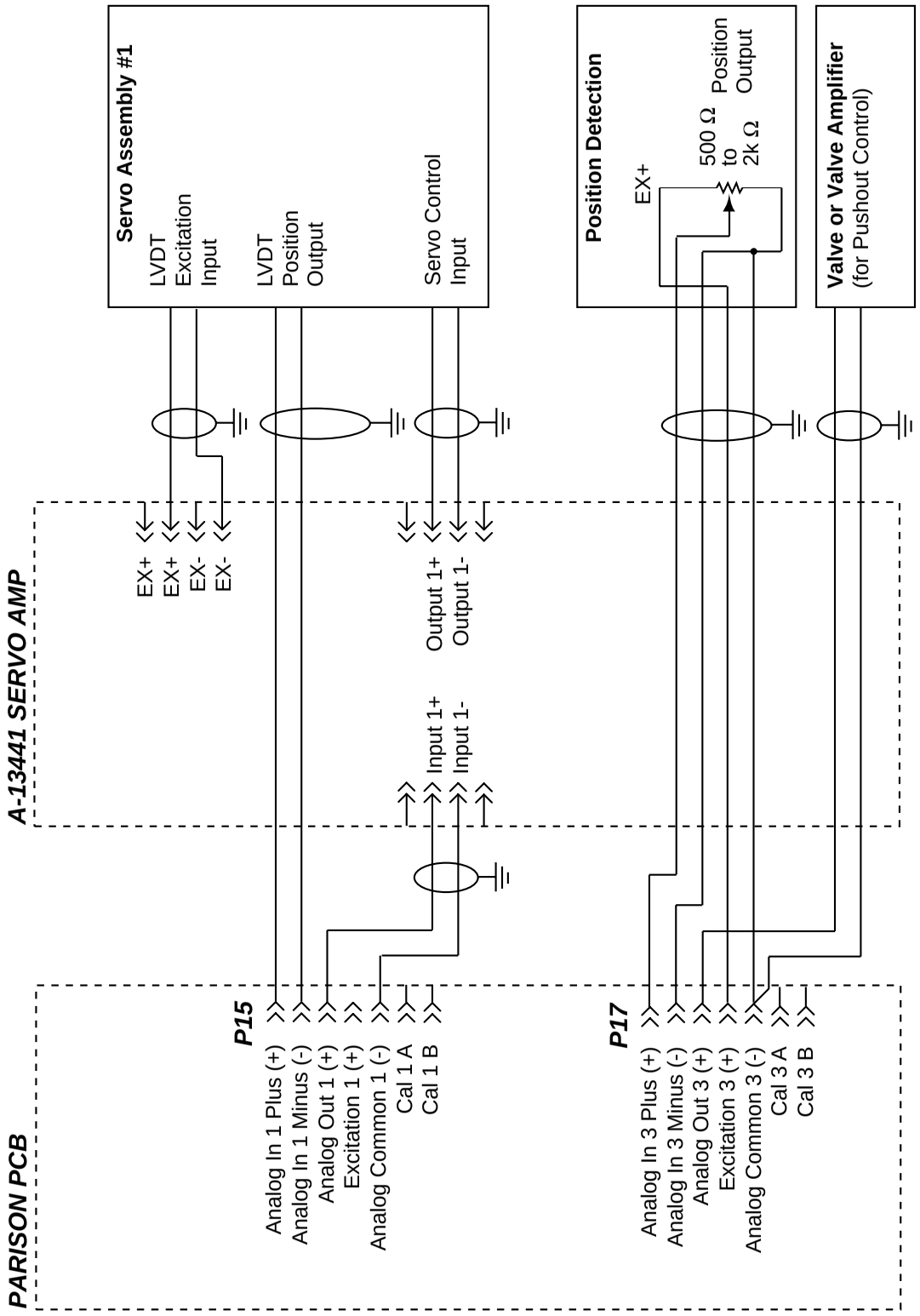


Figure 26. Accumulator Machine (Velocity Control) with B-C Servo Amp

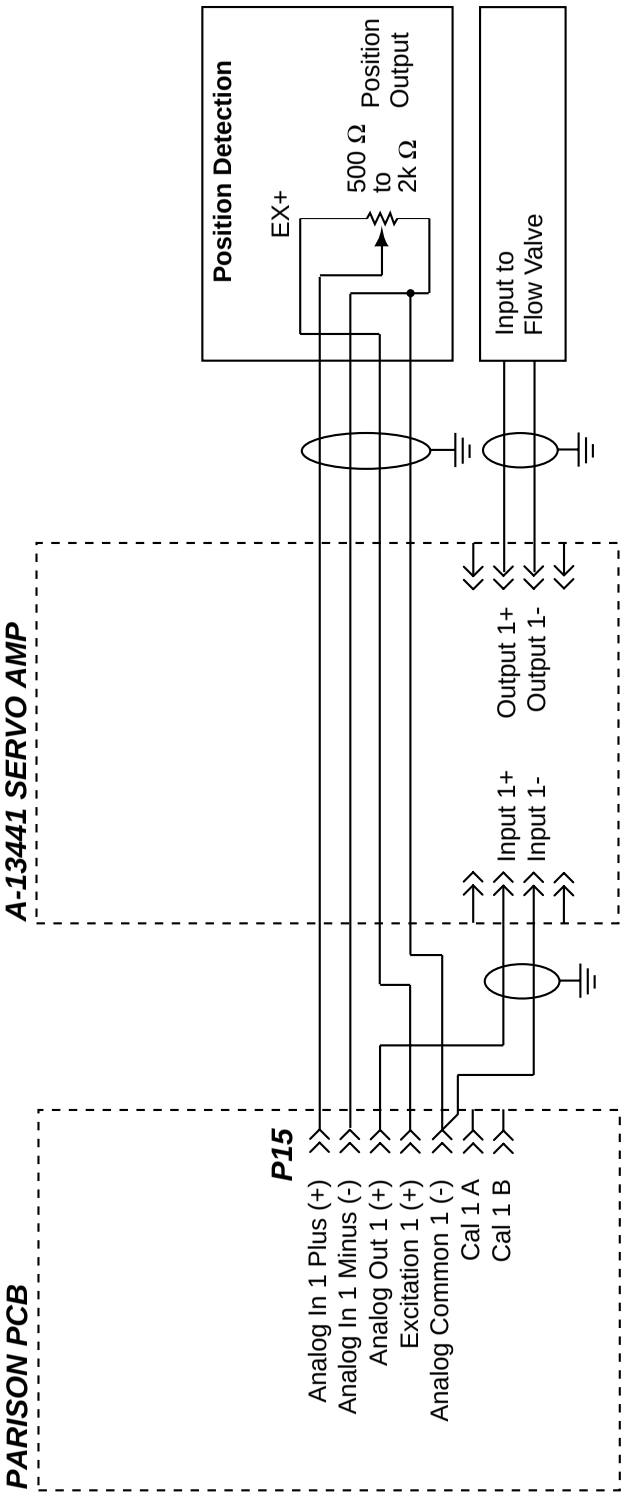
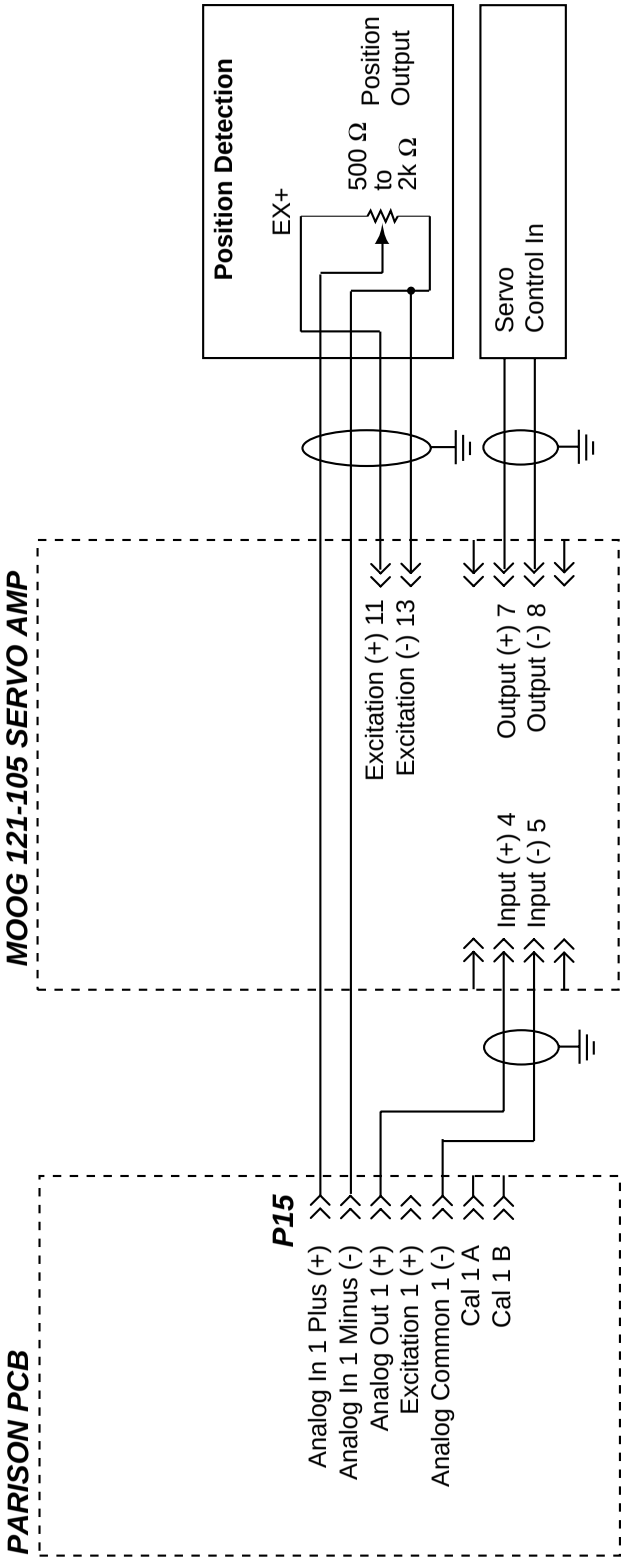


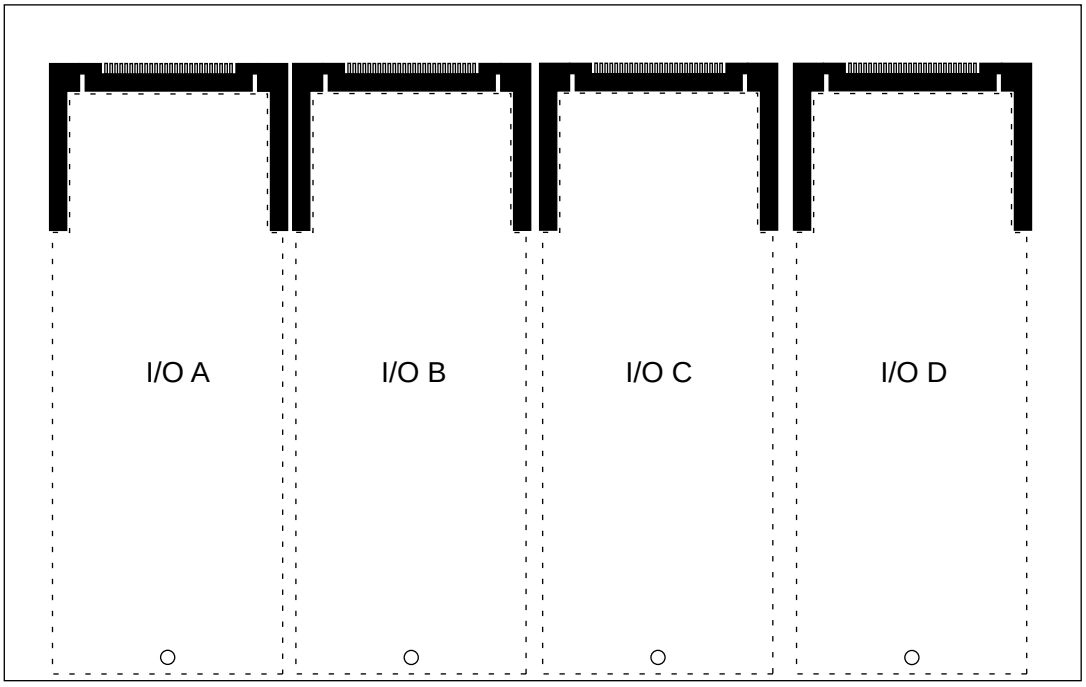
Figure 27. Two-Head Position-Based Machine with Moog Servo Amp



5. Using the 4-Slot Carrier Board

5.1 Introduction

The 4-Slot Carrier Board is designed to hold a variety of optional Input/Output boards. Install all digital I/O first, starting in Slot A, followed by Strain Gauge inputs (if any), followed by communications boards (if any). Refer to the following sections for information on specific I/O boards.



D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 28. Four Slot Carrier Board A-60142-xx0

5.2 Wiring the Digital I/O Boards

5.2.1 Introduction

Carrier boards can be ordered with up to 4 input/output daughterboards. Each input/output daughterboard consists of 2 groups of four I/O points, each group powered by its own V+.

Terminal “V1-4” sources outputs for the first group (I/O-1 through I/O4) and terminal “V5-8” sources outputs for the second group (I/O5 through I/O8).

Inputs and outputs can be mixed in a group, however, if power (V1-4, V5-8) is removed from the output circuits in a mixed group, it MUST also be REMOVED from the inputs of that group. Failure to remove power from the inputs will result in the output circuits being sourced from any input in that group that happens to be ON.

Power must come from a Class 2 power supply (the acceptable voltage range is 12 Vdc to 32 Vdc). Outputs are rated for 2 Amp loads at 24 Vdc; maximum leakage current is 1 mA. Inputs represent a 5 mA load, with a guaranteed turn on voltage of 10 Vdc and a guaranteed turn off voltage of 5 Vdc.

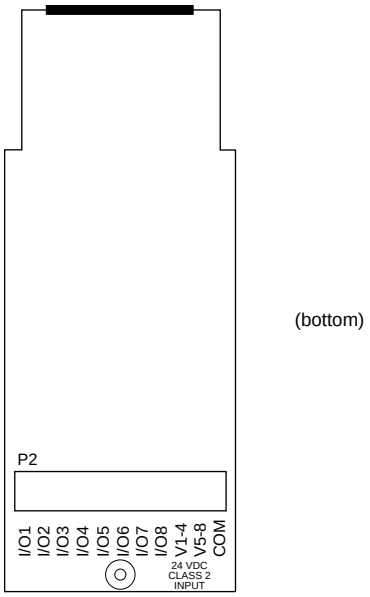
5.2.2 Specifications

Power Supply
Power must come from a Class 2 power supply, 12 to 32 Vdc.

Outputs
Outputs are rated for 2 Amp loads at 24 Vdc. Maximum leakage current is 1 mA. At 55°C ambient and 24 Vdc, these outputs MUST be limited to 2 Amps maximum per output, 10 Amps maximum per card and 40 Amps maximum per ASB.

Inputs
Inputs represent a 5 mA load, with a guaranteed turn on voltage of 10 Vdc and a guaranteed turn off voltage of 5 Vdc.

> Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



P2	
Pin Number	**Assignment**
1	I/O1
2	I/O2
3	I/O3
4	I/O4
5	I/O5
6	I/O6
7	I/O7
8	I/O8
9	V1-4
10	V5-8
11	COM
Mating Connector	E24-1134-011

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 29. 8 Input/Output Digital I/O Card A-60138-xx0

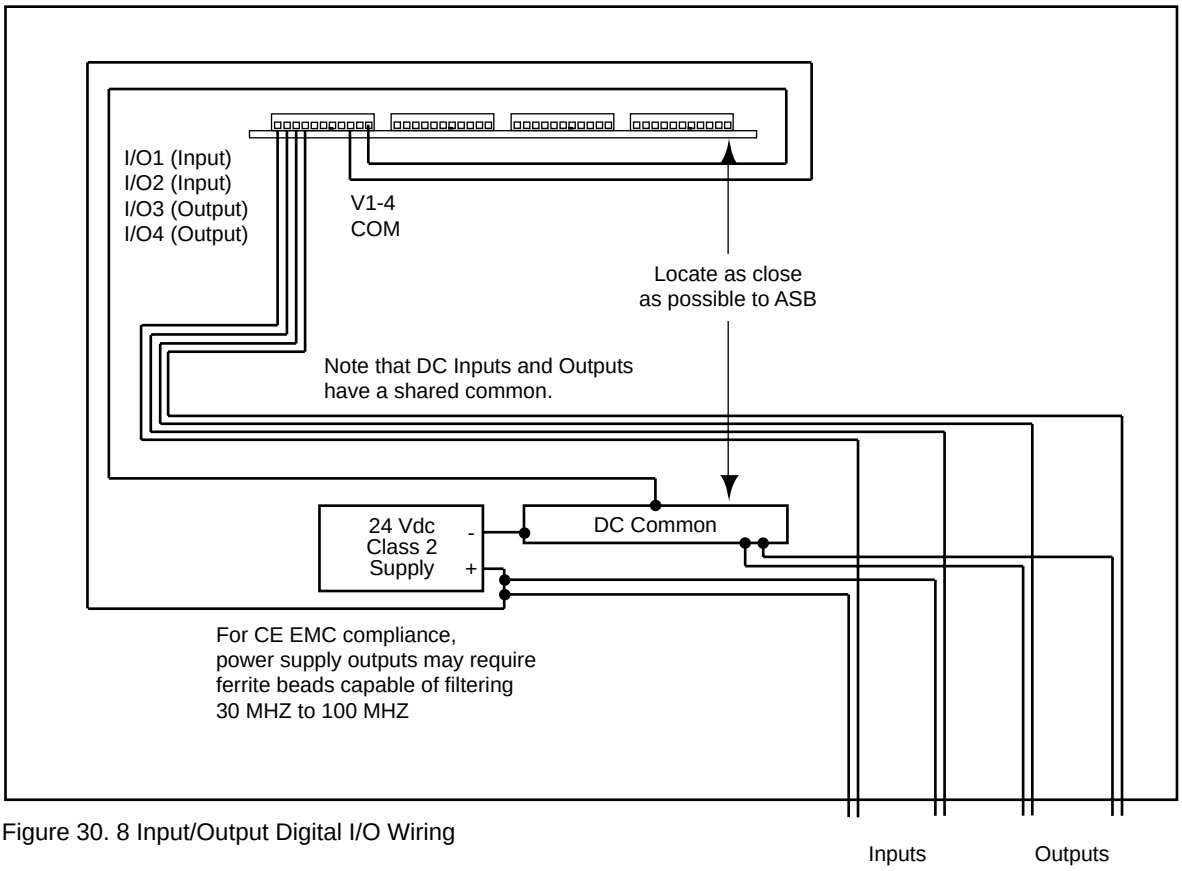
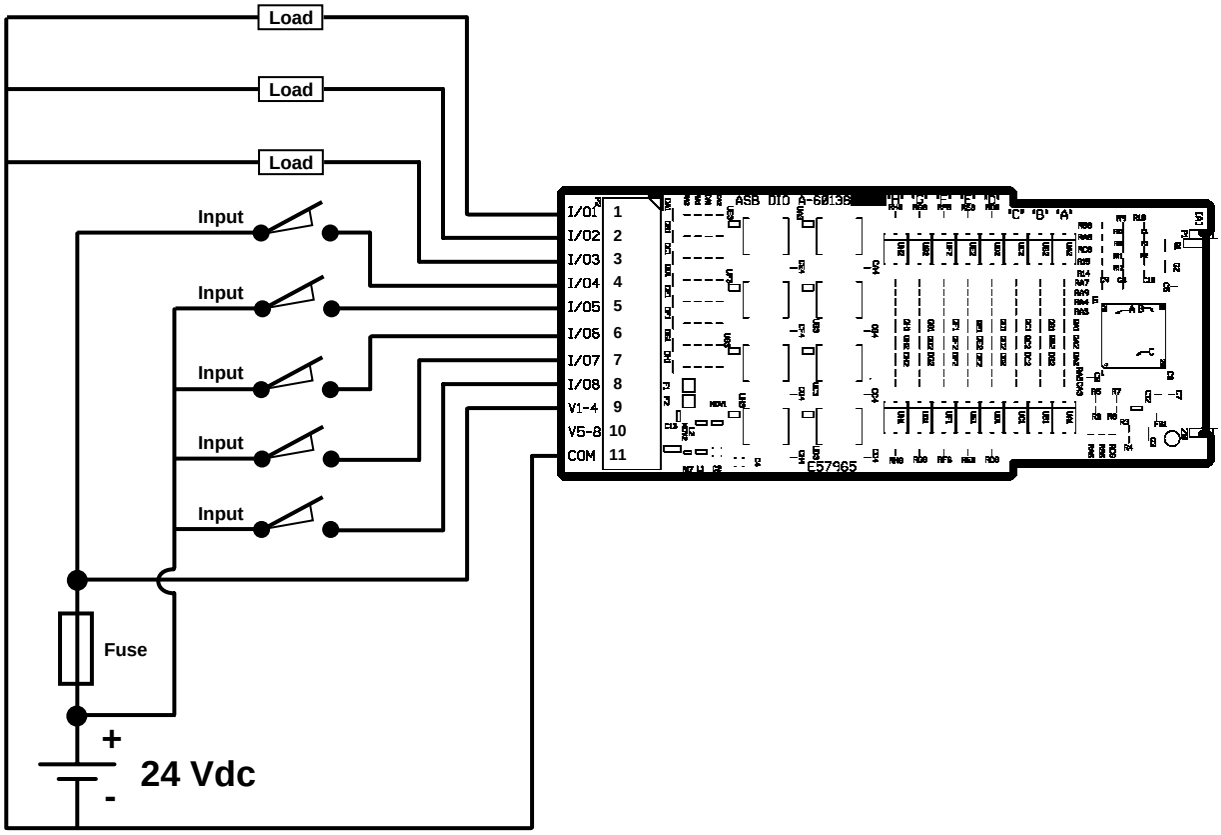


Figure 30. 8 Input/Output Digital I/O Wiring



1. Each card consists of two groups of four I/O points, each group powered by its own V+.

2. Each group of 4 output circuits is fused at 15 Amps on board with a surface mount fuse (NOT field replaceable). Each output circuit is thermally and over-current protected. Outputs are rated at 2 Amps each. Output groups need to be externally fused. The size of the fuse must be determined based on actual load usage, power supply and wire size. Each group of 4 output circuits is rated at a maximum of 8 Amps.

3. V1-4 sources outputs for the first group, Terminals 1 thru 4. V5-8 sources outputs for the second group, Terminals 5 thru 8.

4. Inputs and outputs can be mixed in a group, however, if power (V1-4, V5-8) is removed from the output circuits in a mixed group, it MUST also be REMOVED from the inputs of that group. Failure to remove power from the inputs will result in the output circuits being sourced from any input in that group that happens to be ON.

5. Power must come from a Class 2 power supply (the acceptable voltage range is 12 Vdc to 32 Vdc). Outputs are rated for 2 Amp loads at 24 Vdc; maximum leakage current is 1 mA. Inputs represent a 5 mA load, with a guaranteed turn on voltage of 10 Vdc and a guaranteed turn off voltage of 5 Vdc.

6. At 55°C ambient and 24 Vdc, these outputs MUST be limited to 2 Amps maximum per output, 10 Amps maximum per card and 40 Amps maximum per ASB.

Figure 31. 8 Input/Output Sample Wiring

5.3 Wiring the 2 Channel Analog Input Board

5.3.1 Introduction

Carrier boards can be ordered with up to two 2 Channel Analog Input boards. These boards are primarily meant for strain gauge pressure inputs. Each daughterboard has 2 channels of pressure transducer input. Calibration relay contacts and excitation voltage is provided. A thermocouple input (with cold junction temperature sensing) can be used in place of the transducer input, if desired. Each channel also includes one voltage or current input.

5.3.2 Specifications

Resolution: 16 bits

Accuracy: 0.1%

Stability: 10 ppm

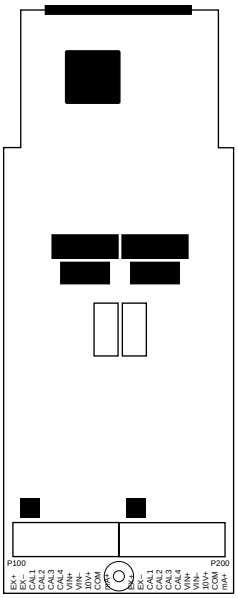
Sampling Rate: 20 Samples per second

Input Types:

Pressure Transducer, 2mV/Volt ot 4mV/Volt sensitivity
Cold Junction Temperature Voltage
0 to 10 Vdc
4 to 20 mAdc

Isolation: 500 Volts channel to channel
500 Volts channel to digital common

> Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



P100	
Pin Number	**Assignment**
1	EX+ for Channel 1
2	EX– for Channel 1
3	CAL1 (Sensor Cal Lead if External Cal Resistor)
4	CAL2 (External Cal Resistor)
5	CAL3 (External Cal Resistor, Cal Relay Contact)
6	CAL4 (Cal Relay Contact)
7	VIN+ for Pressure Input or T/C+
8	VIN– for Pressure Input or T/C–
9	0 to 10 Vdc Input +
10	COM
11	4 to 20 mA Input +
Mating Connector	E24-1519-011

P200	
Pin Number	**Assignment**
1	EX+ for Channel 2
2	EX– for Channel 2
3	CAL1 (Sensor Cal Lead if External Cal Resistor)
4	CAL2 (External Cal Resistor)
5	CAL3 (External Cal Resistor, Cal Relay Contact)
6	CAL4 (Cal Relay Contact)
7	VIN+ for Pressure Input or T/C+
8	VIN– for Pressure Input or T/C–
9	0 to 10 Vdc Input +
10	COM
11	4 to 20 mA Input +
Mating Connector	E24-1519-011

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 32. Two Channel Analog Input Card A-60148

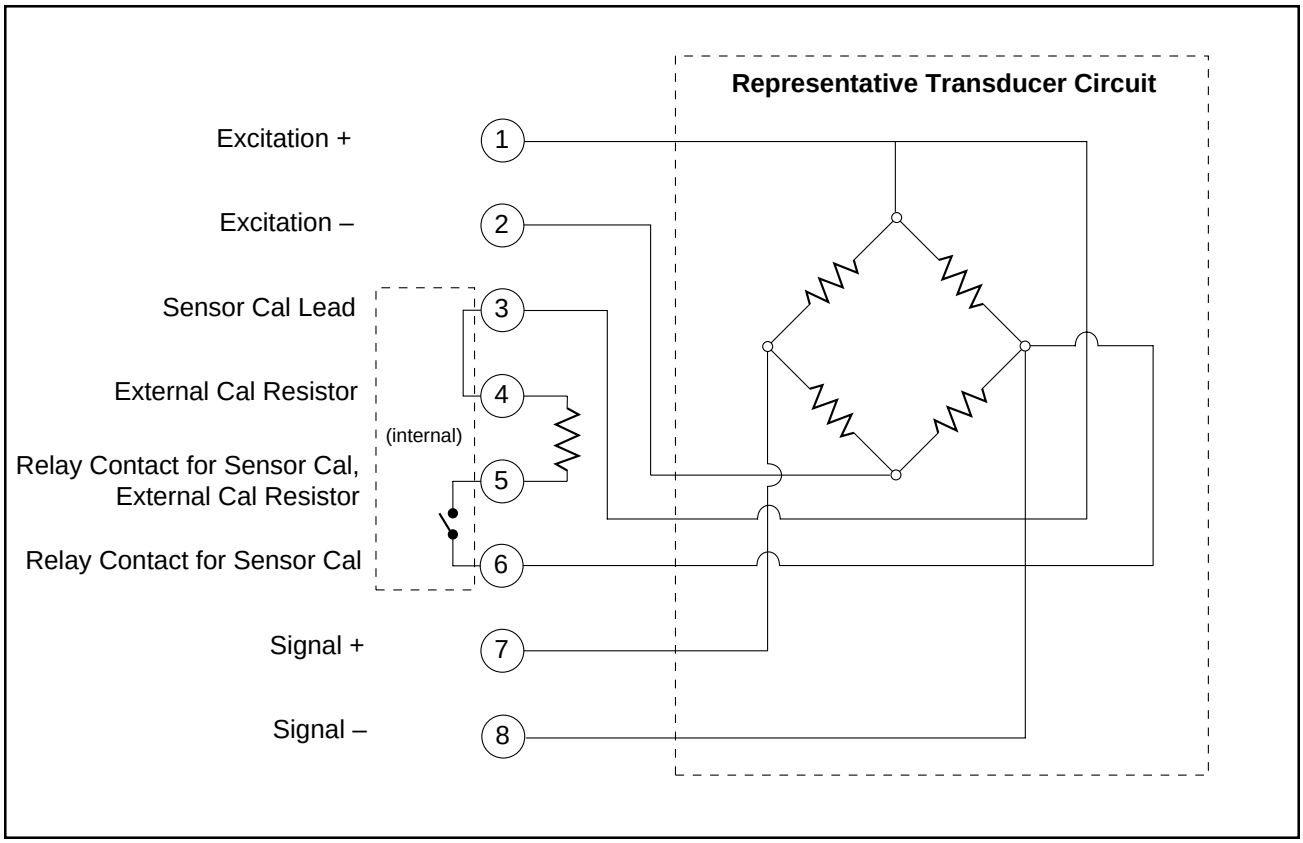


Figure 33. Wiring for External Cal Resistor

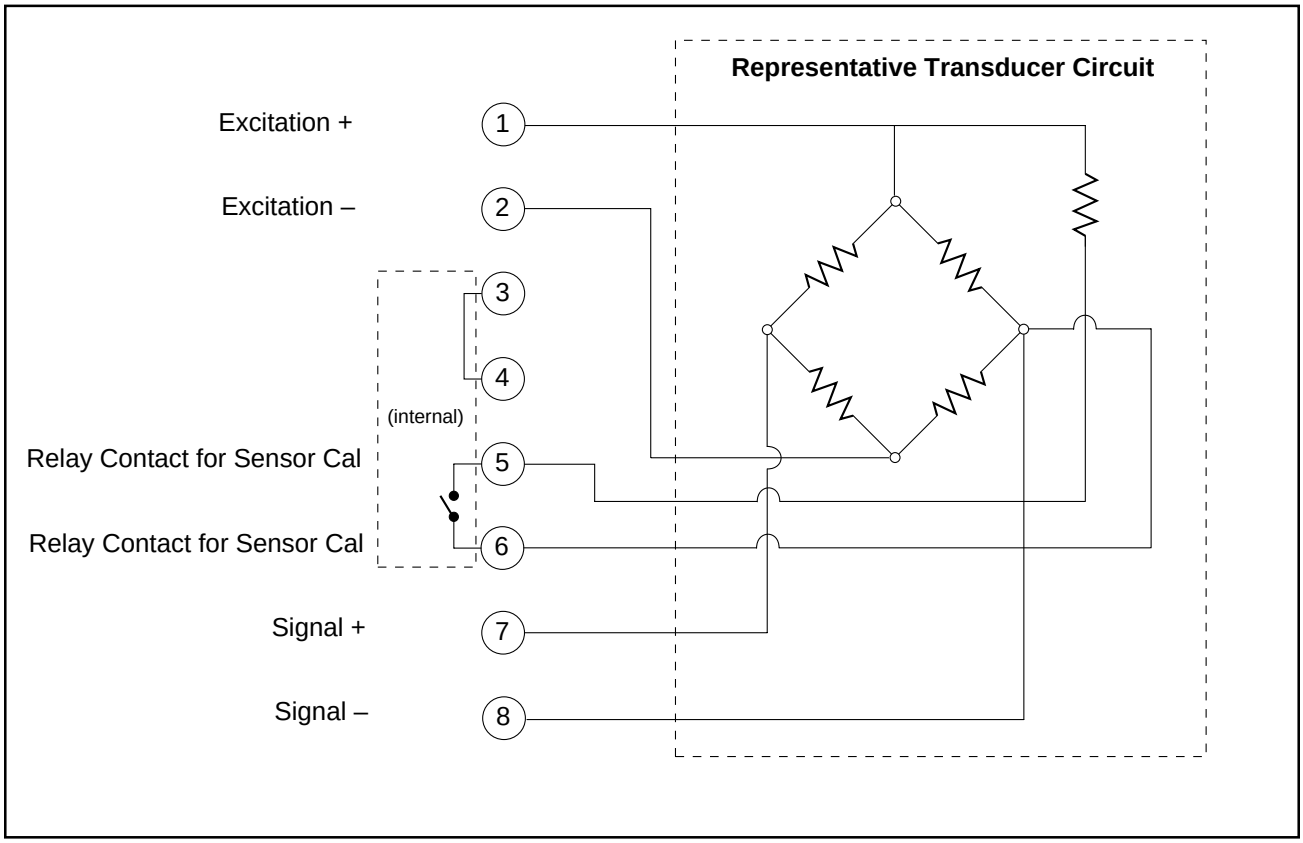


Figure 34. Wiring for Internal Cal Resistor

5.4 Wiring the MACO-NET Communications Board

5.4.1 Introduction

The MACO-NET Communications board is used only for communicating with a standard (non-PC) operator station. Only one MACO-NET board is required per system and it should be installed in Node 1 of the system.

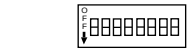
If there is a Rack in the system, a Rack should be designated as Node 1 (and the MACO-Net card should reside in Slot C of the 2-Slot carrier board which is part of the Data Handler block of Node 1).

If the system consists of ASBs only, the MACO-Net card should reside in Slot D of the 4-Slot carrier board in Node 1.

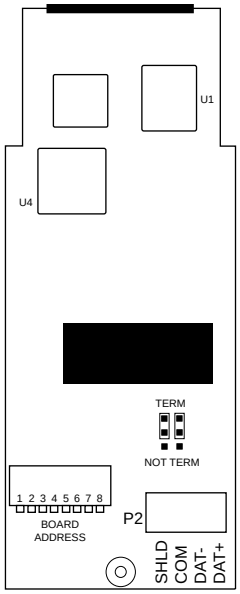
All address switches should be in the down (off) position.

Note that the operator station attached to this card will require an external Class 2 supply capable of 15 Vdc, 2 Amps (minimum); 15 Vdc, 3 Amps (recommended).

> Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



ALL Address Switches Should be in the down (OFF) Position



(bottom)

P2	
Pin Number	**Assignment**
1	Shield
2	Common
3	Data –
4	Data +
Mating Connector	E24-1134-004

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 35. MACO-NET Card A-60187

5.5 Wiring the Encoder Board

5.5.1 Introduction

Each encoder daughterboard contains circuitry for two incremental quadrature encoders. A customer-supplied 24 Vdc is required for the board. Two isolated 5 Vdc supplies are then provided by the board to power the encoders.

The inputs for the respective phase, home and fault signals are RS-422 compliant for a receiver (R) and cable termination (Rt). Each of the signals (A, /A, B, /B, H, /H) is terminated by a 120 Ohm resistor.

5.5.2 Specifications

Power Supply
(User Supplied): 24 Vdc (18 Vdc to 36 Vdc), 1 Amp minimum, Class 2

Termination (Rt): 120 Ohms

Threshold (Vt): ±200 mV

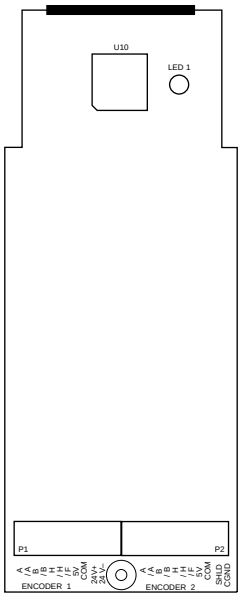
Common Mode
(Vcm): ±7Vdc

Supply Output: 5 Vdc, ±250 mV @ 200 mA each supply output

For a quadrature encoder, 2 logical signals are required in order to provide phase and directional information. These signals are input to the card as the A, /A, B, /B inputs. Logic signals A and B are out of phase by 90 degrees. The signal levels of A and /A are the logical inverse of one another.

An RS-422 logic signal is represented as the differential between 2 levels. A logical signal is true if level A is greater than level /A and is false when level A is less than level /A. the differential threshold is 200 mV. In other words, for a logical level 1 (ON) to be received, input signal A must be greater than input signal /A by at least 200 mV. Conversely, for a logical 0 (OFF) to be received, input signal A must be less than input signal /A by at least 200 mV. If the input signals are within 200 mv of each other, the logic level is undefined.

> Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



LED 1	
ON	All OK
OFF	ASB/Rack Not Powered
Blinking	Control Fault due to timeout on access by Data Handler

(bottom)

P1		
Pin Number	**Label**	**Assignment**
1	A	Encoder 1, Channel A
2	/ A	Encoder 1, Channel A (NOT)
3	B	Encoder 1, Channel B
4	/ B	Encoder 1, Channel B (NOT)
5	H	Encoder 1, Home
6	/ H	Encoder 1, Home (NOT)
7	/ F	Encoder 1, Fault (NOT)
8	5V	Encoder 1, 5 Vdc (Out)
9	COM	Encoder 1, Common
10	24V +	Encoder 1 & 2, 24 Vdc + (In)
11	24V –	Encoder 1 & 2, 24 Vdc – (In)
Mating Connector	E24-1519-011	E24-1519-011

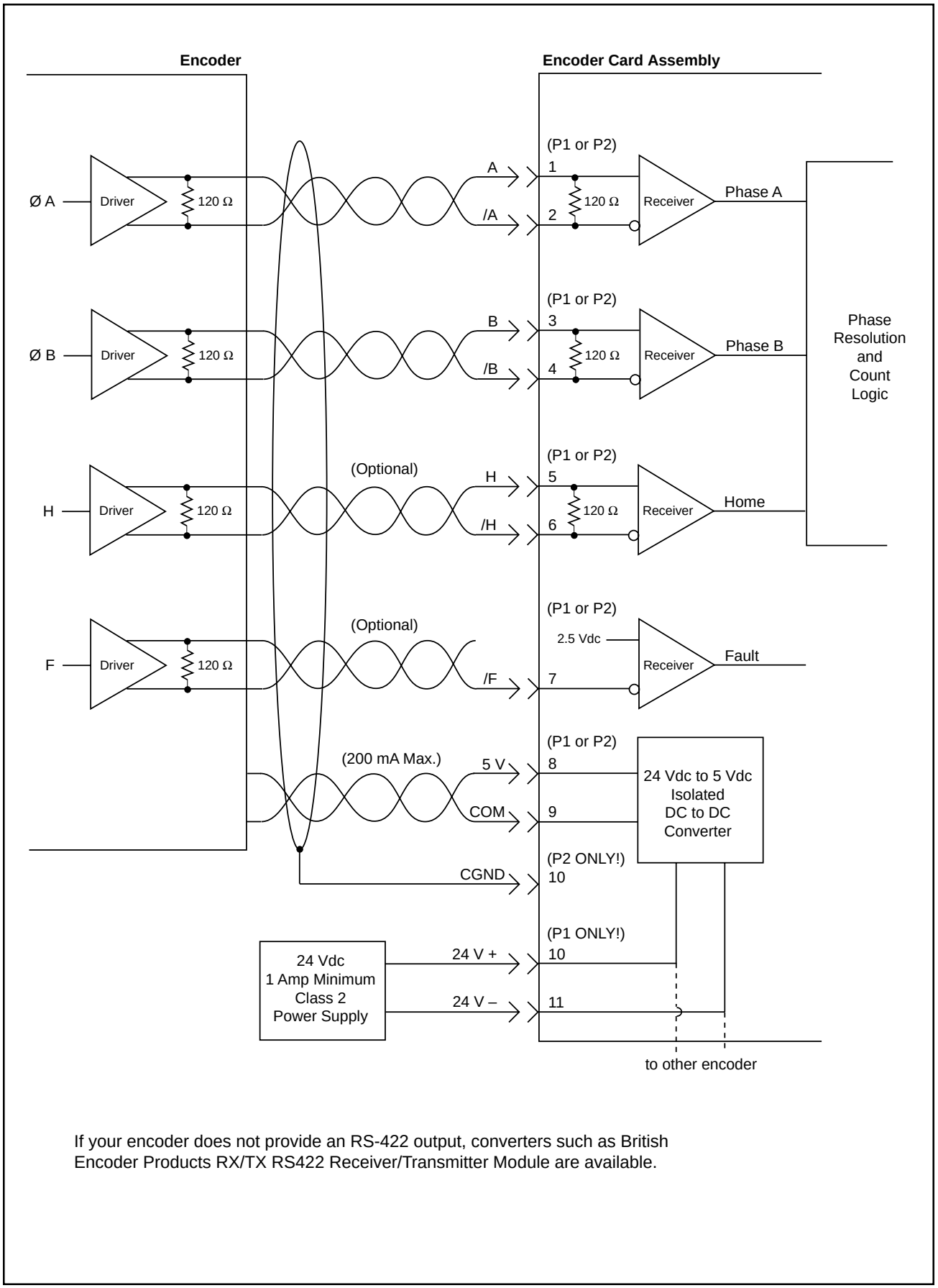
P2		
Pin Number	**Label**	**Assignment**
1	A	Encoder 2, Channel A
2	/ A	Encoder 2, Channel A (NOT)
3	B	Encoder 2, Channel B
4	/ B	Encoder 2, Channel B (NOT)
5	H	Encoder 2, Home
6	/ H	Encoder 2, Home (NOT)
7	/ F	Encoder 2, Fault (NOT)
8	5V	Encoder 2, 5 Vdc (Out)
9	COM	Encoder 2, Common
10	SHLD	No Connection
11	CGND	Encoder 1 & 2, Shield
Mating Connector	E24-1519-011	E24-1519-011

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 36. Encoder Card A-60191



If your encoder does not provide an RS-422 output, converters such as British Encoder Products RX/TX RS422 Receiver/Transmitter Module are available.

Figure 37. Wiring the Encoder Card

6. Wiring the 32 In/32 Out or 24 In/24 Out Digital I/O Boards

6.1 Introduction

The 32 In/32 Out Digital I/O board is capable of (both) 32 inputs and 32 outputs. Outputs are sourced in groups of 4, with Vcc 1-4 supplying Output 1 through Output 4, Vcc 5-8 supplying Output 5 through 8, etc.

Each output circuit is thermally and over-current protected. Output groups need to be externally fused. The size of the fuse must be determined based on actual load usage, power supply and wire size.

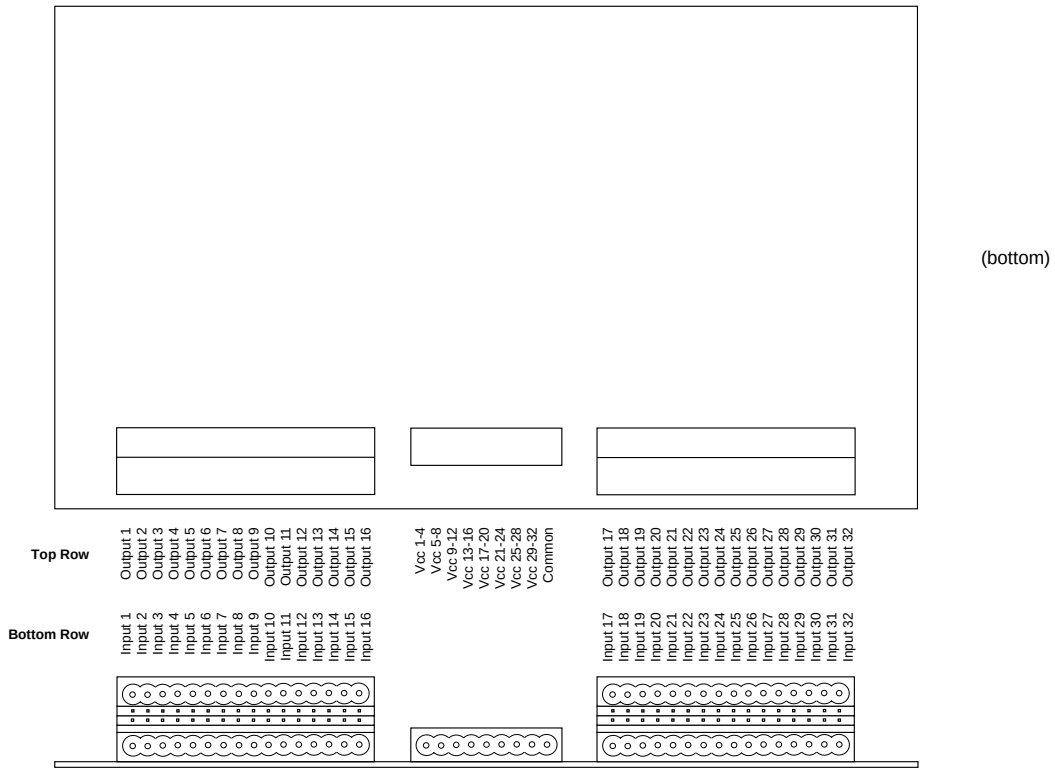
6.2 Specifications

Power Supply
Power must come from a Class 2 power supply, 18 to 32 Vdc.

Outputs
Outputs are rated for 2 Amp loads at 24 Vdc. Maximum leakage current is 1 mA. At 55°C ambient and 24 Vdc, these outputs MUST be limited to 2 Amps maximum per output, 8 Amps maximum per group and 64 Amps maximum per card (48 Amps for the 24 In/24 Out version).

Inputs
Inputs represent a 3 mA load, with a guaranteed turn on voltage of 16 Vdc and a guaranteed turn off voltage of 5 Vdc.

> Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



Pin Number	Upper Connector	Lower Connector
	Assignment	Assignment
1	Output 1	Input 1
2	Output 2	Input 2
3	Output 3	Input 3
4	Output 4	Input 4
5	Output 5	Input 5
6	Output 6	Input 6
7	Output 7	Input 7
8	Output 8	Input 8
9	Output 9	Input 9
10	Output 10	Input 10
11	Output 11	Input 11
12	Output 12	Input 12
13	Output 13	Input 13
14	Output 14	Input 14
15	Output 15	Input 15
16	Output 16	Input 16
Mating Connector		

Vcc Connector	
Pin Number	Assignment
1	Vcc 1-4
2	Vcc 5-8
3	Vcc 9-12
4	Vcc 13-16
5	Vcc 17-20
6	Vcc 21-24
7	Vcc 25-28*
8	Vcc 29-32*
9	Common
Mating Connector	

*N/A on 24 In/24 Out

Pin Number	Upper Connector	Lower Connector
	Assignment	Assignment
1	Output 17	Input 17
2	Output 18	Input 18
3	Output 19	Input 19
4	Output 20	Input 20
5	Output 21	Input 21
6	Output 22	Input 22
7	Output 23	Input 23
8	Output 24	Input 24
9	Output 25*	Input 25*
10	Output 26*	Input 26*
11	Output 27*	Input 27*
12	Output 28*	Input 28*
13	Output 29*	Input 29*
14	Output 30*	Input 30*
15	Output 31*	Input 31*
16	Output 32*	Input 32*
Mating Connector		

*N/A on 24 In/24 Out

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.

Figure 38. 32 In/32 Out or 24 In/24 Out A-60150-x

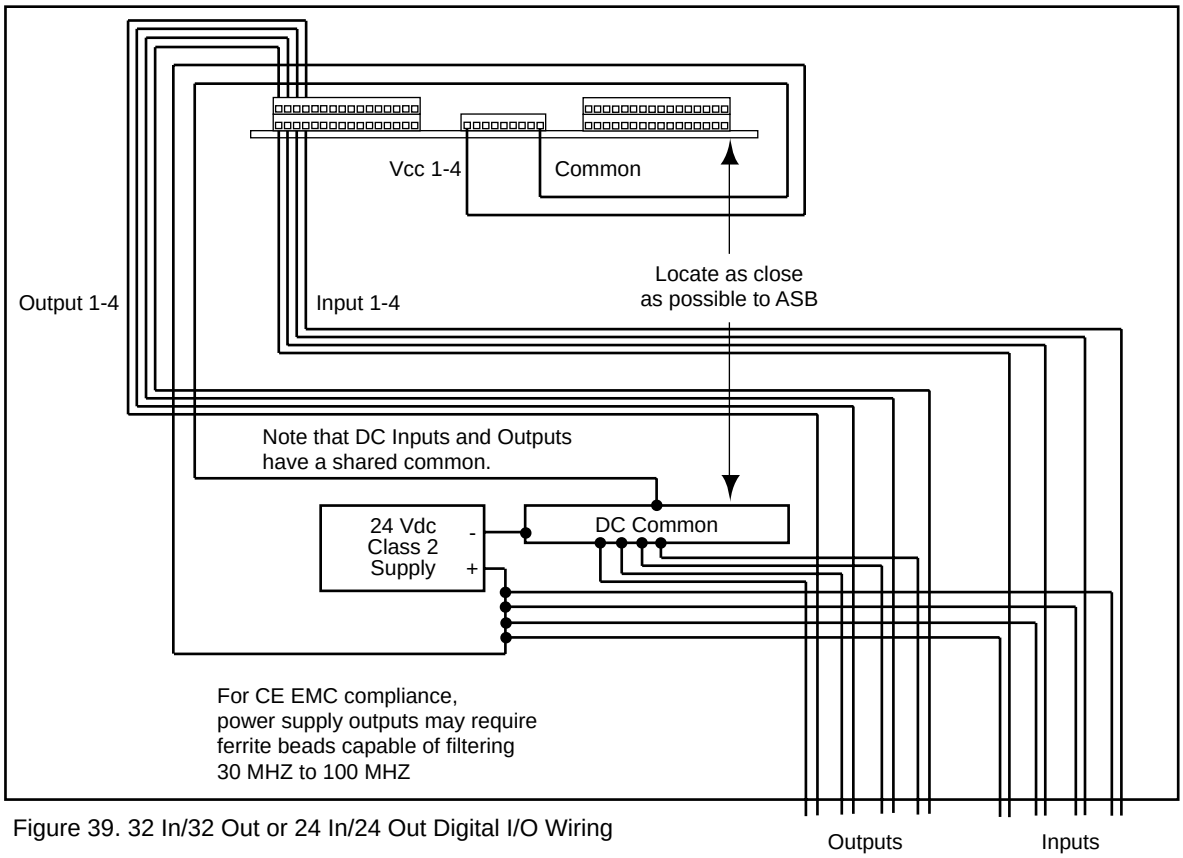


Figure 39. 32 In/32 Out or 24 In/24 Out Digital I/O Wiring

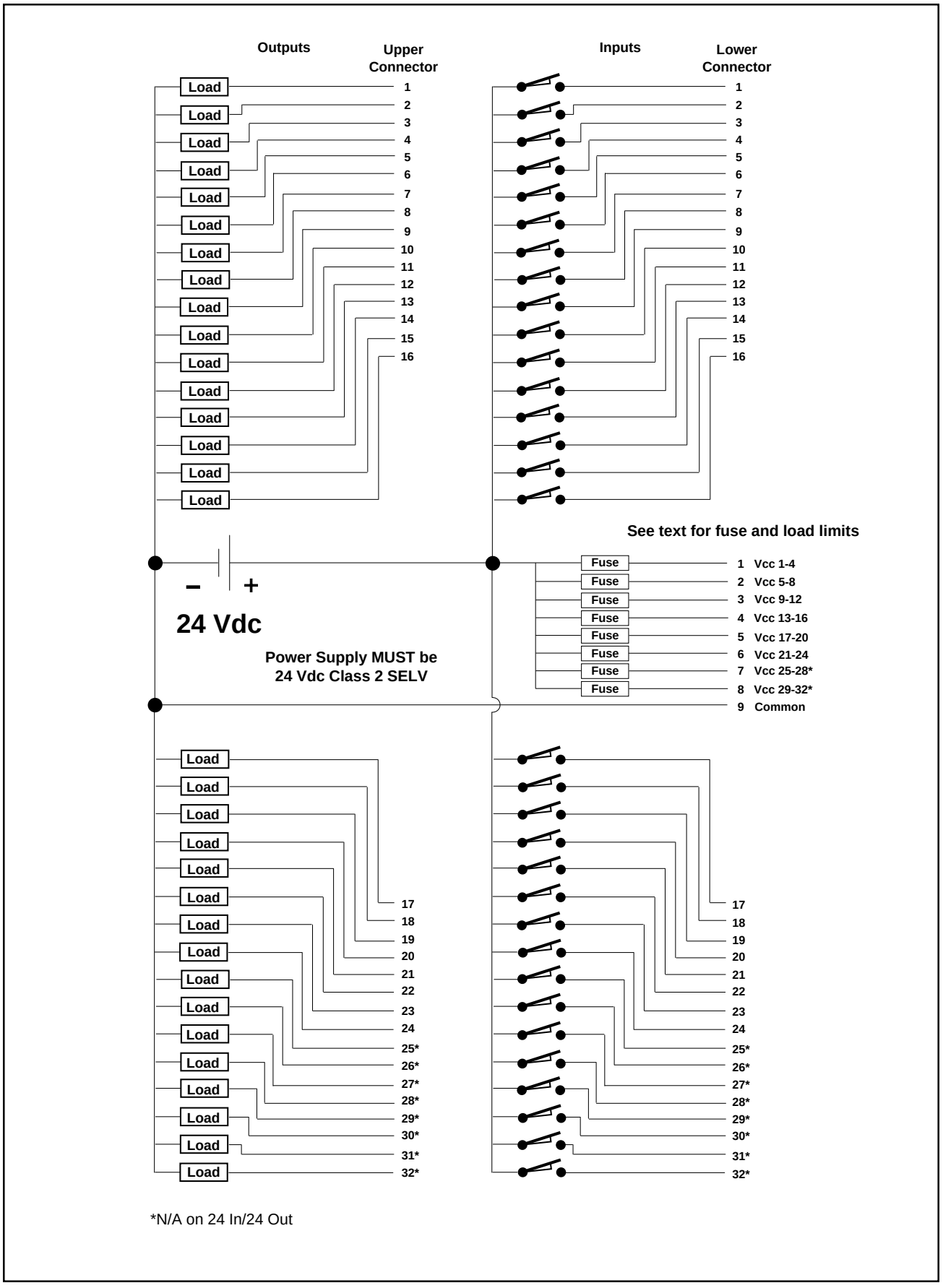
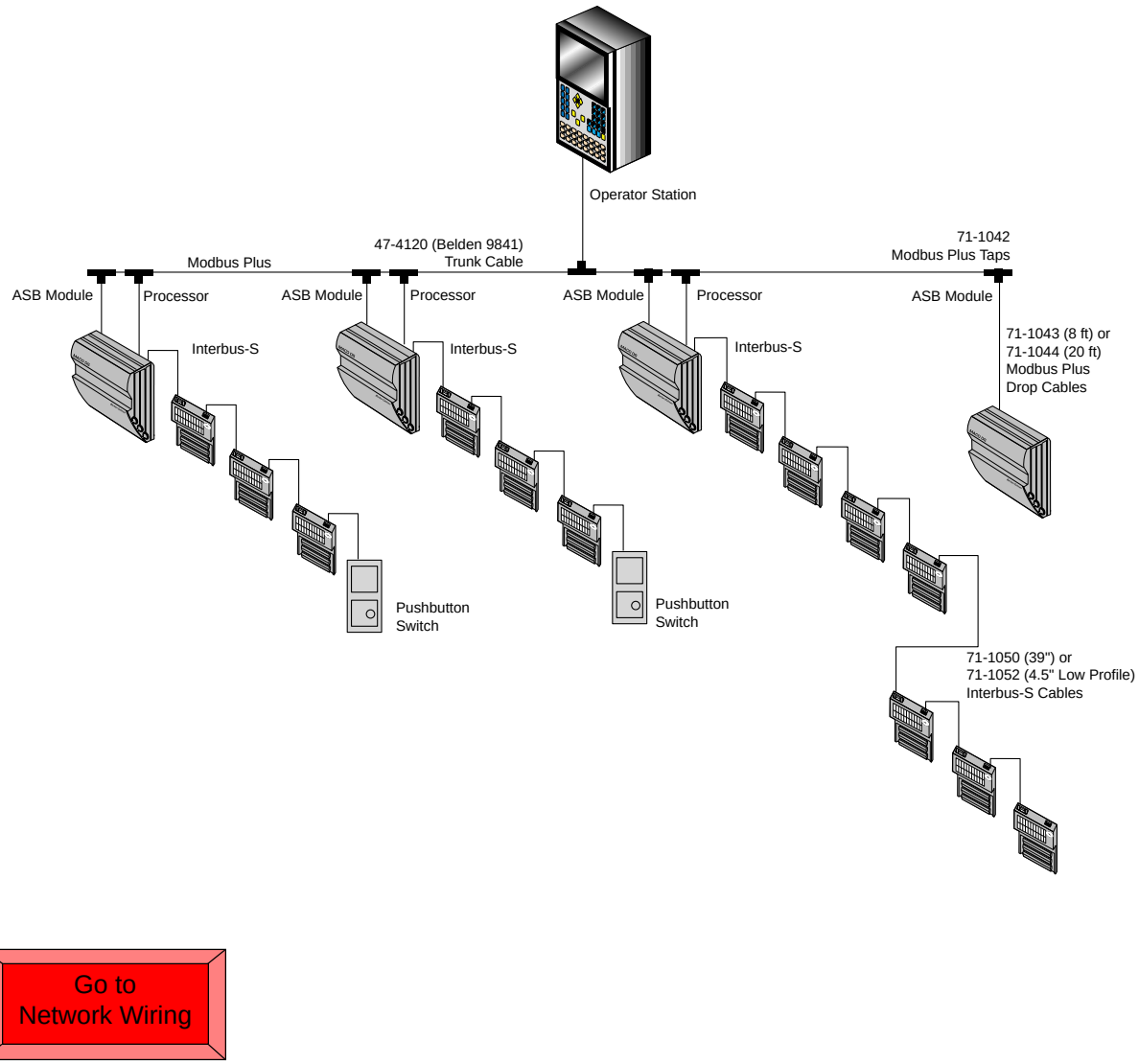


Figure 40. 32 In/32 Out or 24 In/24 Out Sample Wiring



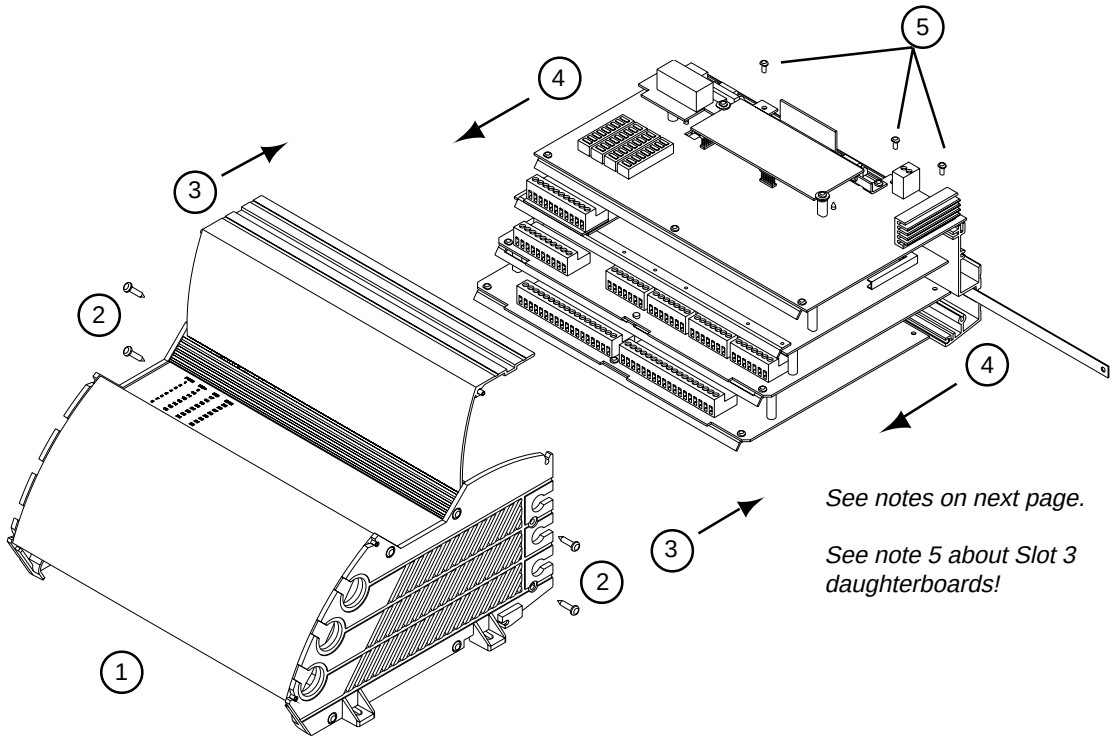
Go to Network Wiring

Figure 41. Sample System Wiring

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



Attention:
Observe proper ESD precautions! Place the ASB assembly on an ESD mat and attach a wrist strap to the ground strap on the ASB.

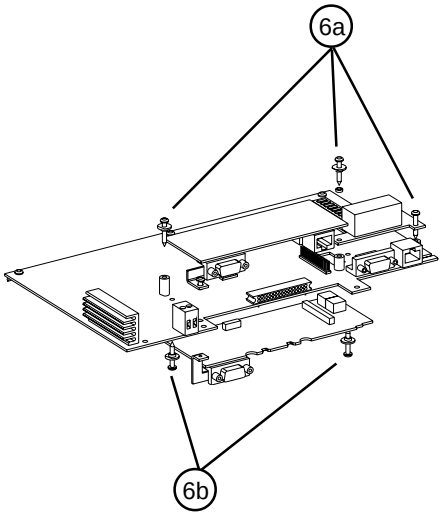
1. Remove all field wiring connectors from the PCBs.
2. Remove the 2 screws from each side of the ASB.
3. Carefully slide the entire assembly out of the enclosure.
4. Boards in the bottom 3 slots can be removed by carefully pulling them forward off the motherboard connectors.
5. The Data Handler assembly is held in place by 3 screws.

Figure 42. Adding or Replacing Boards

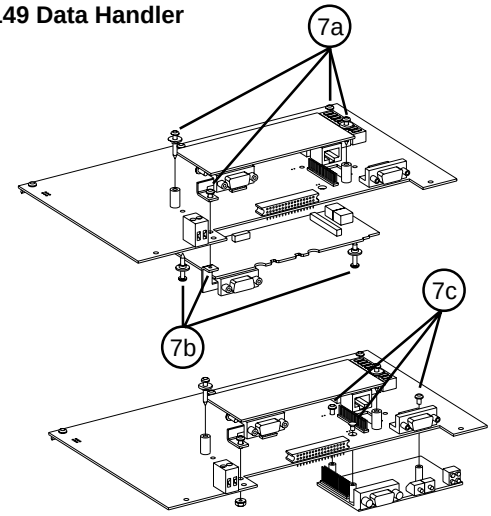
6. On the A-60134 data handler, the communications board and battery are held in place by 3 screws and the processor board is held in place by 2 screws.

7. On the A-60149 data handler, the communications board is held in place by 4 screws and the processor board (if present) is held in place by 2 screws and a threaded bracket. The Anybus board (if present) is held in place by 3 screws.

A-60134 Data Handler



A-60149 Data Handler



NOTES:

1. Slot 1 MUST be filled before Slot 2.

2. If a t/c-analog board is used, it must be inserted before a parison, EZ PRO or injection board.

3. If a parison board is used, it must be inserted before an EZ PRO or injection board.

4. If an EZ PRO board is used, it must be inserted before an injection board.

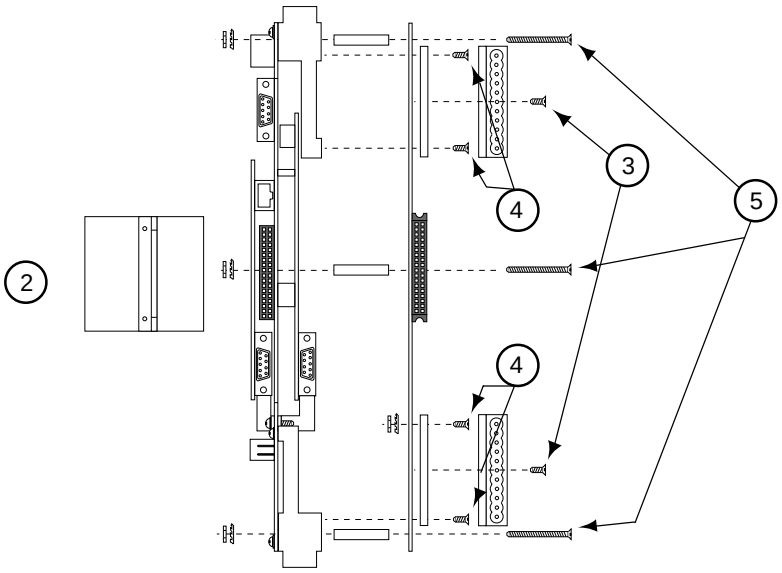
5. Slot 3 is used for I/O boards ONLY (Input or Input/Output). Slot 3 daughterboards can be removed WITHOUT disassembling the ASB (remove the single screw holding the daughterboard in place and carefully pull forward off the connector).

6. Slot 4 is used for the data handler board ONLY.

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE:
Class 2 Wiring must be separated a minimum of 1/4 inch from any Class 1 conductors.



Attention:
Observe proper ESD precautions! Place the data handler block assembly on an ESD mat and attach a wrist strap to the assembly.

1. Remove all field wiring connectors from the PCBs.
2. Remove the “connector board” from the front of the assembly.
3. Remove any daughterboards from the carrier board (remove the single screw holding the daughterboard in place and carefully pull forward off the connector).
4. Remove the screws holdng the front of the carrier board in place.
5. Remove the screws holding the rear of the carrier board in place.
6. Refer to the previous pages for disassembling the data handler board.

Figure 43. Disassembling the Data Handler Block

CAUTIONS & WARNINGS NOTICE

IMPORTANT INFORMATION:
Although this instruction manual is written in english, items that are considered to be safety related are marked both with the symbol shown in the margin and an identifying number. In order to locate a message in a specific language, simply note the number and go to that number in the list of messages for that language.

INFORMATION IMPORTANTE
Bien que ce manuel d' instruction soit écrit en Anglais, les points considérés en rapport avec la sécurité sont repérés par le symbole situé dans la marge ainsi qu'un numéro d' identification. Pour localiser un message dans une langue spécifique, simplement noter ce numéro et se reporter à ce numéro dans la liste des messages pour le language considéré.

INFORMAZIONI IMPORTANTI:
Per quanto questo manuale è stato scritto in inglese, gli articoli considerati importanti per la sicurezza sono marcati sia con il simbolo esposto nel margine sia col numero di identificazione. Per poter trovare un messaggio nella lingua specifica, basta notare il numero ed andare a quel numero nell'elenco di messaggi per quella lingua.

WICHTIGE INFORMATIONEN:
Diese Anleitung wurde zwar in Englisch geschrieben; die Punkte, die sich auf Sicherheitsthemen beziehen, sind jedoch mit dem im Rand gezeigten Symbol sowie einer Kennummer markiert. Wenn Sie eine Meldung in einer bestimmen Sprache suchen, notieren Sie sich einfach die Nummer und rufen Sie diese Nummer in der Liste mit Meldungen in dieser Sprache auf.

INFORMACIÓN IMPORTANTE:
Aunque el original de este manual de instrucciones está escrito en inglés, los temas que se consideran relacionados con la seguridad están marcados con el símbolo que aparece en el margen y con un número de identificación. Para localizar un mensaje en determinado idioma basta anotar el número y buscar ese número en la lista de mensajes correspondientes a ese idioma.

CAUTIONS & WARNINGS NOTICE

A.1

CAUTION:
Risk of Electric Shock - More than one disconnect switch may be required to deenergize the equipment before servicing.

B.1

CAUTION:
Do Not Operate Without Cover in Place. Cover must be in place both for operator safety and to insure proper cooling of internal components.

C.1

WARNING:
Use of improper battery could present a risk of fire or explosion of the battery.

D.1

WARNING:
Hazardous extraneous voltage capable of causing severe injury or death may exist between sensor leads and ground. Disconnecting the instrument power may not remove this voltage. Measure for the presence of voltage between each sensor lead and ground before servicing. Do NOT place power wiring in the same conduit or wiring trough with sensor wiring.

NOTICE D'AVERTISEMENTS ET D'ALARMES

A.1

AVERTISSEMENT/ATTENTION:
Risque de décharge électrique. Il peut être nécéssaire de désactiver plus d' un commutateur afin de désamorcer l' équipement avant toute intervention.

B.1

AVERTISSEMENT/ATTENTION:
Ne pas opérer la machine sans les capots de protection en place. Les capots de protection doivent être en place aussi bien pour la sécurité de l' opérateur que pour assurer un refroidissement correct des composants internes.

C.1

ALARME/DANGER:
L' utilisation de batteries ou de piles électriques non conformes peut présenter un risque d' explosion ou d' incendie au sein de la batterie ou de la pile.

D.1

ALARME/DANGER:
Des courants imprévisibles de très haut voltages pouvant occasionner de sévères blessures par électrocution, ou même mort d' homme peuvent exister entre les fils des détecteurs et les prises de terre. Déconnecter l' alimentation des instruments peut ne pas annuler ce voltage existant. Effectuer un contrôle électrique pour confirmer la présence de voltage entre chaque cable des détecteurs et les prises de terre avant toute réparation. Ne PAS mettre les cables d' alimentation dans la même conduite, ou bien les conducteurs en contact avec les fils des détecteurs.

NOTIZIA DI PRECAUZIONI E AVVISI

A.1

PRECAUZIONE:
Rischio di scossa elettrica - Potrebbe occorrere l'azionamento di più di un interruttore per disattivare l'apparecchiatura prima delle riparazioni.

B.1

PRECAUZIONE:
Non adoperare senza il coperchio in posizione. Il coperchio deve essere in posizione sia per la sicurezza dell'operatore sia per assicurare il giusto raffreddamento dei componenti interni.

C.1

AVVISO:
L'uso della batteria sbagliata potrebbe presentare un rischio di incendio o esplosione della batteria stessa.

D.1

AVVISO:
Ci potrebbe essere un pericolo di voltaggio estraneo fra i fili elettrici e la terra capace di causare un infortunio severo o la morte. Lo stacco dell'energia allo strumento potrebbe non togliere questo voltaggio. Misurare per la presenza di voltaggio fra ogni filo elettrico di sensore e la terra prima di fare servizio. NON mettere i fili elettrici nello stesso condotto o canale trasportatore con i fili elettrici di sensore.

ACHTUNGS UND WARNHINWEISE

A.1

ACHTUNG:
Gefahr von elektrischem Schlag! Vor einer Reparatur kann es notwendig sein, dass mehr als ein Schalter ausgeschalet werden muss.

B.1

ACHTUNG:
Nicht ohne eingebaute Abdeckung in Betrieb nehmen. Abdeckung muß aus Sicherheitsgründen für Bediener sowie zur ordnungsgemäßen Kühlung interner Komponenten installiert sein.

C.1

WARNUNG:
Die Verwendung einer unsachgemäßen Batterie könnte ein Brandrisiko oder Explosionsrisiko für die Batterie darstellen.

D.1

WARNUNG:
Zwischen Sensorzuleitungen und Masse können gefährliche externe Spannungen anliegen, die zu ernsthaften Verletzungen, eventuell mit Todesfolgen führen können. Durch das Abtrennen der Stromversorgung des Instruments wird die Spannung unter Umständen nicht beseitigt. Zwischen jeder Sensorzuleitung und Masse vor dem Durchführen von Wartungsmaßnahmen eine Messung zur Feststellung eventuell vorhandener Spannung durchführen. Die Stromverdrahtung NICHT im selben Kabelkanal oder Kabeltrog installieren, der für die Sensorverdrahtung verwendet wird.

NOTIFICACION DE PRECAUCIONES Y ADVERTENCIAS

A.1

PRECAUCIÓN:
Peligro de choque eléctrico - Puede ser necesario desconectar más de un interruptor para cortar la corriente del equipo antes de realizar el servicio.

B.1

PRECAUCIÓN:
No operar cuando la tapa no esté colocada. La tapa debe estar en su sitio por razones de seguridad del operador y a los efectos de un adecuado enfriamiento de los componentes internos.

C.1

ADVERTENCIA:
El uso de una batería inadecuada puede presentar riesgo de incendio o explosión de la batería.

D.1

ADVERTENCIA:
Entre los conductores del sensor y la conexión a tierra puede haber un peligroso voltaje extraño que puede causar graves lesiones, o la muerte. Antes de realizar el servicio, efectúe mediciones para detectar la presencia de voltaje entre cada conductor del sensor y la conexión a tierra. NO instale cableado eléctrico en el mismo conducto o canal de cableado con el cableado del sensor.

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