



*Allen-Bradley*

## **Allen-Bradley I/O Modules**

**Wiring Diagrams**

**Rockwell  
Automation**

## Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://www.ab.com/manuals/gi>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc. is prohibited.

Throughout this manual we use notes to make you aware of safety considerations.

---

### WARNING



Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

---

---

### IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

---

---

### ATTENTION



Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:

- identify a hazard
  - avoid a hazard
  - recognize the consequence
- 

---

### SHOCK HAZARD



Labels may be located on or inside the drive to alert people that dangerous voltage may be present.

---

---

### BURN HAZARD



Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.

---

### Introduction

The purpose for showing these connection diagrams here is to illustrate the following attributes of each I/O module, I/O block, or fixed I/O controller:

- the number of inputs and/or outputs
- whether there is a single common for all I/O, a common for a set of I/O separate from other sets of I/O, or a signal return for each I/O circuit so that each I/O circuit is isolated from all others
- whether an output is a current source or a current sink
- whether an input is a source load or a sink load

To fit them into this concise format, these diagrams are intentionally simplified to the point that they do not show the type of cables, twisted pairs, cable shields or the grounding of cable shields. We make an exception where the cable shield must be connected at an I/O terminal.

For those input modules or blocks that can tolerate the leakage current of proximity sensors, we usually show a proximity sensor at one input and hard contacts at the others for ease of illustration.

---

**IMPORTANT**

Many of the catalog numbers included in this publication have specific wiring guidelines and recommendations that are listed in the product's technical documentation (e.g. installation instructions or user manuals) but not here because the purpose of this publication is to show connection diagrams and basic information required to wire each I/O module.

For a full description of how to use each of the catalog numbers listed in this publication, see the individual product's technical documentation.

---











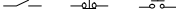
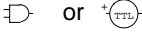
# Abbreviations

In these diagrams we used the following abbreviations:

no	normally open (contact outputs)
nc	normally closed (contact outputs)
n.c.	no connection (do not connect to this terminal)

# Symbols

In these diagrams we used the following symbols:

ac power source	
ac/dc power source	
dc power source	
output load	
current-signal analog sensor	
voltage-signal analog sensor	
RTD	
thermocouple	
3-wire proximity sensor	
4-wire proximity sensor	
hard-contact switching devices	
TTL switching device	

### Chapter 1

1734 POINT I/O Modules. . . . . 1-1

### Chapter 2

1734D POINTBlock I/O Modules . . . . . 2-1

### Chapter 3

1746 I/O Modules . . . . . 3-1

### Chapter 4

1747 I/O on Fixed Hardware Controllers. . . . . 4-1

### Chapter 5

1756 ControlLogix I/O Modules . . . . . 5-1

### Chapter 6

1761 Controller I/O on MicroLogix 1000 Controllers . . . 6-1

### Chapter 7

1762 I/O on MicroLogix 1200 Controllers . . . . . 7-1

### Chapter 8

1764 Controller I/O on MicroLogix 1500 Controllers . . . 8-1

### Chapter 9

1769 Compact I/O Modules . . . . . 9-1

### Chapter 10

1771 I/O Modules . . . . . 10-1

### Chapter 11

1790 CompactBlock LDX I/O Modules . . . . . 11-1

## **Chapter 12**

1791 I/O Blocks . . . . . 12-1

## **Chapter 13**

1791D CompactBlock I/O Blocks . . . . . 13-1

## **Chapter 14**

1791P CompactBlock I/O Blocks . . . . . 14-1

## **Chapter 15**

1791R CompactBlock I/O Blocks . . . . . 15-1

## **Chapter 16**

1792D ArmorBlock MaXum I/O Blocks. . . . . 16-1

## **Chapter 17**

1794 FLEX I/O Modules . . . . . 17-1

## **Chapter 18**

1797 FLEX Ex Modules. . . . . 18-1

## **Chapter 19**

1798 FLEX Armor I/O Modules. . . . . 19-1

## **Chapter 20**

1799 Embedded I/O Cards . . . . . 20-1

## 1734 POINT I/O Modules

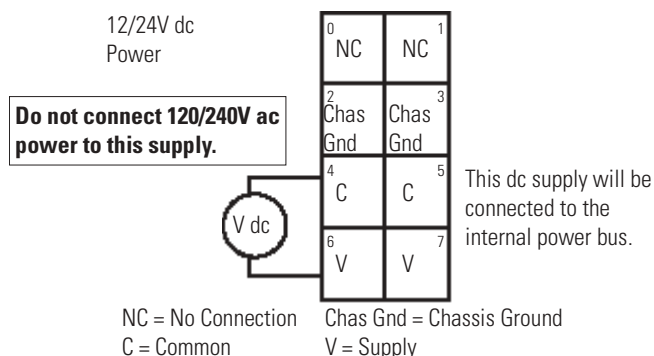
### 1734-232ASC

0	1
Tx	Rx
2	3
NC	NC
4	5
NC	NC
6	7
NC	SG

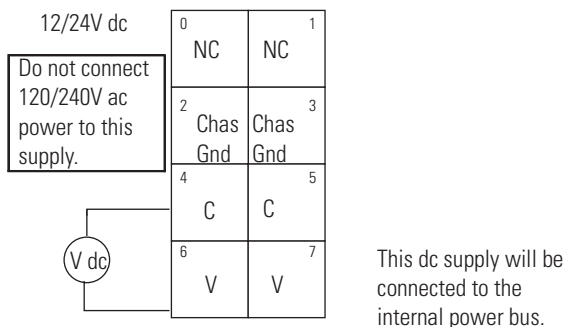
Tx = Transmit  
NC = No Connection

Rx = Receive  
SG = Signal Ground

### 1734-ADN, -ADNX, -ACNR, -AENT, -APB

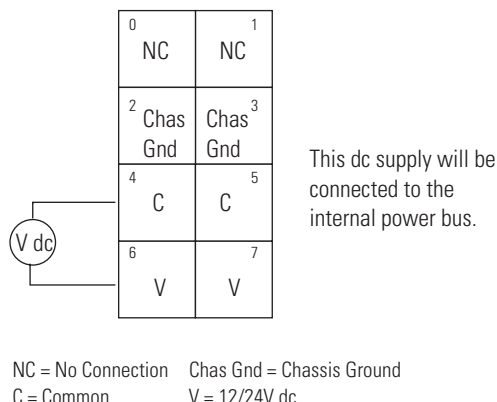


### 1734-EP24DC

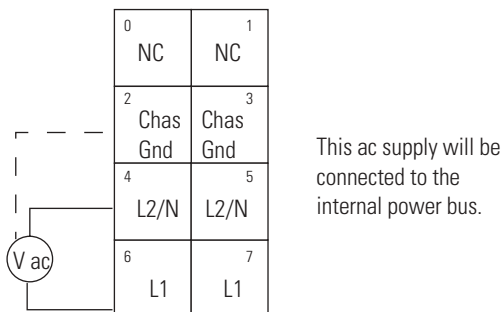


V = 12/24V dc, C = Common  
CHAS GND = Chassis ground

### 1734-FPD (12/24V dc)

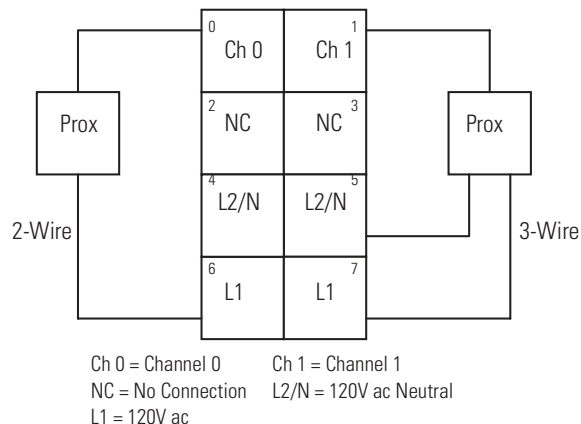


### 1734-FPD (120/240V ac)

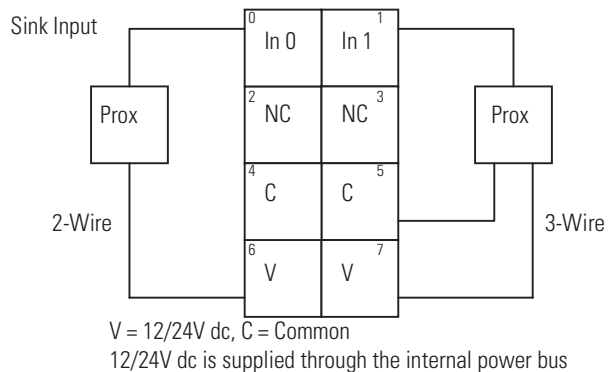


NC = No Connection  
L1 = 120/240V ac  
Chas Gnd = Chassis Ground  
L2/N = ac Neutral

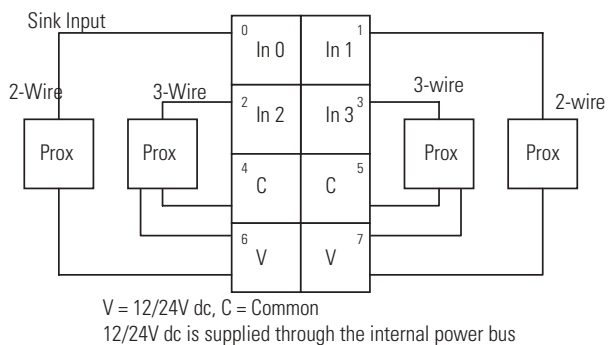
### 1734-IA2



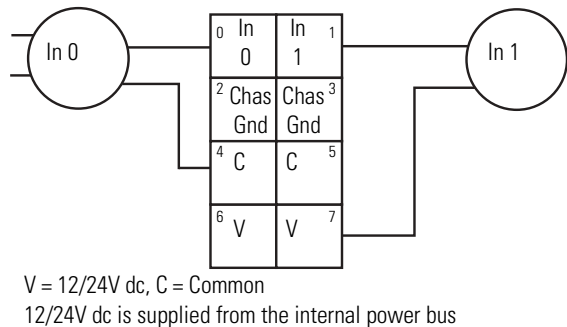
### 1734-IB2



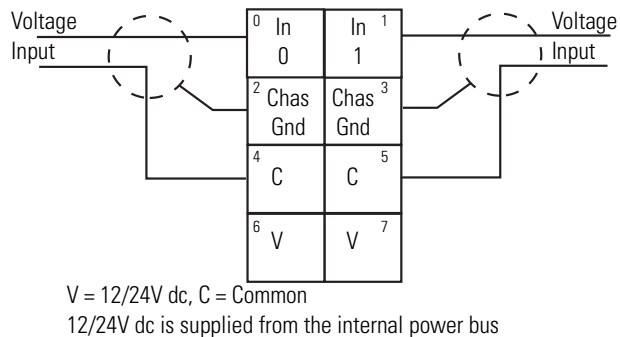
### 1734-IB4



### 1734-IE2C



### 1734-IE2V



### 1734-IJ



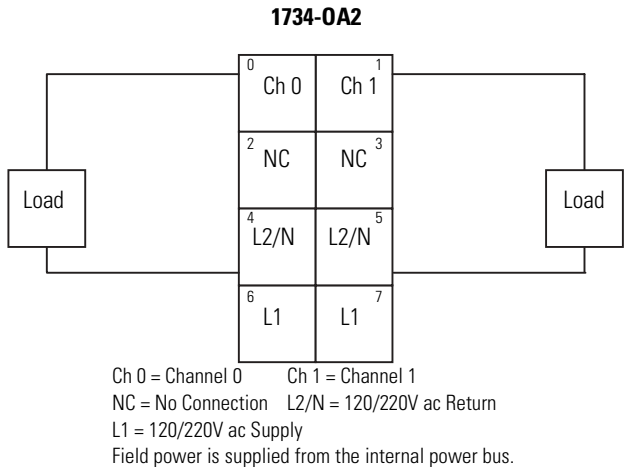
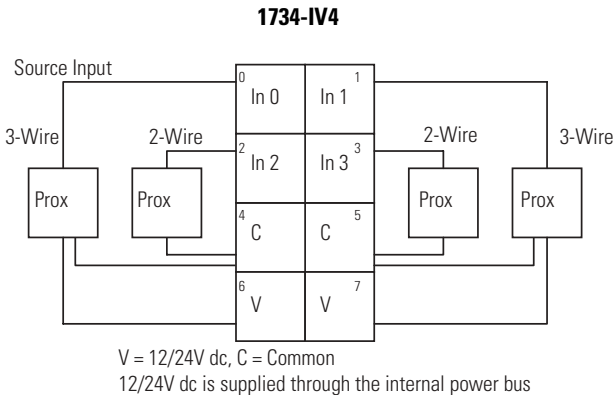
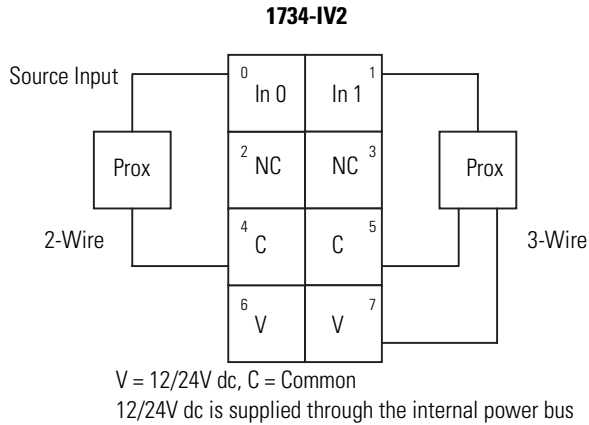
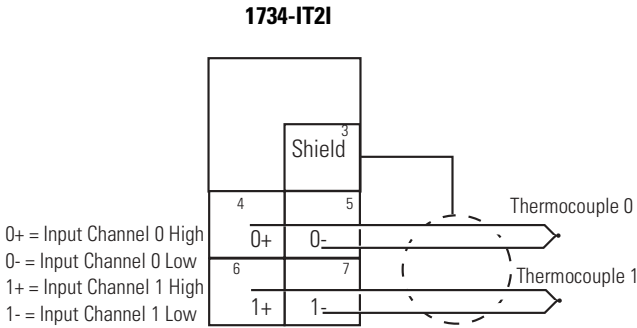
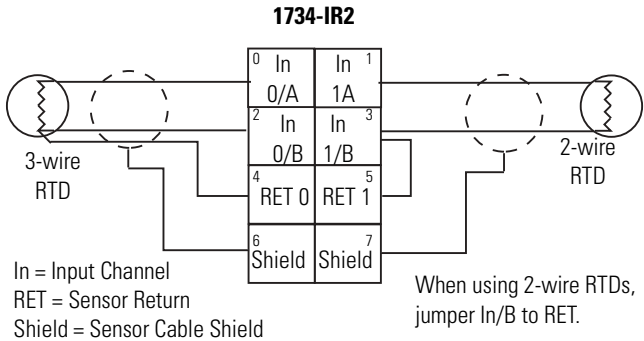
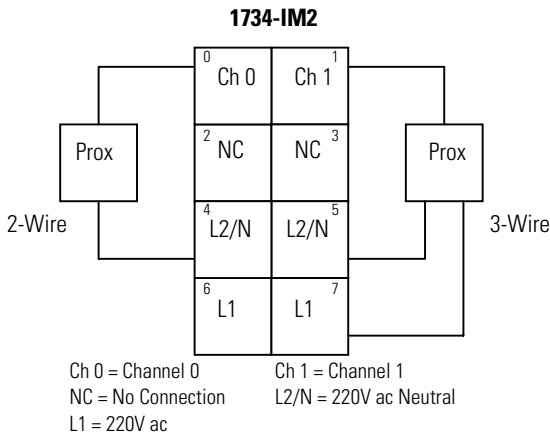
A, B, Z, Aret, Bret, and Zret = inputs  
Chas Gnd = Chassis Ground

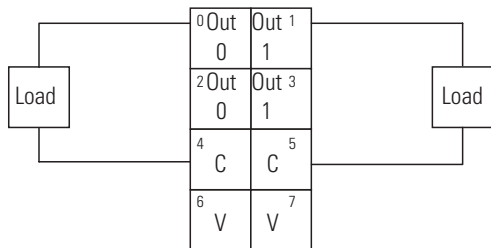
### 1734-IK



A, B, Z, Aret, Bret, and Zret = inputs  
Chas Gnd = Chassis Ground



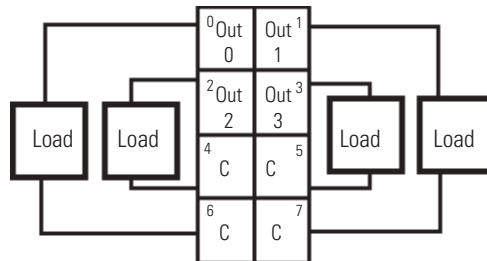


**1734-OB2E, -OB2EP**

V = 12/24V dc, C = Common

Field power is supplied from the internal power bus

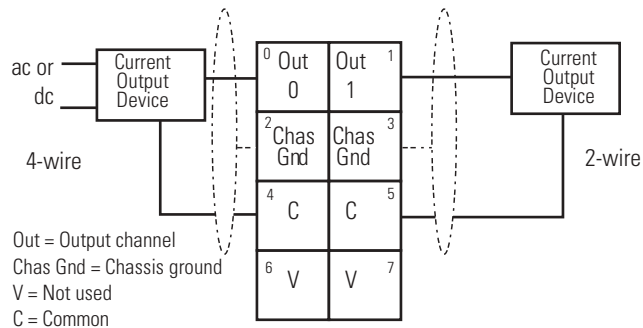
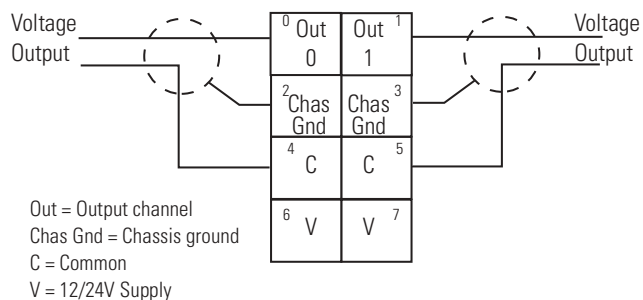
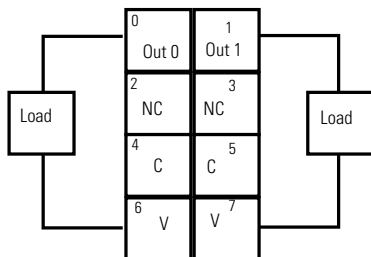
Module power is supplied from the internal power bus

**1734-OB4E**

V = 12/24V dc, C = Common

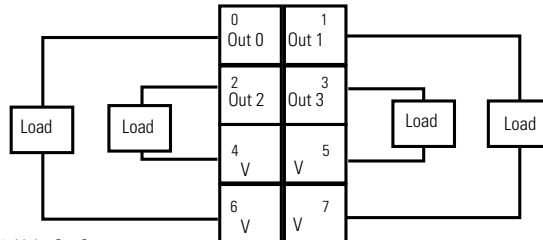
Field power is supplied from the internal power bus

Module power is supplied from the internal power bus

**1734-0E2C****1734-0E2V****1734-0V2E**

V = 12/24V dc, C = Common

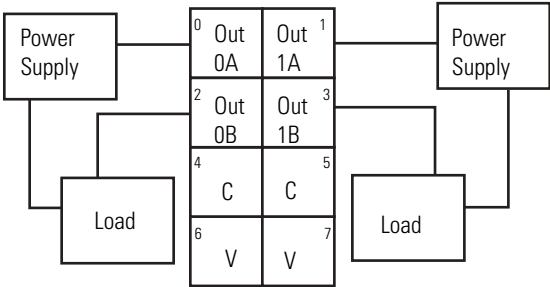
Field power is supplied from internal power bus

**1734-0V4E**

V = 12/24V dc, C = Common

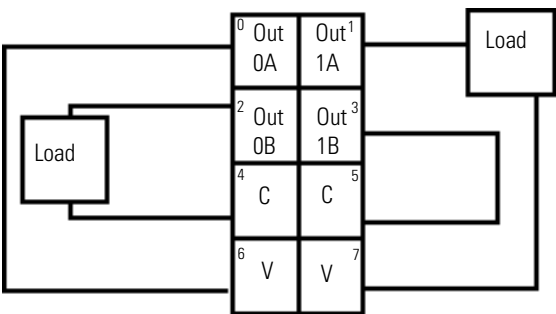
Field power is supplied from internal power bus

**1734-OW2 Load Powered by External Power Bus**



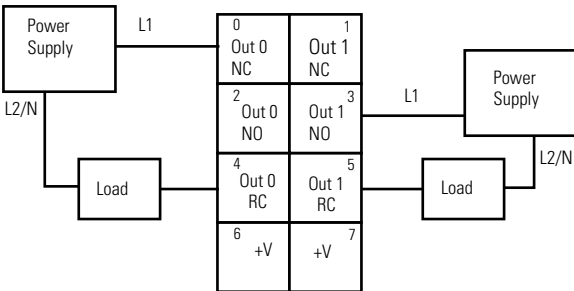
Out = Output channel relay contacts  
V = Supply (can range from +5V dc to 240V ac)  
C = Common

**1734-OW2 Load Powered by Internal Power Bus**



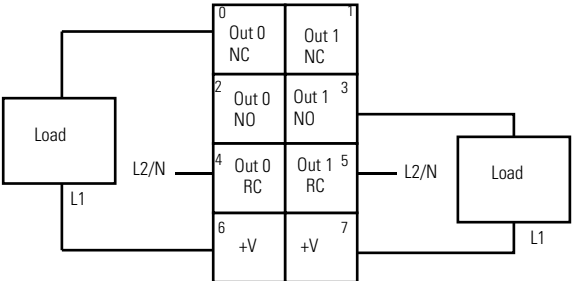
Out = Output channel relay contacts  
V = Supply (can range from +5V dc to 240V ac)  
C = Common

**1734-0X2 Load Powered by External Power Bus**



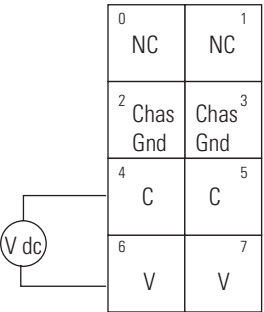
Out = Output channel relay contacts  
Power Supply = can range from +5V dc to 240V ac  
RC = Relay Common

**1734-0X2 Load Powered by Internal Power Bus**



NC = Normally closed  
NO = Normally open  
RC = Relay Common  
+V = Positive Supply

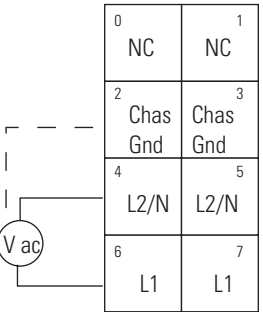
**1734-PDN (12/24V dc)**



This supply will be connected to the internal power bus.

NC = No Connection Chas Gnd = Chassis Ground  
C = Common V = 12/24V dc

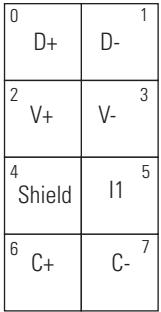
**1734-PDN 120/240V ac**



This supply will be connected to the internal power bus.

NC = No Connection Chas Gnd = Chassis Ground  
L1 = 120/240V ac L2/N = ac Neutral

**1734-SSI**



D = Data I1 = Digital Sourcing Input 1  
C = Clock V = SSI Sensor

**1734-VHSC24**

Module 1		Module 2	
<sup>0</sup> A	<sup>1</sup> Aret	<sup>0</sup> Chas Gnd	<sup>1</sup> Chas Gnd
<sup>2</sup> B	<sup>3</sup> Bret	<sup>2</sup> RET 0	<sup>3</sup> RET 1
<sup>4</sup> Z	<sup>5</sup> Zret	<sup>4</sup> -Vaux	<sup>5</sup> -Vaux
<sup>6</sup> Out 0	<sup>7</sup> Out 1	<sup>6</sup> +Vaux	<sup>7</sup> +Vaux

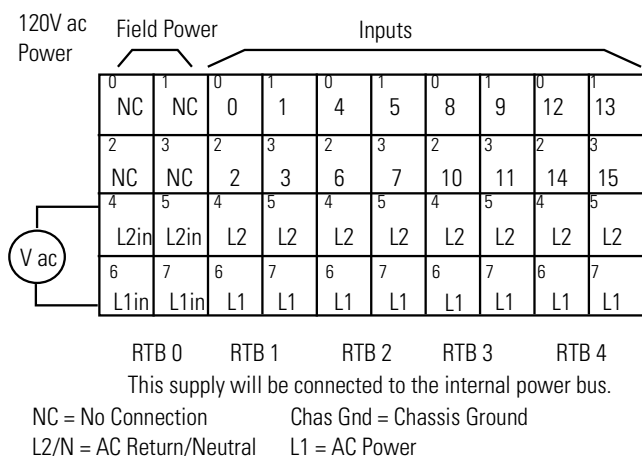
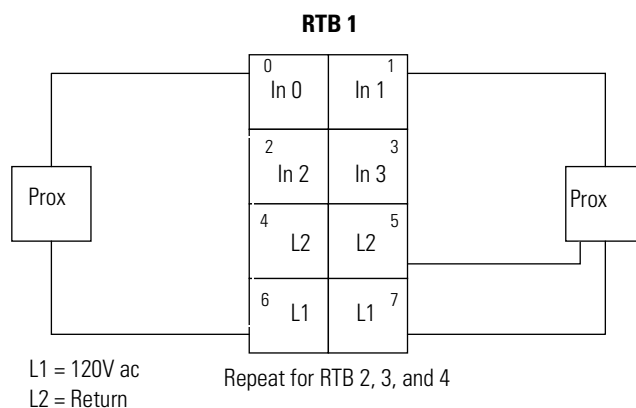
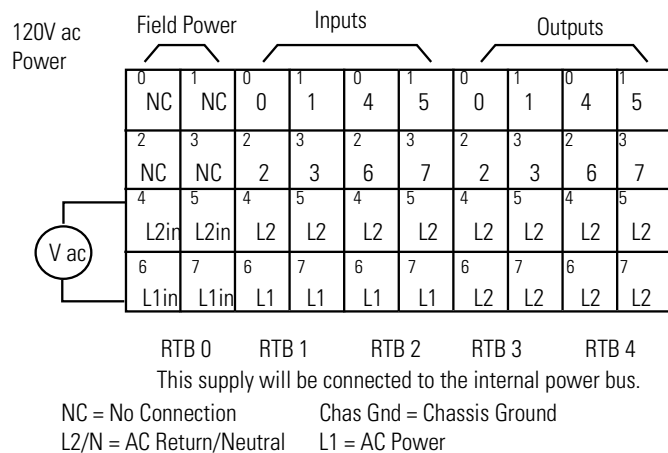
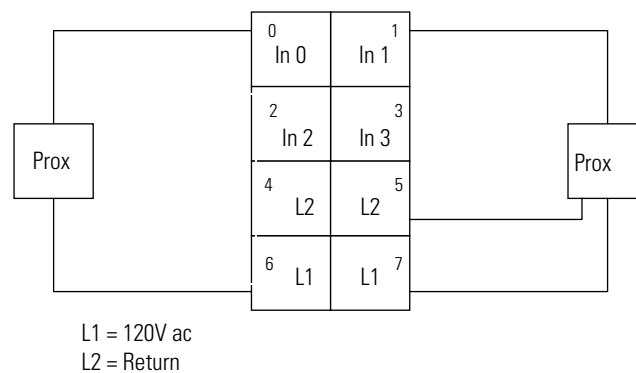
A, B, Z, Aret, Bret, and Zret = inputs  
Chas Gnd = Chassis Ground  
-Vaux = Auxiliary Supply  
+Vaux = Auxiliary Supply

**1734-VHSC5**

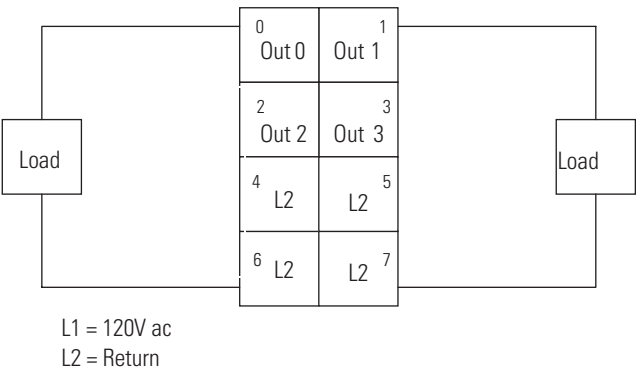
Module 1		Module 2	
<sup>0</sup> A	<sup>1</sup> Aret	<sup>0</sup> Chas Gnd	<sup>1</sup> Chas Gnd
<sup>2</sup> B	<sup>3</sup> Bret	<sup>2</sup> RET 0	<sup>3</sup> RET 1
<sup>4</sup> Z	<sup>5</sup> Zret	<sup>4</sup> -Vaux	<sup>5</sup> -Vaux
<sup>6</sup> Out 0	<sup>7</sup> Out 1	<sup>6</sup> +Vaux	<sup>7</sup> +Vaux

A, B, Z, Aret, Bret, and Zret = inputs  
Chas Gnd = Chassis Ground  
-Vaux = Auxiliary Supply  
+Vaux = Auxiliary Supply

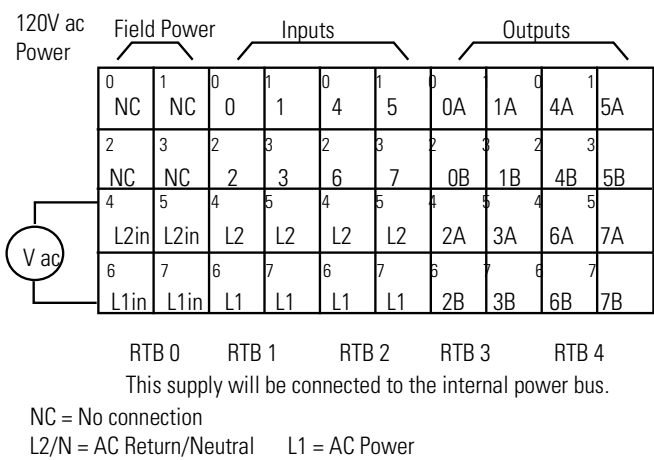
## 1734D POINTBlock I/O Modules

**1734D-IA16, -IA16S**

**1734D-IA16, -IA16S Input**

**1734D-IA8XOA8, -IA8XOA8S**

**1734D-IA8XOA8, -IA8XOA8S Input**


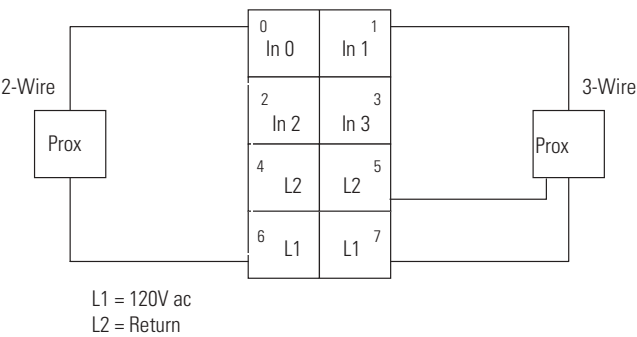
1734D-IA8XOA8, -IA8XOA8S Output



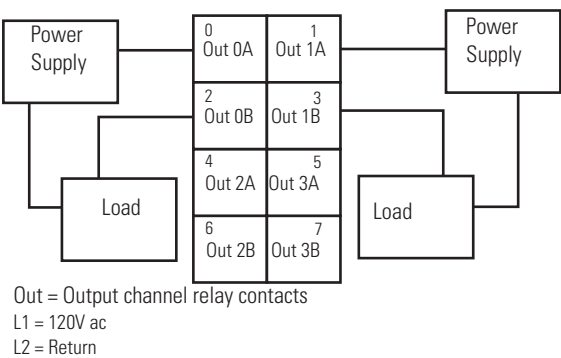
1734D-IA8XOW8, -IA8XOW8S



1734D-IA8XOW8, -IA8XOW8S Input

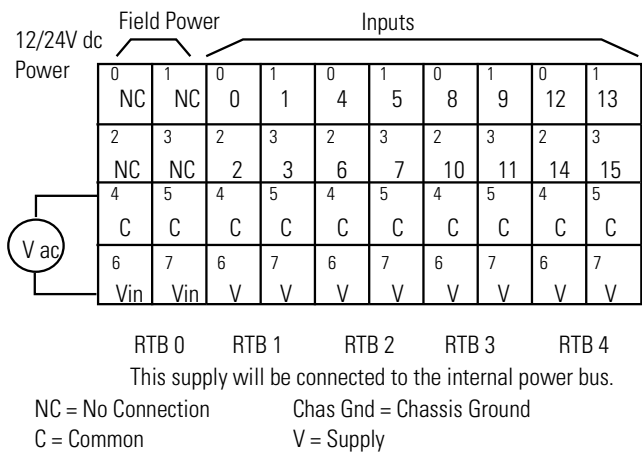


1734D-IA8XOW8, -IA8XOW8S Output  
(Load Powered by External Power)

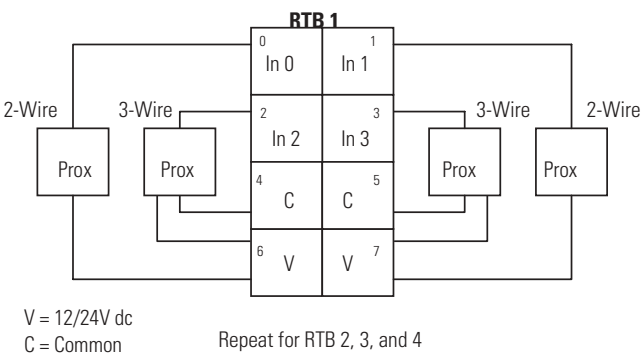


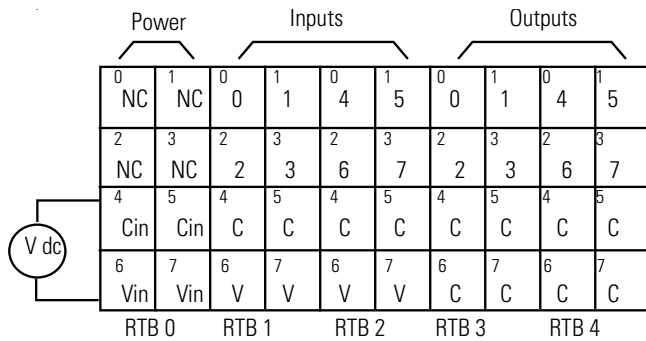
NOTE: This module cannot be powered by an internal power load.

1734D-IB16, -IB16S

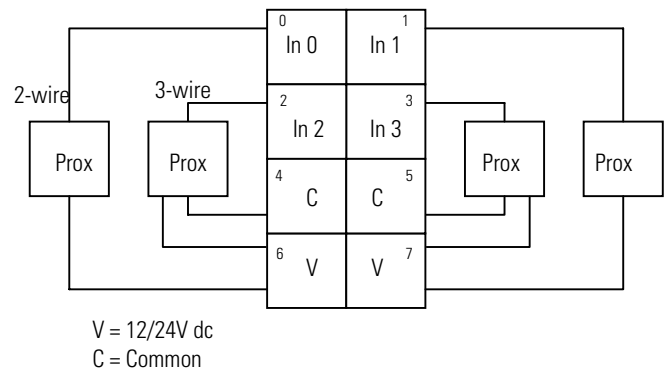
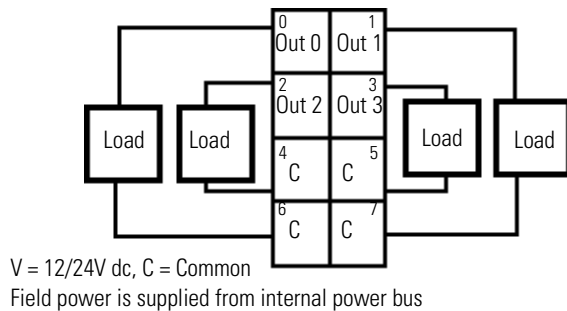
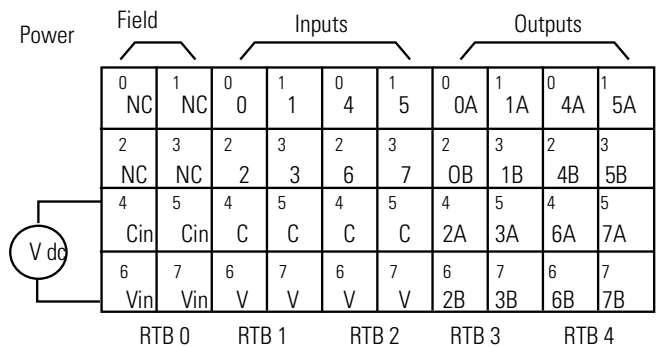


1734D-IB16, -IB16S Sink Input



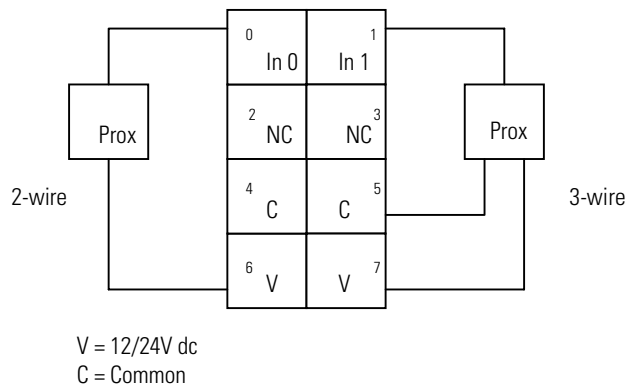
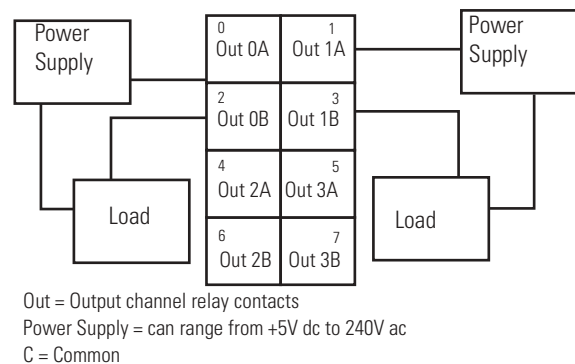
**1734D-IB8XOB8E, -IB8XOB8ES**

This supply will be connected to the internal power bus.  
 NC = No Connection      Chas Gnd = Chassis Ground  
 C = Common              V = Supply

**1734D-IB8XOB8E, -IB8XOB8ES Sink Input****1734D-IB8XOB8E, -IB8XOB8ES Output****1734D-IB8XOW8, -IB8XOW8S**

This supply will be connected to the internal power bus.

NC = No Connection      Chas Gnd = Chassis Ground  
 C = Common              V = Supply

**1734D-IB8XOW8, -IB8XOW8S Sink Input****1734D-IB8XOW8, -IB8XOW8S Output (Load Powered by External Power)**

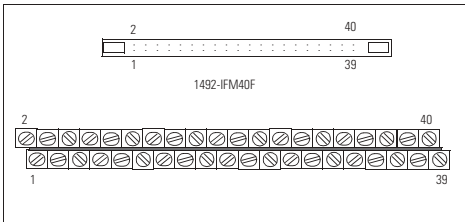
NOTE: This module cannot be powered by an internal power load.

**Notes:**

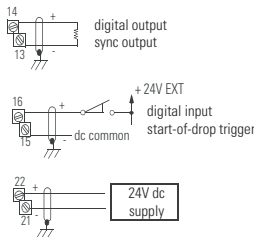


1746 I/O Modules

1746-BLM

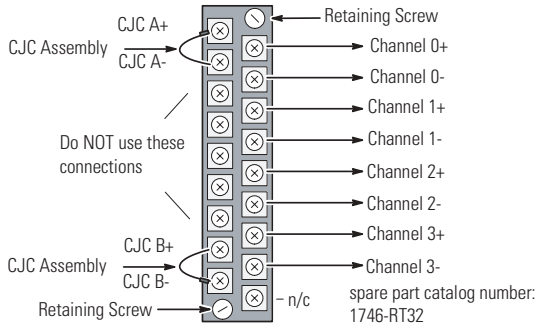


We recommend making connections to the 1746-BLM module with:  
-- Interface module (1492-IFM40F)  
-- Interface cable (1492-CABLE010H)



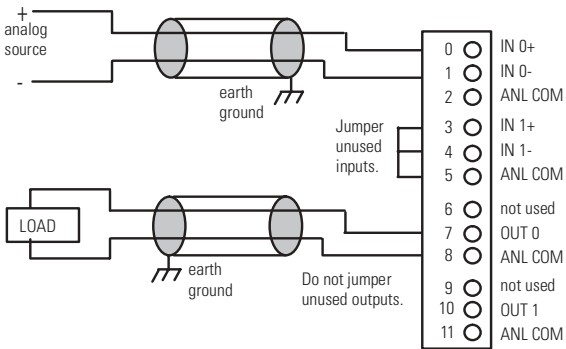
Description	Axis 1	Axis 2	Axis 3	Axis 4	System
Reserved					4, 3, 2, 1
Digital OUT-	17	13	9	5	
Digital OUT+ (+24EXT)	18	14	10	6	
Digital IN-	19	15	11	7	
Digital IN+	20	16	12	8	
-24V dc RET					21
+24V dc EXT					22
Analog OUT- (GND)	23	27	31	35	
Analog OUT+	24	28	32	36	
Analog IN-	25	29	33	37	
Analog IN+	26	30	34	38	
Excitation- (-10V)					39
Excitation+ (+10V)					40

1746-BTM

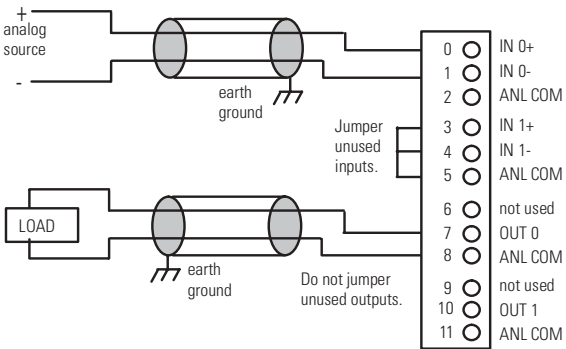


**ATTENTION** Do not remove or loosen the cold junction compensating thermistors located on the terminal block. Both thermistors are critical to ensure accurate thermocouple input readings at each channel. The module will not operate in the thermocouple mode if a thermistor is removed

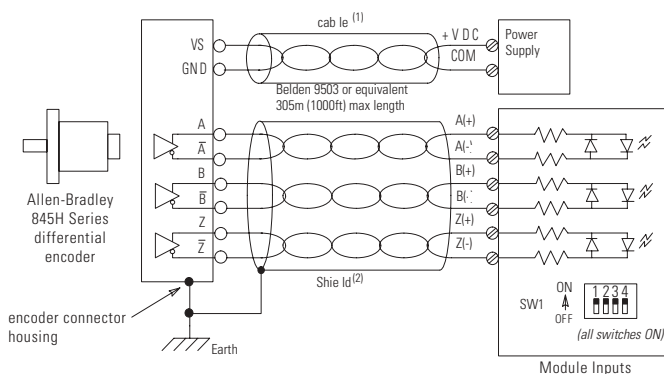
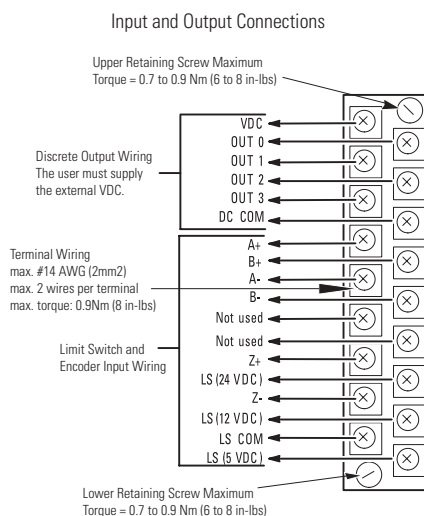
1746-FI04I



1746-FI04V



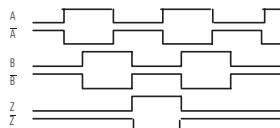
## 1746-HSCE Differential Encoder



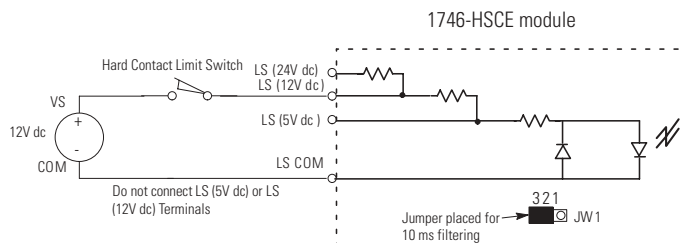
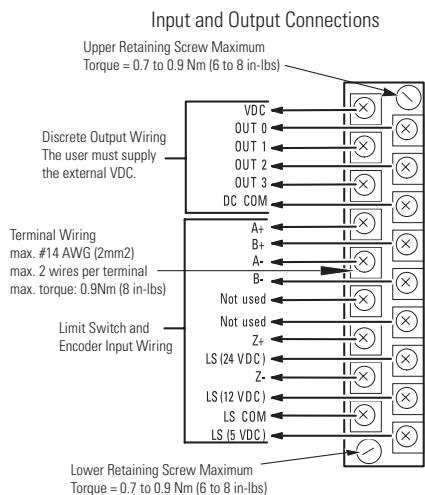
1. Refer to your encoder manual for proper cable type and length.
2. Due to the topology of the module's input circuits, terminating the shield at the encoder end provides the highest immunity to EMI interference. Connect EARTH ground directly to the encoder connector housing.

## Differential Encoder Output Waveforms

The figure below shows the different encoder output waveforms. If your encoder matches these waveforms, the encoder signals can be directly connected to the associated screw terminals on the module. For example, the A lead from the encoder is connected to the module's A+ screw. If your encoder does not match these waveforms, some wiring modifications may be necessary. See the High-Speed Counter Module User Manual, publication 1746-6.5 for a description of these modifications.



## 1746-HSCE Limit Switch (12V dc Hard Contact)

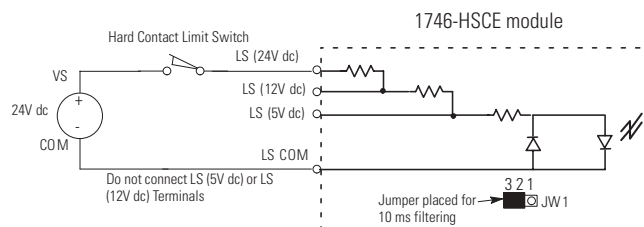
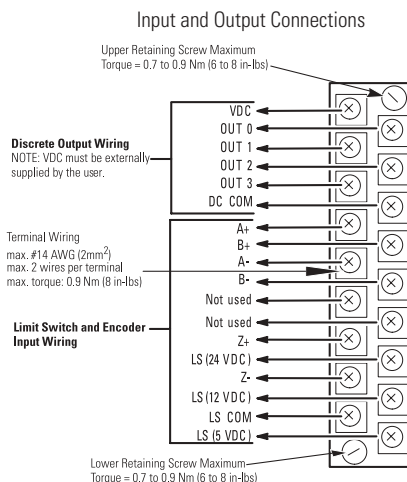


## ATTENTION



Connect only one LS input range at a time, or the module will be damaged.

### 1746-HSCE Limit Switch (24V dc Hard Contact)

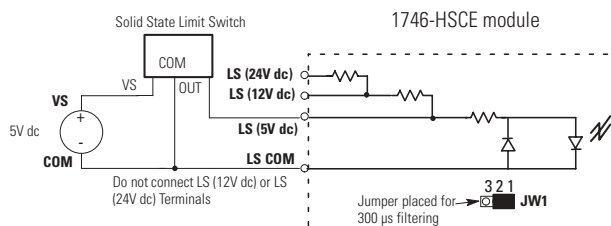
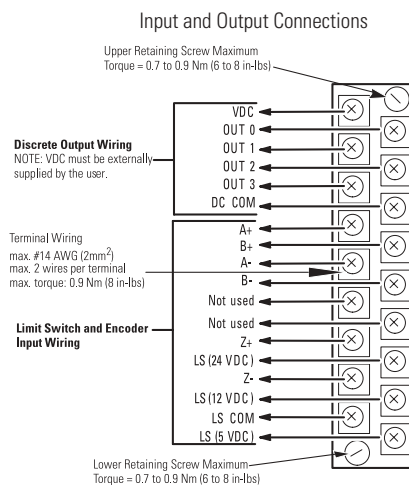


**ATTENTION**



Connect only one LS input range at a time, or the module will be damaged.

### 1746-HSCE Limit Switch (5V dc Solid State)

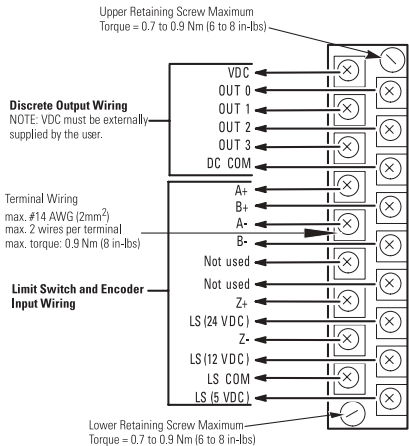


**ATTENTION**

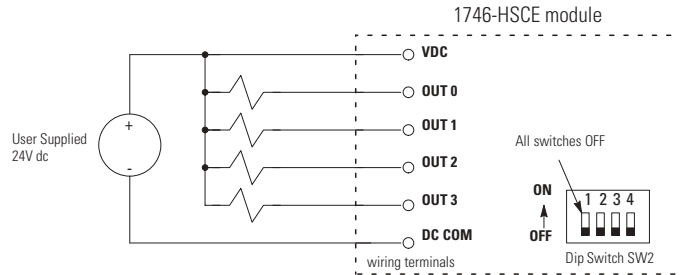


Connect only one LS input range at a time, or the module will be damaged.

### Input and Output Connections



### 1746-HSCE Outputs



#### ATTENTION

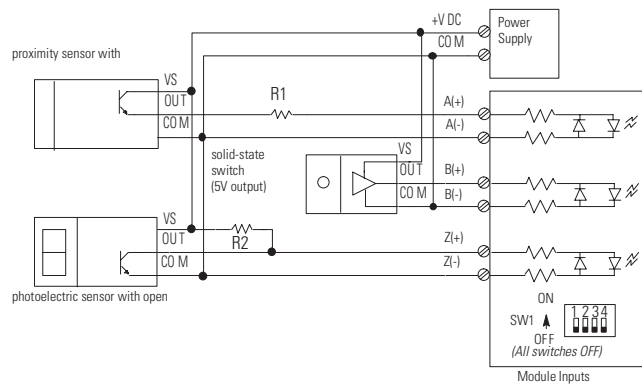
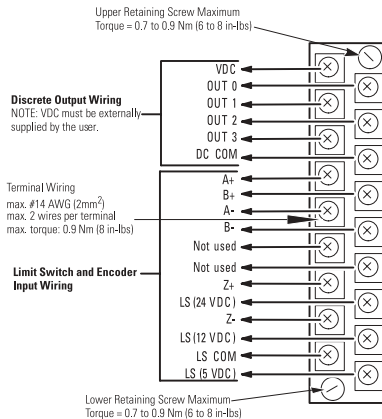


Do not use incandescent lamps as output indicators. The high peak inrush current required to heat the filament can damage the module's output circuits. Use LED type indicators that satisfy the output circuit ratings, such as Allen-Bradley 800A and 800T LED indicators.

The outputs are not electrically isolated from each other. (They are referenced to the same output common terminal.) However, outputs are isolated from the rest of the circuitry to a level of 1500 volts.

### 1746-HSCE Single-Ended (Discrete Devices)

#### Input and Output Connections



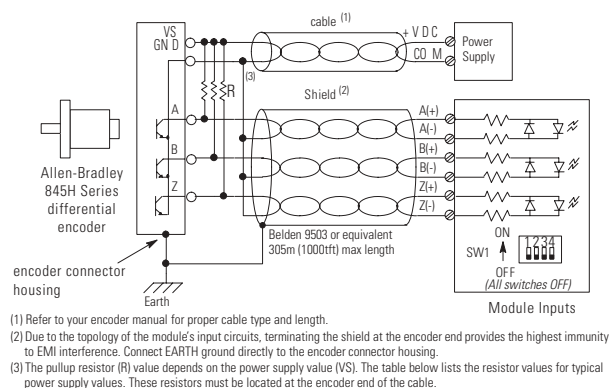
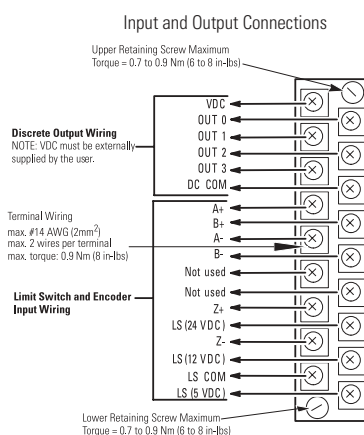
#### IMPORTANT

This diagram shows the sensors operation from a common power supply. Separate power supplies for each circuit can be used.

The resistor (R1) value depends on the power supply value (VS).

The pullup resistor (R2) value depends on the power supply value (VS).

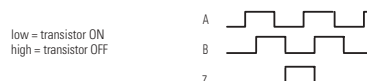
### 1746-HSCE Single-Ended Encoder (Open-Collector)



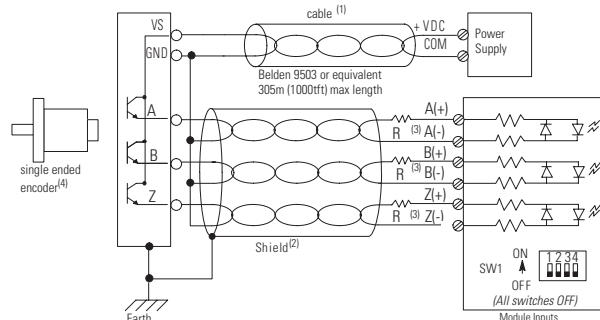
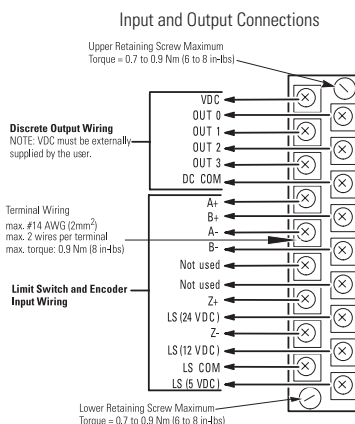
VS Value	R Value	Maximum Output Leakage
+5V dc	150 ohm 1/4W 5%	6.3 mA
+12V dc	1800 ohm 1/4W 5%	1.5 mA
+24V dc	4700 ohm 1/4W 5%	1.2 mA

#### Single-Ended Encoder Output Waveforms

The figure below shows the single-ended output waveforms. When the waveform is low, the encoder output transistor is ON.



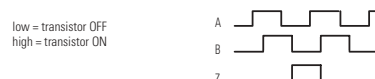
### 1746-HSCE Single-Ended Encoder (Sourcing)



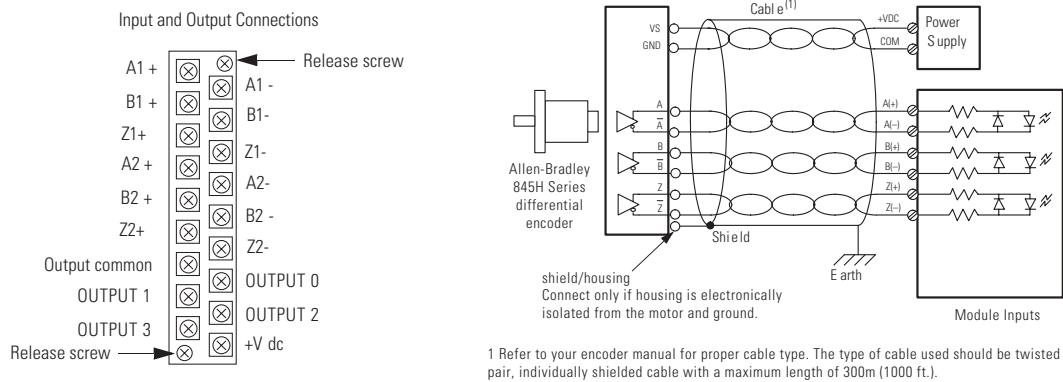
VS Value	R Value	Maximum Output Leakage
+5V dc	no resistor needed	6.3 $\mu$ A
+12V dc	1800 ohm 1/4W 5%	1.5 $\mu$ A
+24V dc	4700 ohm 1/4W 5%	1.2 $\mu$ A

#### Single-Ended Encoder Output Waveforms (Sourcing)

The figure below shows the single-ended encoder output waveforms. When the waveform is low, the encoder output transistor is OFF.

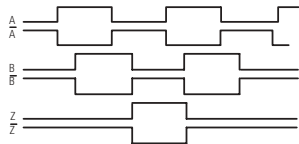


1746-HSCE2 – Differential Encoder

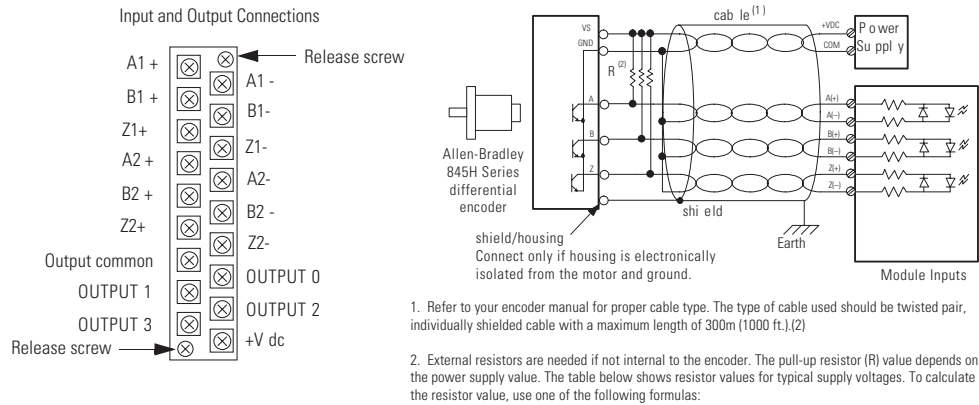


Differential Encoder Output Waveforms

The figure below shows the different encoder output waveforms. If your encoder matches these waveforms, the encoder signals can be directly connected to the associated screw terminals on the module. For example, the A lead from the encoder is connected to the module's A+ screw. If your encoder does not match these waveforms, some wiring modifications may be necessary. See the user's manual for your encoder.

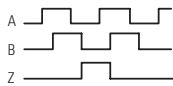


1746-HSCE2 Single-Ended Encoder (Open-Collector)



Single-Ended Encoder Output Waveforms

The figure below shows the single-ended encoder output waveforms. When the waveform is low, the encoder output transistor is on. When the waveform is high, the encoder output transistor is off.



For 5V dc jumper position:  $R = \frac{(V_{cc} - V_{min})}{I_{min}}$

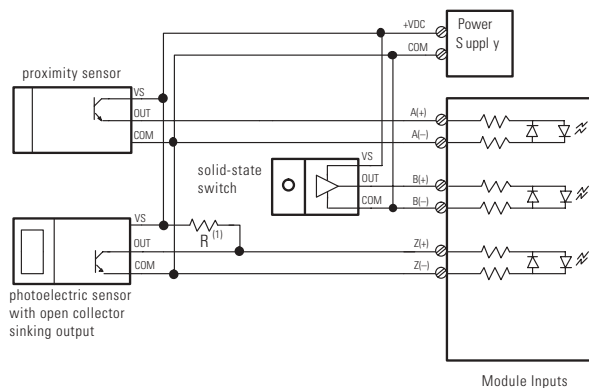
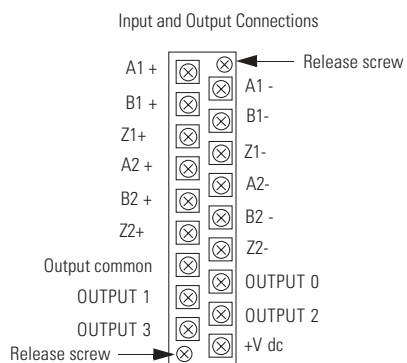
For 24V dc jumper position:  $R = \left[ \frac{(V_{cc} - V_{min})}{I_{min}} - 1K\Omega \right]$

where: R = pull-up resistor value  
V<sub>cc</sub> = power supply voltage  
V<sub>min</sub> = 4.2V dc  
I<sub>min</sub> = 6.3mA

Power Supply Voltage (V <sub>cc</sub> )	Pull-up Resistor Value (R) <sup>1</sup>
5V dc	127 W
12V dc	238 W
24V dc	2140 W

1 Resistance values may change, depending upon your application.

## 1746-HSCE2 Single-Ended (Discrete Devices)



1. External resistors are needed if not internal to the encoder. The pull-up resistor (R) value depends on the power supply value. The table below shows resistor values for typical supply voltages. To calculate the resistor value, use one of the following formulas:

$$\text{For 5V dc jumper position: } R = \frac{(V_{CC} - V_{min})}{I_{min}}$$

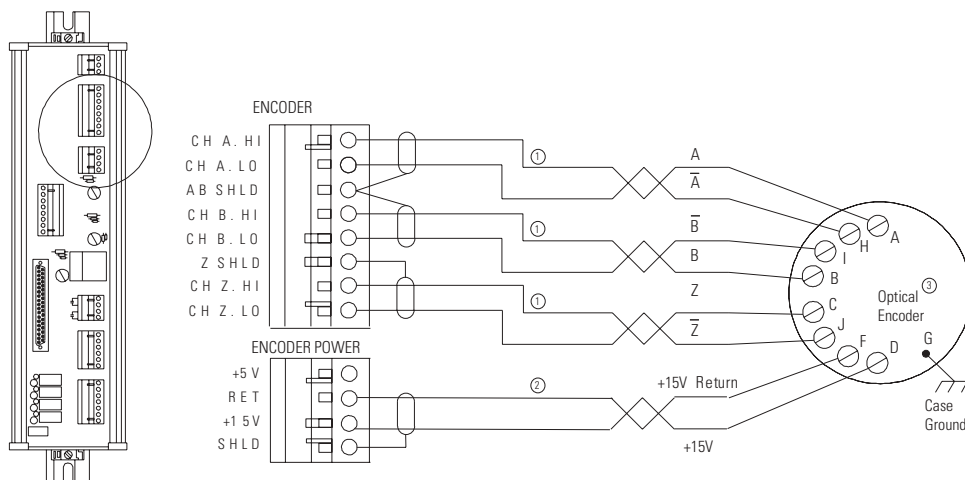
$$\text{For 24V dc jumper position: } R = \left[ \frac{(V_{CC} - V_{min})}{I_{min}} - 1K\Omega \right]$$

where: R = pull-up resistor value  
 $V_{CC}$  = power supply voltage  
 $V_{min} = 4.2V$  dc  
 $I_{min} = 6.3mA$

Power Supply Voltage ( $V_{CC}$ )	Pull-up Resistor Value ( $R$ ) <sup>1</sup>
5V dc	127 $\Omega$
12V dc	238 $\Omega$
24V dc	2140 $\Omega$

<sup>1</sup> Resistance values may change, depending upon your application.

## 1746-HSRV – Wiring a 15V Encoder

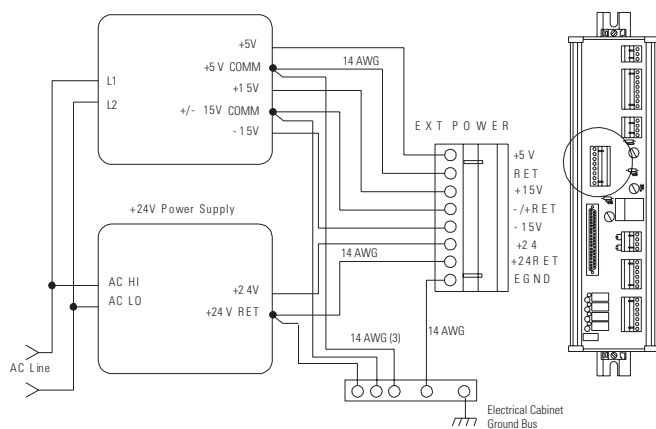


<sup>1</sup> Use three pair 22 gauge individually twisted and shielded cable.

<sup>2</sup> Use one pair 18 gauge twisted and shielded cable.

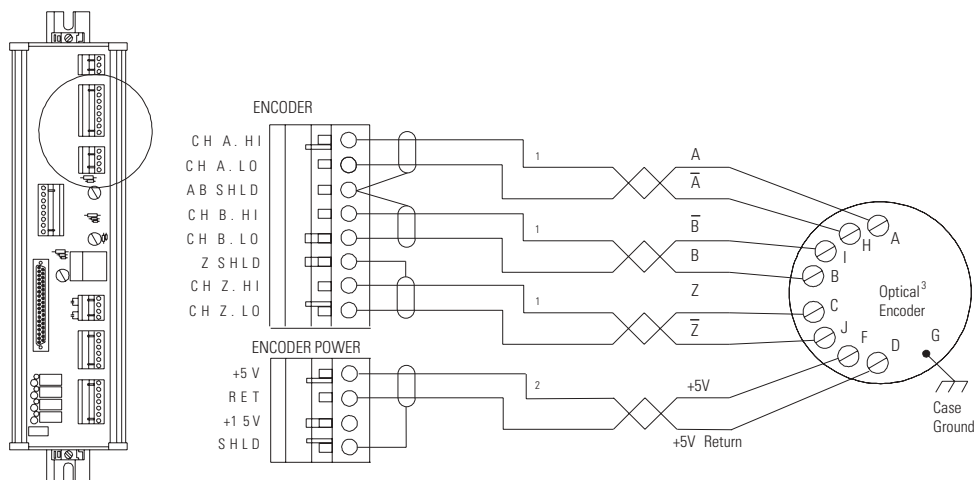
<sup>3</sup> Encoders must have +5V compatible differential line drive outputs on channels A, B, and Z (DS 8830 or equivalent (845H)).

## Wiring the power supply





## 1746-HSRV – Wiring a 5V Encoder

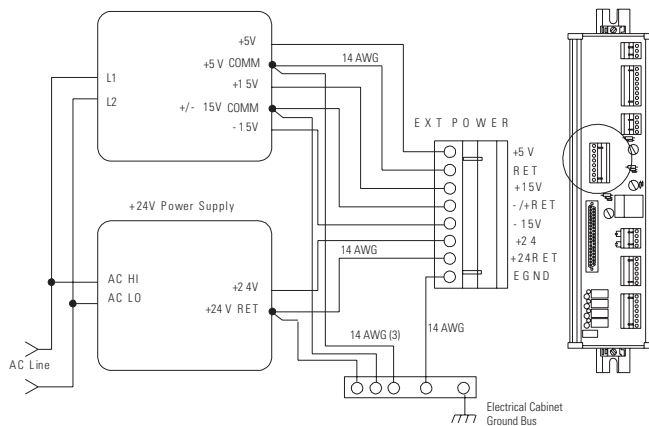


<sup>1</sup> Use three pair 22 gauge individually twisted and shielded cable.

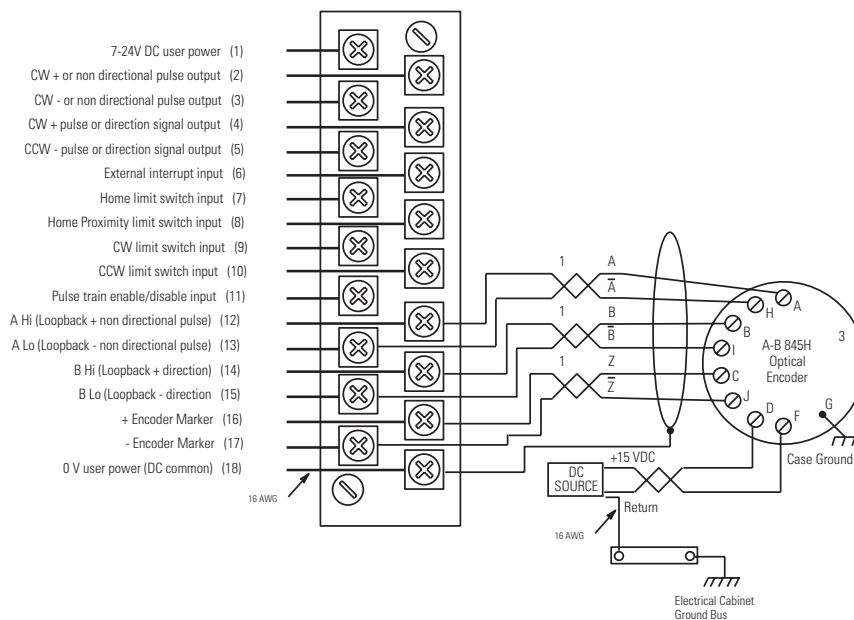
<sup>2</sup> Use one pair 18 gauge twisted and shielded cable.

<sup>3</sup> Encoders must have +5V compatible differential line drive outputs on channels A, B, and Z (DS 8830 or equivalent (845H)).

## Wiring the power supply

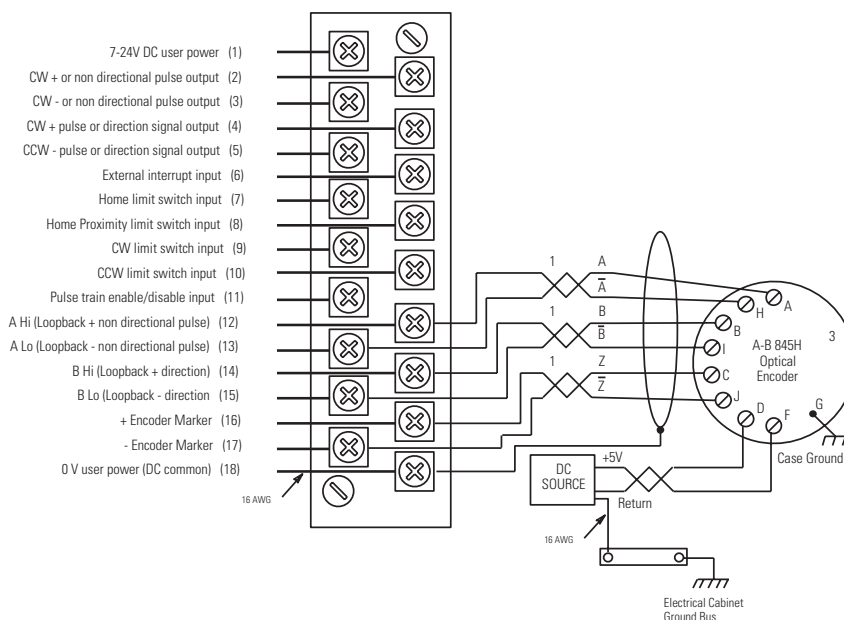


## 1746-HSTP1 – Wiring a 15V Encoder

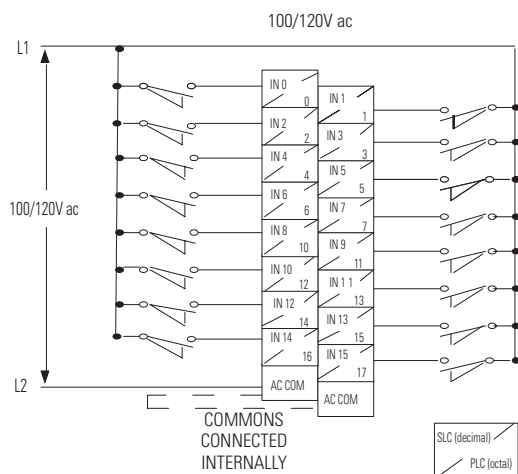
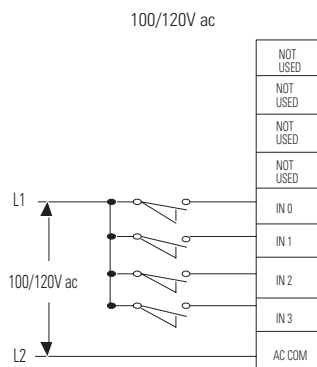
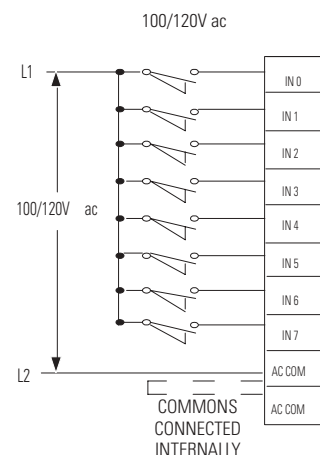
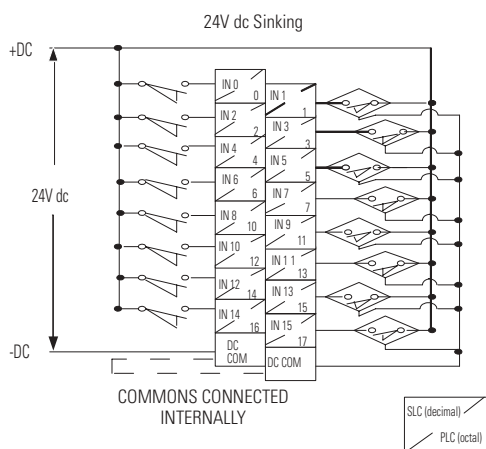
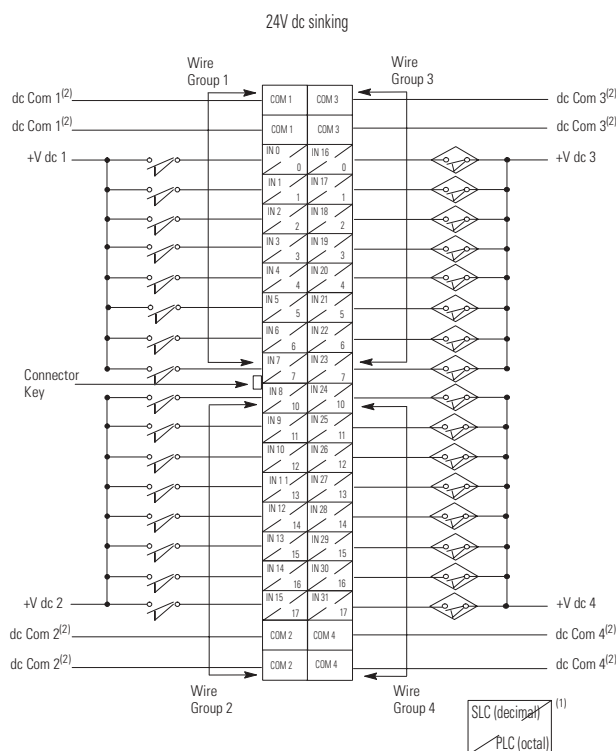


1. Use 3-pair, #22 gauge individually twisted and shielded pair, Belden 9504 or equivalent.
2. Use 1-pair, #18 gauge twisted and shielded cable.
3. Encoders must have +5V compatible differential line drive outputs on channels A, B and Z. (DS8830 or equivalent - Allen-Bradley 845H).
4. +15V from encoder power source - connect encoder return to 0V user power (DC common) at the power supply sources.

## 1746-HSTP1 – Wiring a 5V Encoder



1. Use 3-pair, #22 gauge individually twisted and shielded pair, Belden 9504 or equivalent.
2. Use 1-pair, #18 gauge twisted and shielded cable.
3. Encoders must have +5V compatible differential line drive outputs on channels A, B and Z. (DS8830 or equivalent - Allen-Bradley 845H).
4. +5V from encoder power source - connect encoder return to 0V user power (DC common) at the power supply sources.

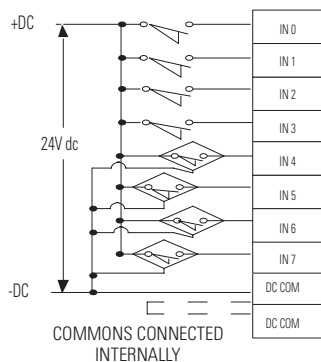
**1746-IA16****1746-IA4****1746-IA8****1746-IB16****1746-IB32**

(1) See decimal and octal coding information at the top of the page.

(2) The dc Com pins on the 1746-IB32 input module are isolated between the four groups and the two com pins in each group are connected internally. To maintain group isolation provided by 32-point I/O modules, use a 1492 terminal block that provides group isolation. Consult 1492 documentation or your Allen-Bradley Sales Office for additional information.

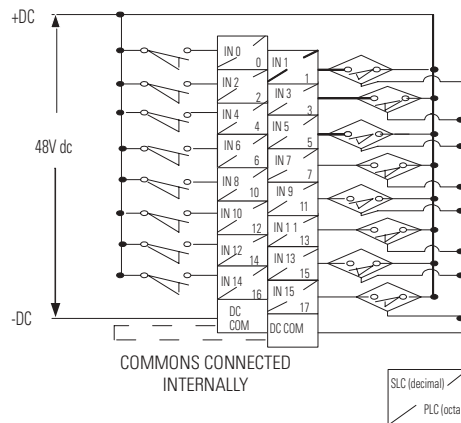
### 1746-IB8

24V dc Sinking



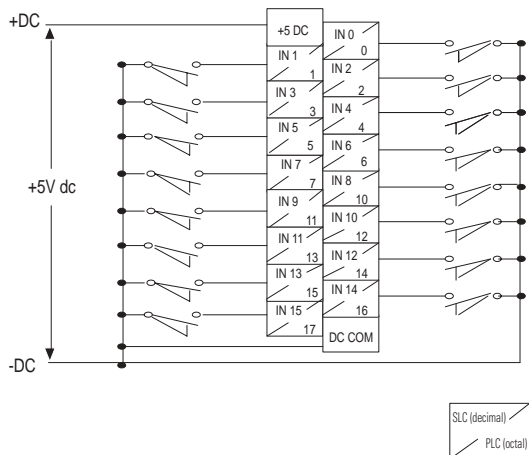
### 1746-IC16

48V dc Sinking



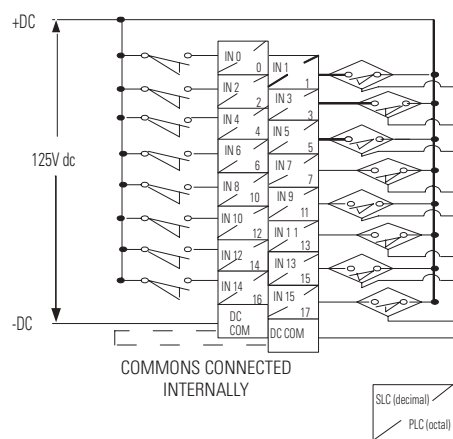
### 1746-IG16

TTL Input (Low = True)

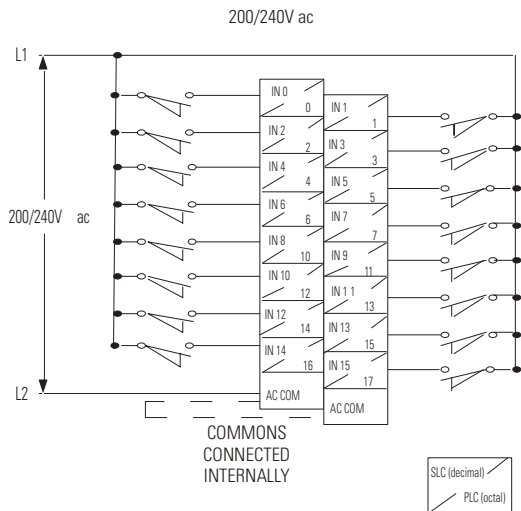


### 1746-IH16

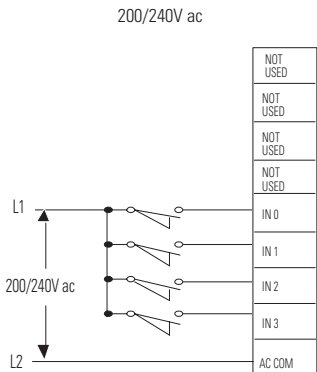
125V dc Sinking



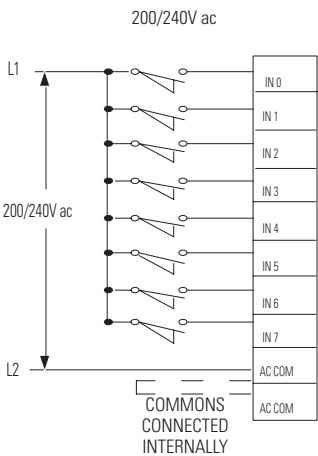
1746-IM16



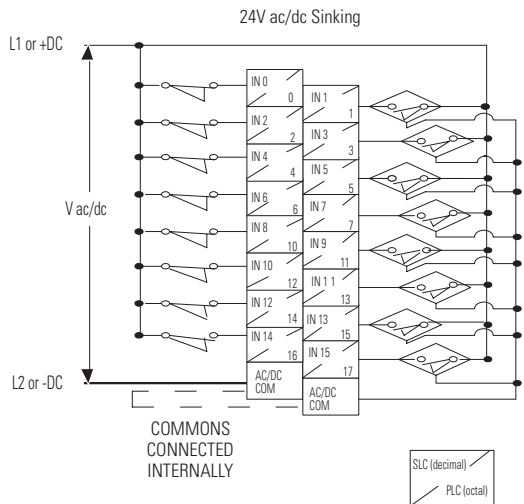
1746-IM4



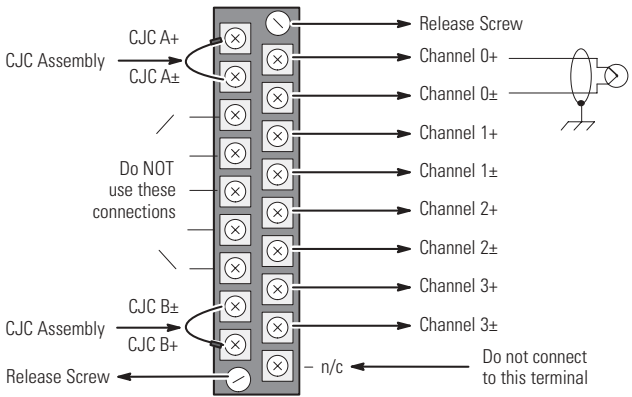
1746-IM8



1746-IN16



1746-INT4



Cold Junction Compensation (CJC)

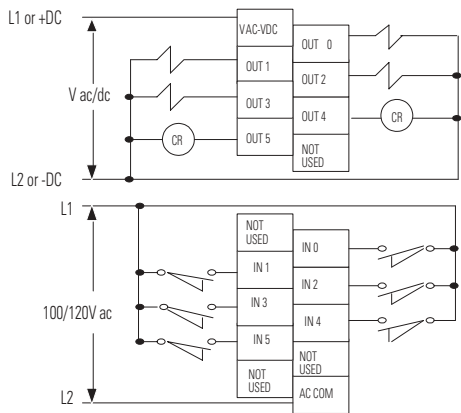
ATTENTION



Do not remove or loosen the cold junction compensating thermistors located on the terminal block. Both thermistors are critical to ensure accurate thermocouple input readings at each channel. The module will not operate in the thermocouple mode if a thermistor is removed.

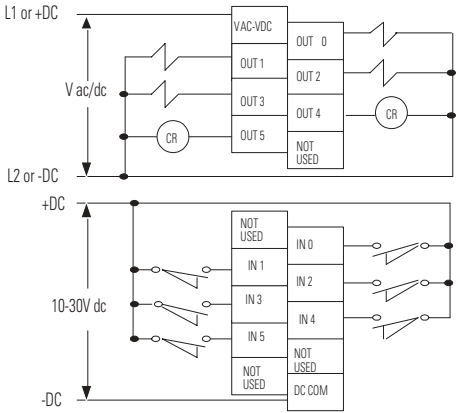
1746-IO12

100/120V ac INPUT - RELAY OUTPUT



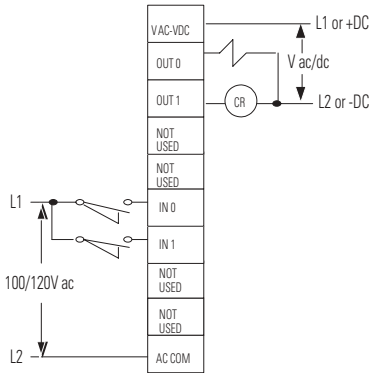
1746-IO12DC

24V dc INPUT - RELAY OUTPUT



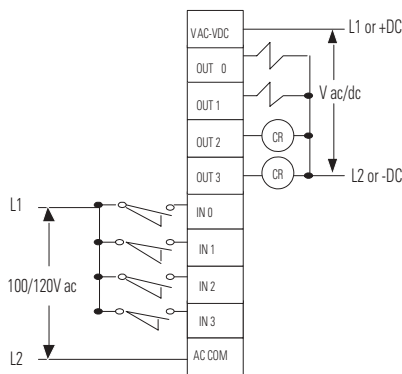
1746-IO4

100/120V ac Input - Relay Output



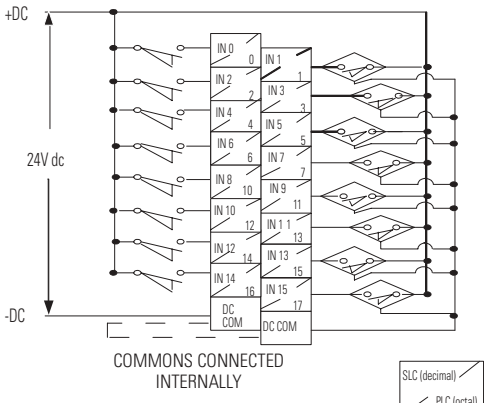
1746-IO8

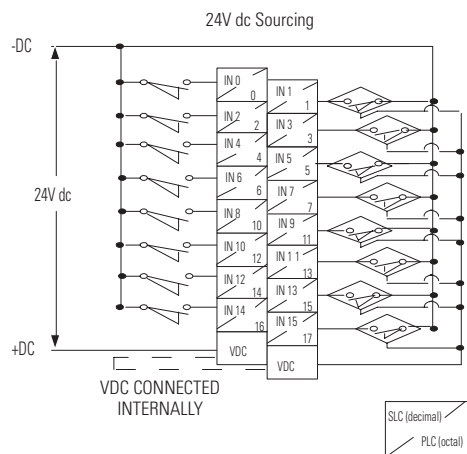
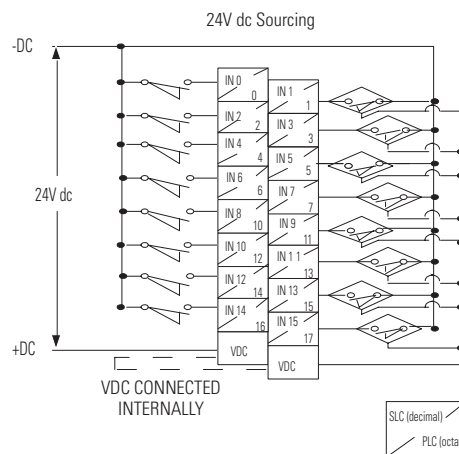
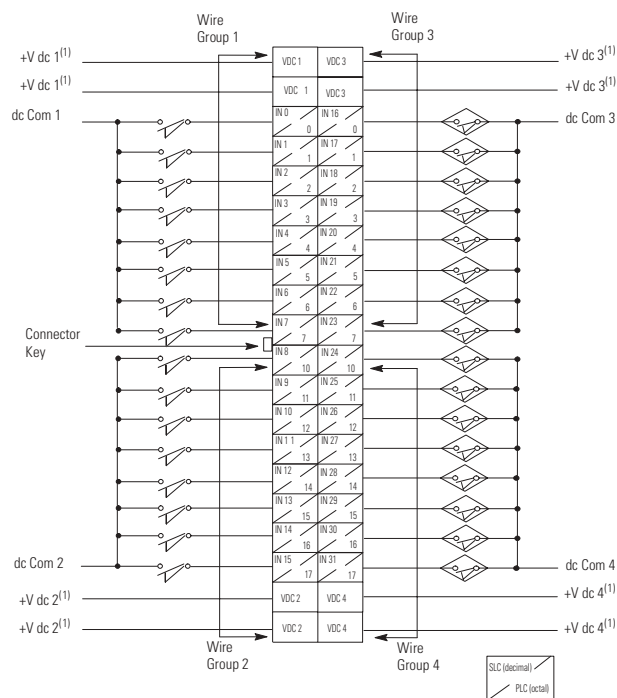
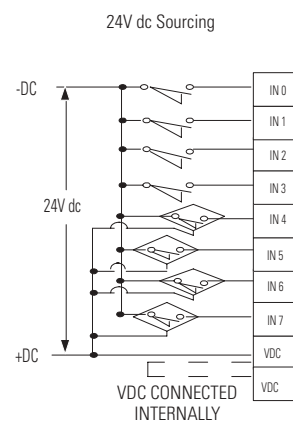
100/120V ac Input - Relay Output



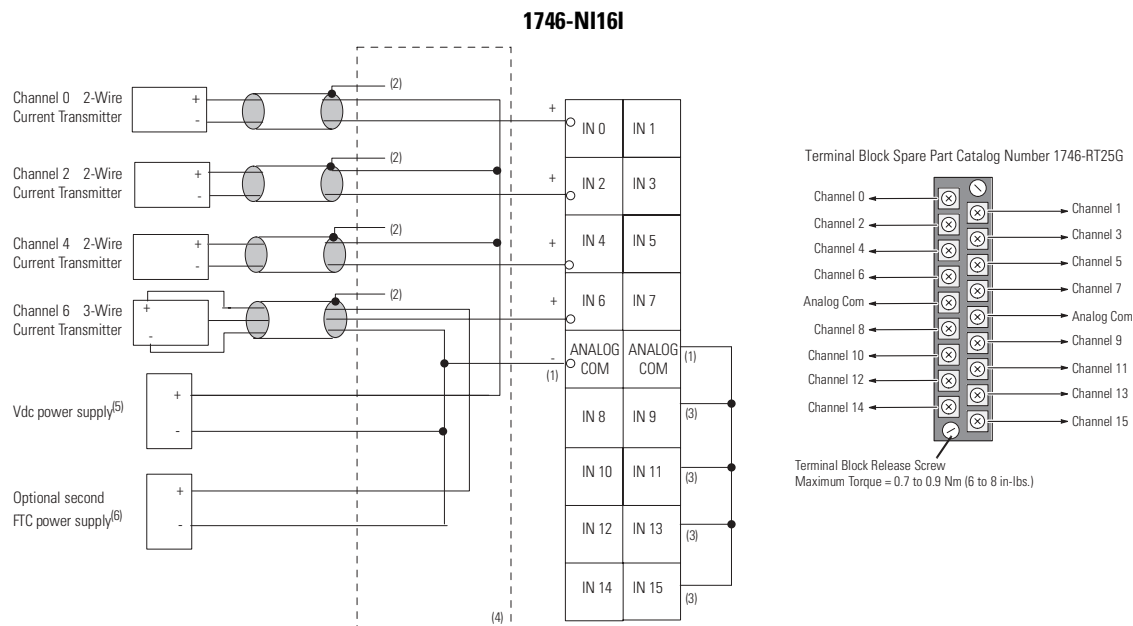
1746-ITB16

24V dc Sinking



**1746-ITV16****1746-IV16****1746-IV32****1746-IV8**

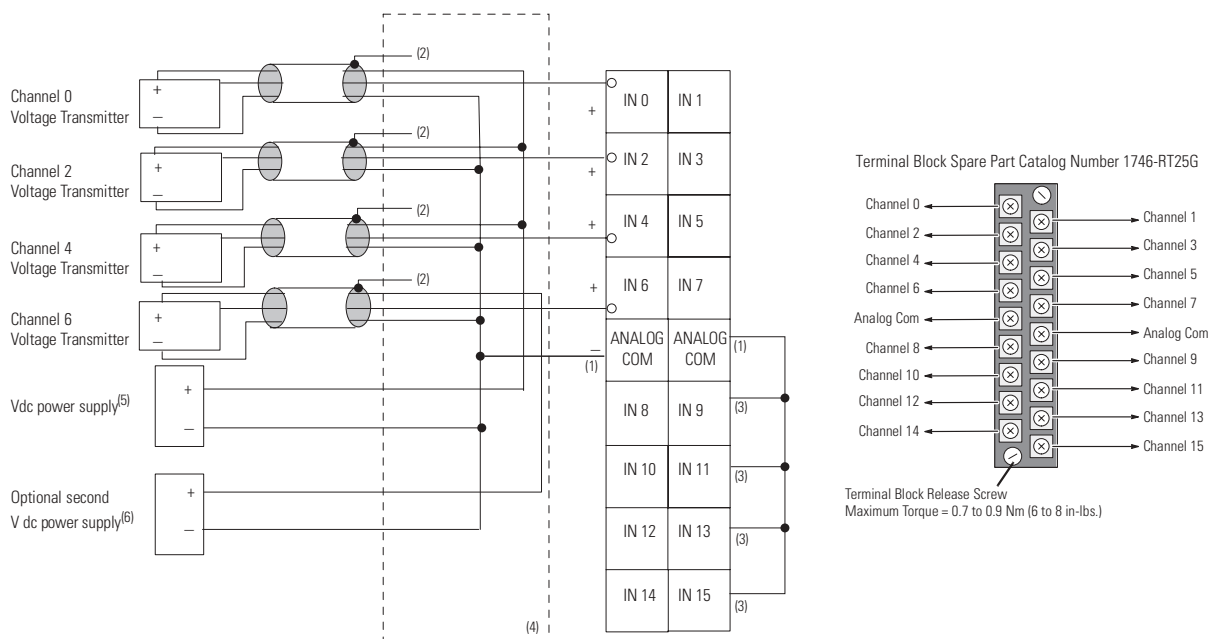
(1) The V dc pins on the 1746-IV32 input module are isolated between the four groups and the two V dc pins in each group are connected internally. To maintain group isolation provided by 32-point I/O modules, use a 1492 terminal block that provides group isolation. Consult 1492 documentation or your Allen-Bradley Sales Office for additional information.



1. There are two common terminals for all of the 16 current inputs. These two analog common terminals are connected internally.
2. All shield wires should be connected to chassis mounting screws.
3. Unused channels should be connected to the analog common terminals (0 Volts).
4. If separate shielded cables are used for each analog input channel, interposing terminal blocks are needed to terminate up to 16 common wires. Then 1 to 4 common wires should be wired from the interposing terminal block to the 2 common terminals on the 1746-NI16I module.
5. The module does not provide loop power for analog inputs. Use a power supply that matches the transmitter specifications.
6. More than one power supply can be used if all supplies are class 2.

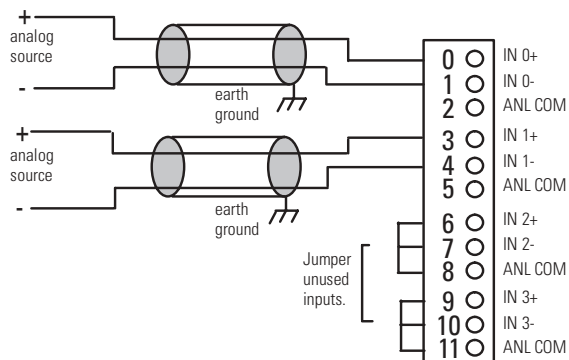


## 1746-NI16V

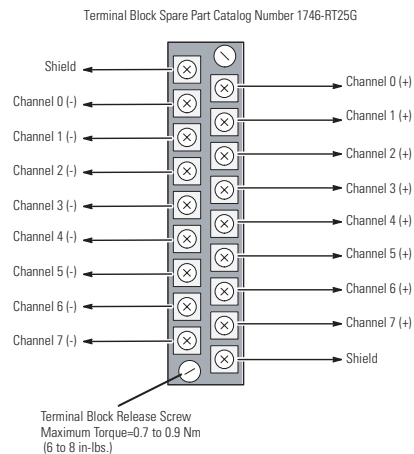
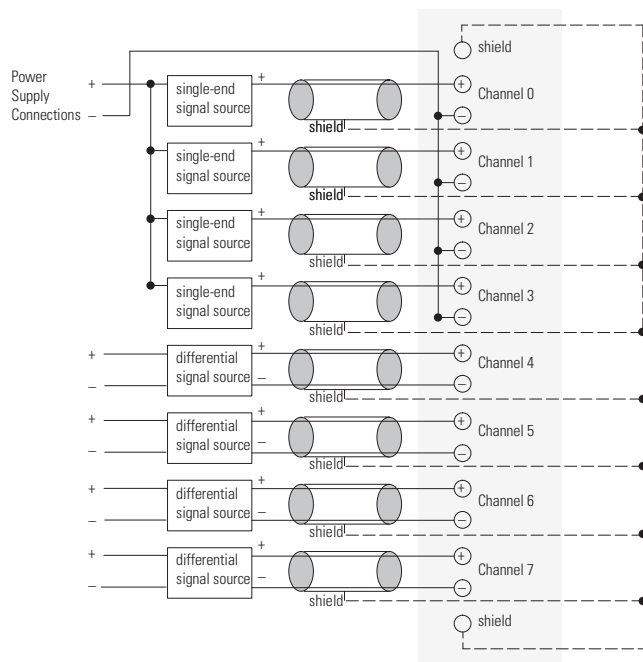


1. There are two common terminals for all of the 16 voltage inputs. These two analog common terminals are connected internally.
2. All shield wires should be connected to chassis mounting screws.
3. Unused channels should be connected to the analog common terminals (0 Volts).
4. If separate shielded cables are used for each analog input channel, interposing terminal blocks are needed to terminate up to 16 common wires. Then 1 to 4 common wires should be wired from the interposing terminal block to the 2 common terminals on the 1746-NI16V module.
5. The module does not provide loop power for analog inputs. Use a power supply that matches the transmitter specifications.
6. More than one power supply can be used if all supplies are class 2.

## 1746-NI4

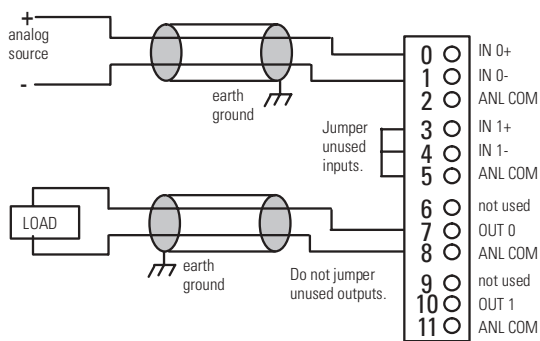


1746-NI8

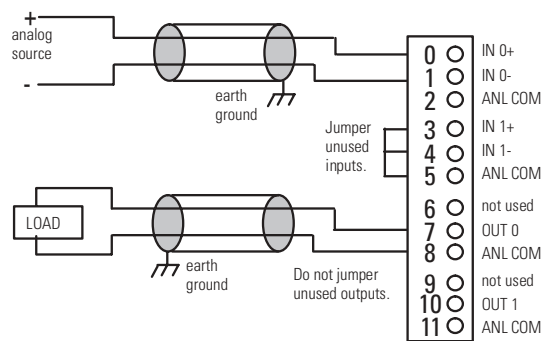


1. Use unshielded communication cable (Belden 8761) and keep the length as short as possible.
2. Connect only one end of the cable shield to earth ground.
3. Connect the shield drain wires for channels 0 to 3 to the top shield terminal.
4. Connect the shield drain wires for channels 4 to 7 to the bottom shield terminal.
5. Shield terminals are internally connected to chassis ground which is connected to earth ground via the SLC backplane.
6. Single-ended source commons may be jumpered together at the terminal block.
7. The channels are not isolated from each other.
8. If a differential signal source has an analog common, it cannot and must not be connected to the module.
9. The common mode voltage range is  $\pm 10.5$  volts. The voltage between any two terminals must be less than 15 volts when connected in a single-ended configuration.
10. The module does not provide power for the analog inputs.
11. Use a power supply that matches the transmitter (sensor) specifications.

1746-NI04I

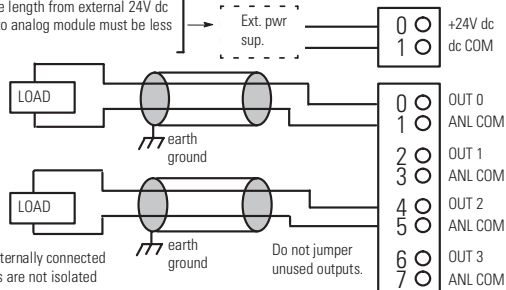


1746-NI04V



**1746-N04I**

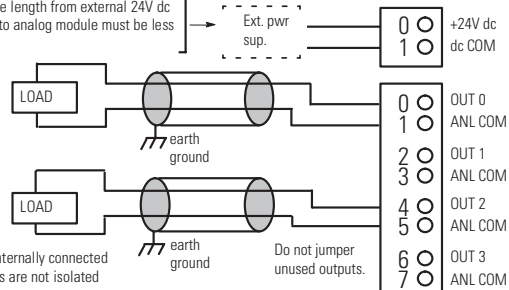
24V dc power supply if external power is selected. Cable length from external 24V dc power supply to analog module must be less than 10m.



Analog commons are internally connected in the module. Channels are not isolated from each other.

**1746-N04V**

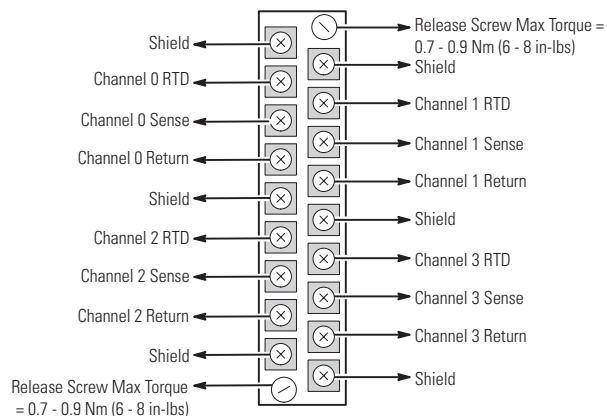
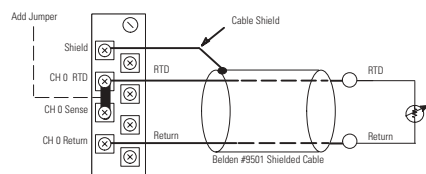
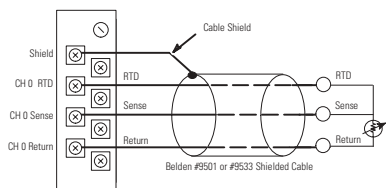
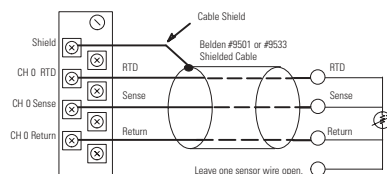
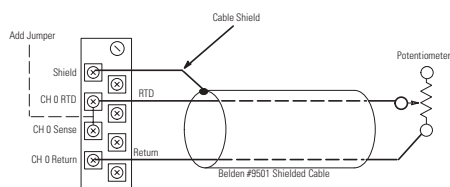
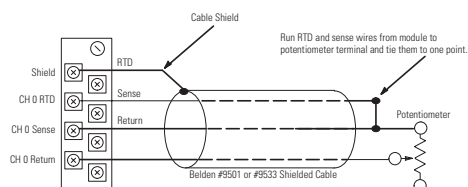
24V dc power supply if external power is selected. Cable length from external 24V dc power supply to analog module must be less than 10m.



Analog commons are internally connected in the module. Channels are not isolated from each other.

**1746-NR4**

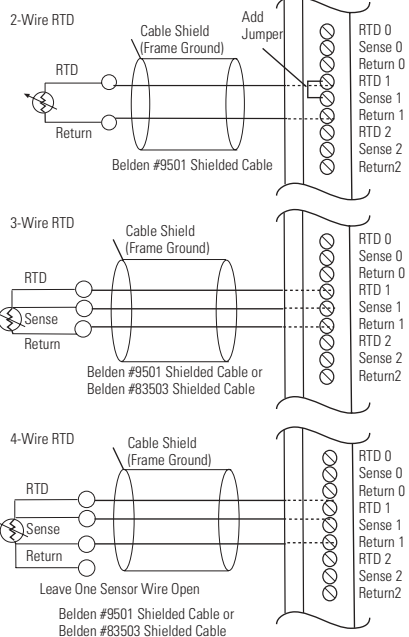
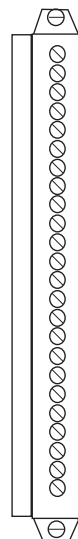
## Terminal Connections

**2-Wire RTD****3-Wire RTD****4-Wire RTD****2-Wire Potentiometer****3-Wire Potentiometer**

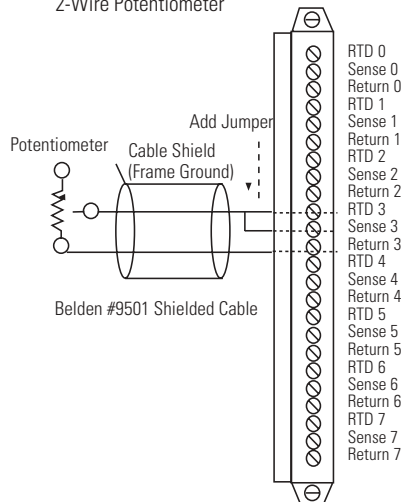
Potentiometer wiper arm can be connected to either the RTD or Return terminal, depending on whether you want increasing or decreasing resistance.

## 1746-NR8

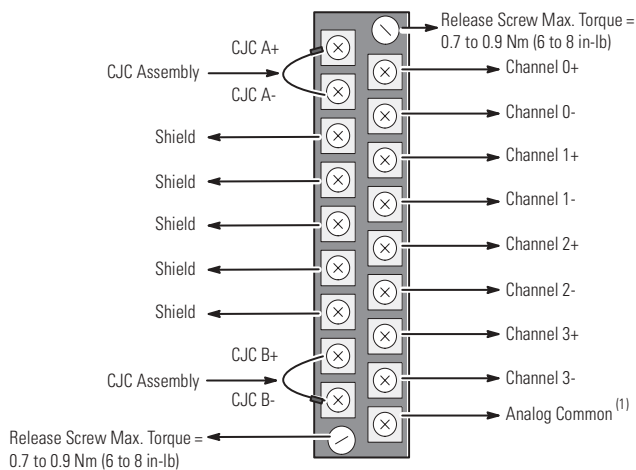
Terminal Connections



2-Wire Potentiometer



## 1746-NT4

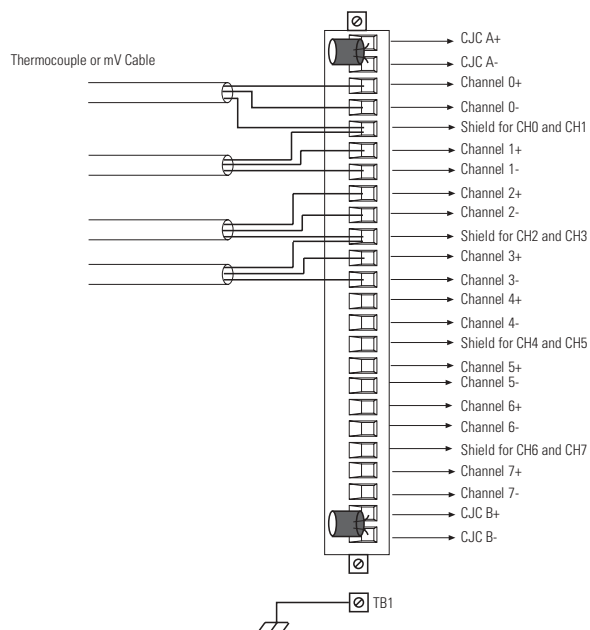


Cold Junction Compensation (CJC)



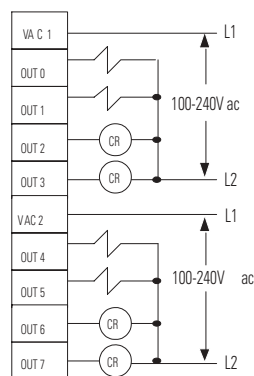
**ATTENTION** Do not remove or loosen the cold junction compensating thermistor assemblies located between the two upper and lower CJC terminals on the terminal block. Both thermistor assemblies are critical to ensure accurate thermocouple input readings at each channel. The module will not operate in the thermocouple mode if either assembly is removed.

## 1746-NT8

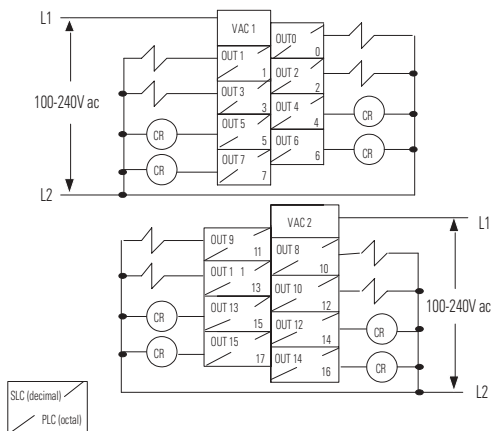


**1746-OA8**

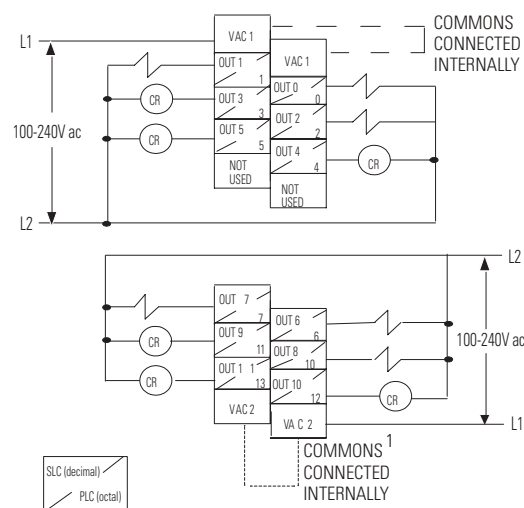
100 to 240V ac Triac Output

**1746-OA16**

100 to 240V ac Triac Output

**1746-OAP12**

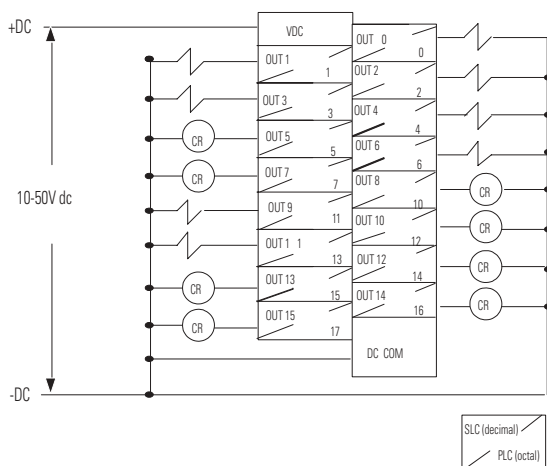
100 to 240V ac High Current Triac Output



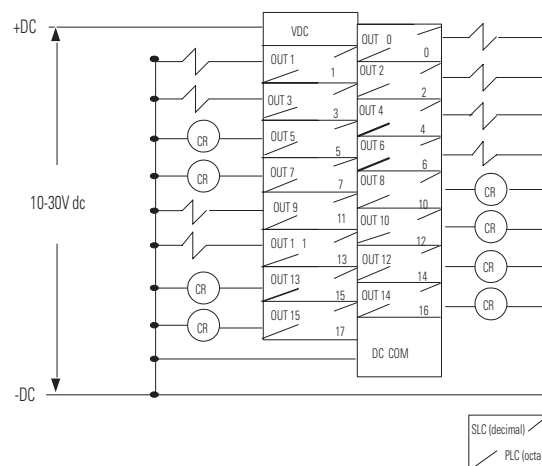
1. This module provides fused commons for short circuit protection.

**1746-OB16**

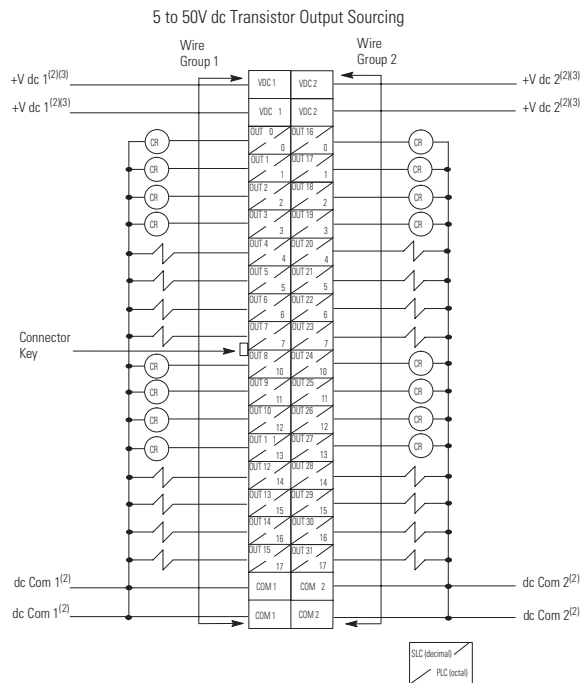
Transistor Output-Sourcing

**1746-OB16E**

Transistor Output-Sourcing (electronically protected)

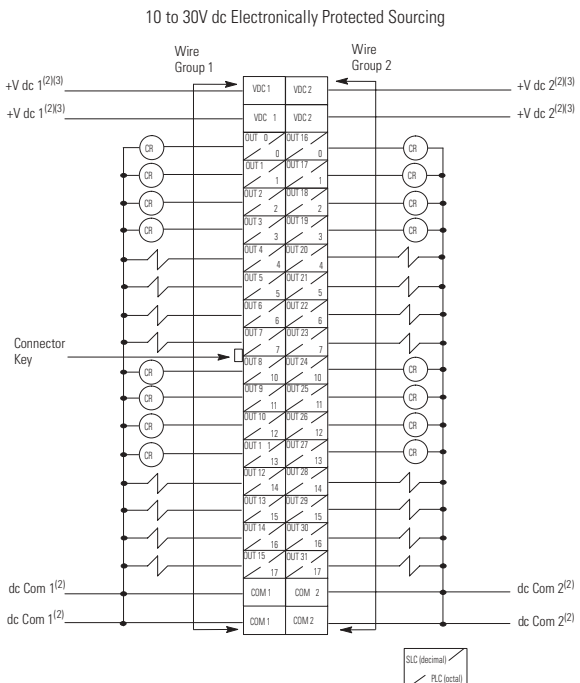


1746-OB32



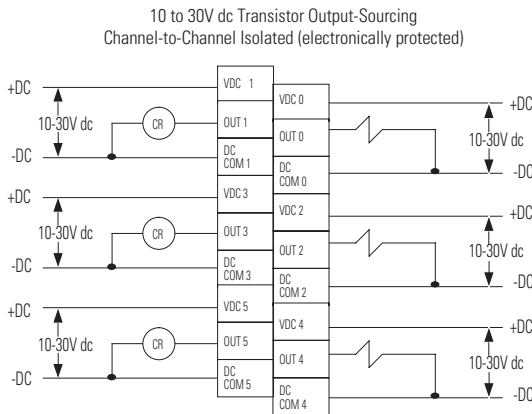
1. The V dc and dc Com pins on the 1746-OB32 and 1746-OB32E output module are isolated between the two groups and the two V dc and two dc Com pins in each group are connected internally.
2. Both V dc pins must be connected to the dc power source if current for a common group is expected to exceed 2 amps. To maintain group isolation provided by 32-point I/O modules, use a 1492 terminal block that provides group isolation.

1746-OB32E

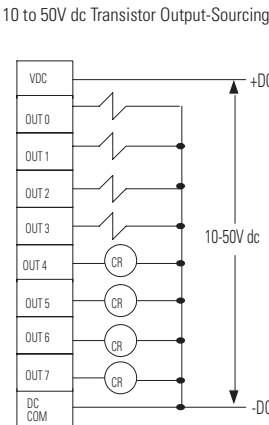


1. The V dc and dc Com pins on the 1746-OB32 and 1746-OB32E output module are isolated between the two groups and the two V dc and two dc Com pins in each group are connected internally.
2. Both V dc pins must be connected to the dc power source if current for a common group is expected to exceed 2 amps. To maintain group isolation provided by 32-point I/O modules, use a 1492 terminal block that provides group isolation.

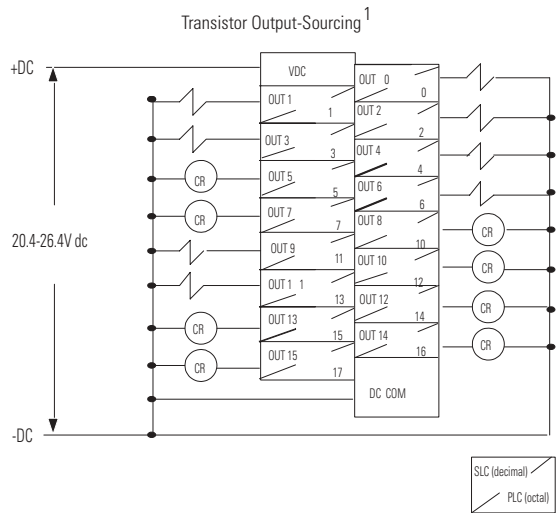
1746-OB6EI



1746-OB8

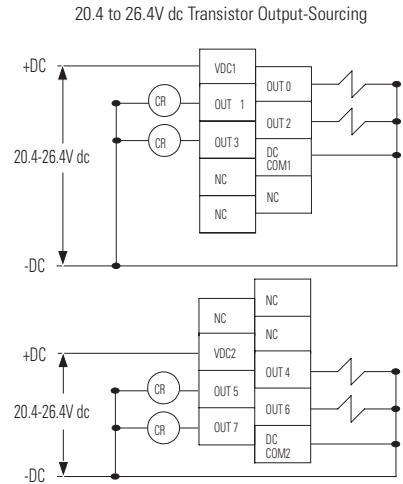


1746-OBP16

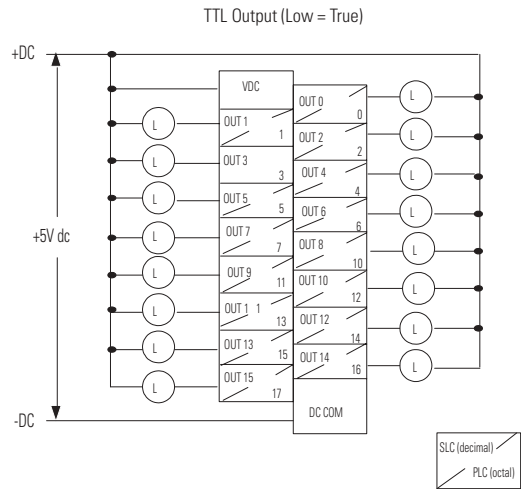


1. This module provides fused commons for short circuit protection.

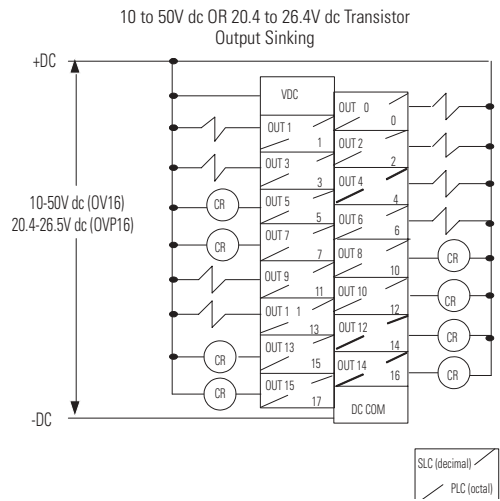
1746-OBP8



1746-OG16

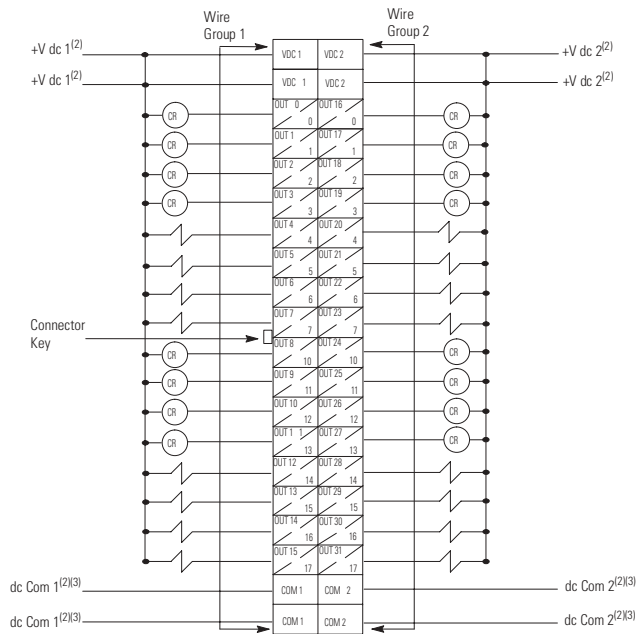


1746-OV16



### 1746-OV32

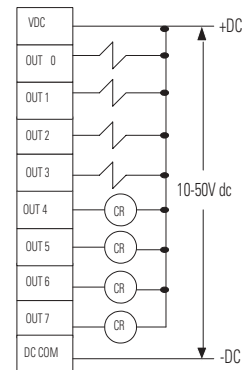
5 to 50V dc Transistor Output Sinking



1. The V dc and dc Com pins on the 1746-OV32 output module are isolated between the two groups. Also, the two V dc and two V Com pins in each group are connected internally.
2. Both dc Com pins must be connected to the dc power source if current for a common group is expected to exceed 2 amps. To maintain group isolation provided by 32-point I/O modules, use a 1492 terminal block that provides group isolation.

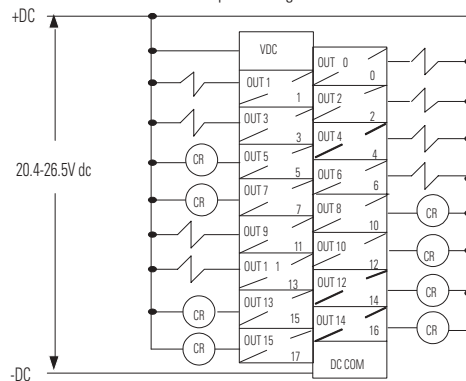
### 1746-OV8

10 to 50V dc Transistor Output Sinking



### 1746-OVP16

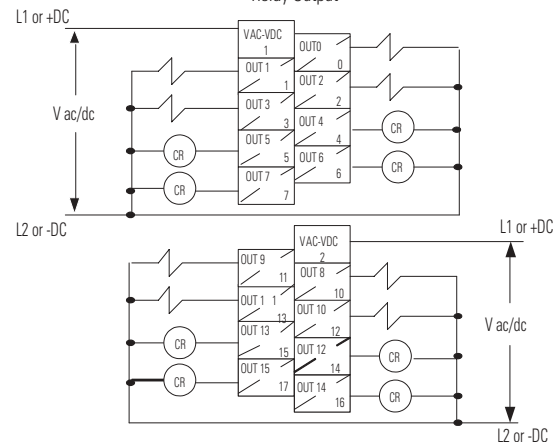
10 to 50V dc OR 20.4 to 26.4V dc Transistor<sup>1</sup>  
Output Sinking



1. This module provides fused commons for short circuit protection.

### 1746-OW16

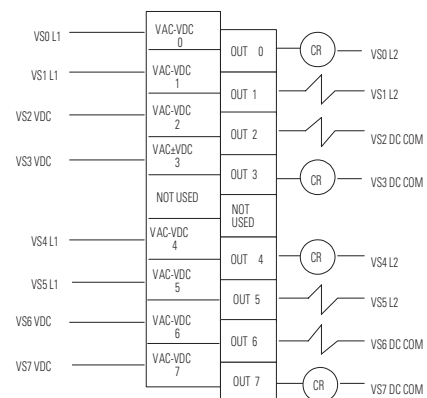
Relay Output



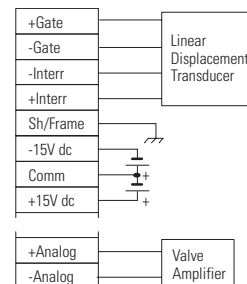


**1746-0X8**

### Channel-to-Channel Isolated Relay Output



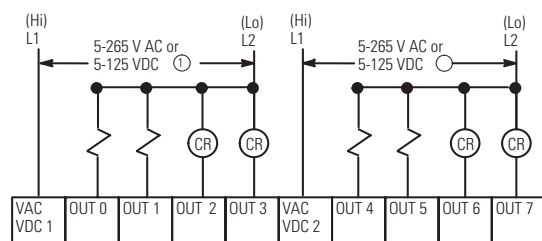
**1746-QV**



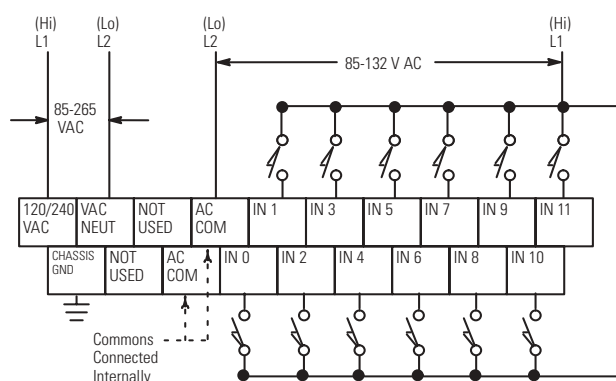
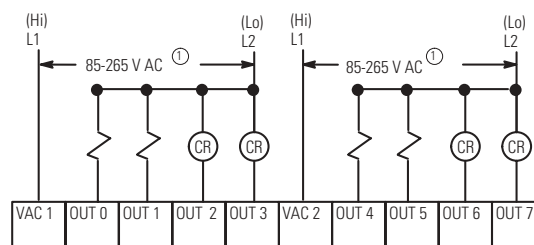
## **Notes:**

## 1747 I/O on Fixed Hardware Controllers

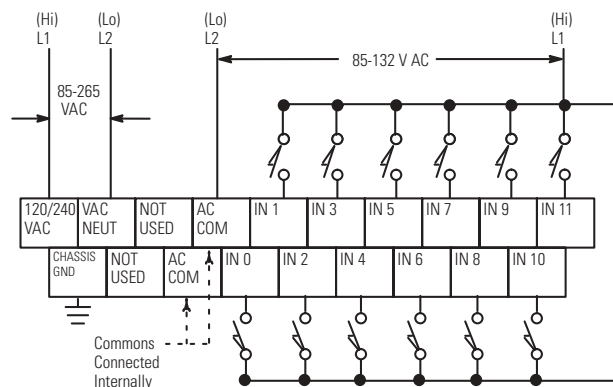
**1747-L20A**



**1747-L20B**

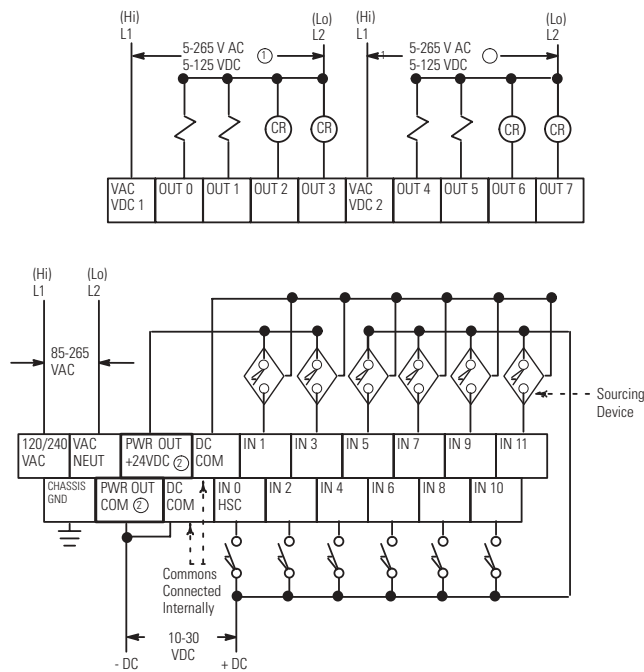


The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

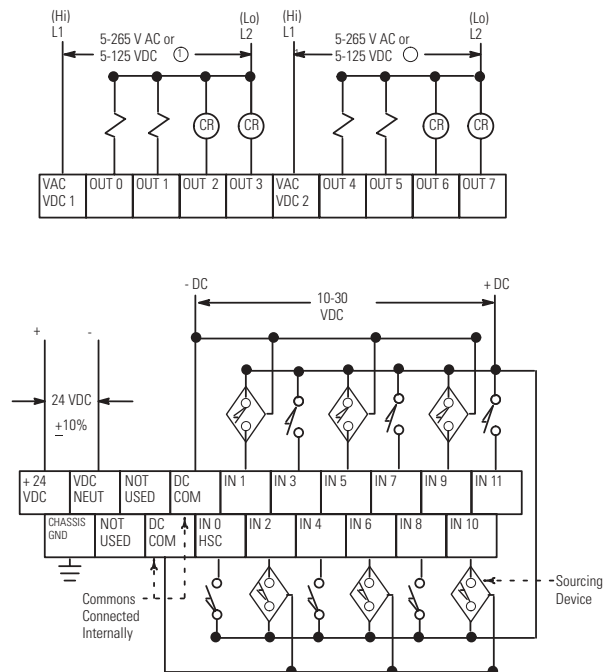


The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

### 1747-L20C



### 1747-L20F

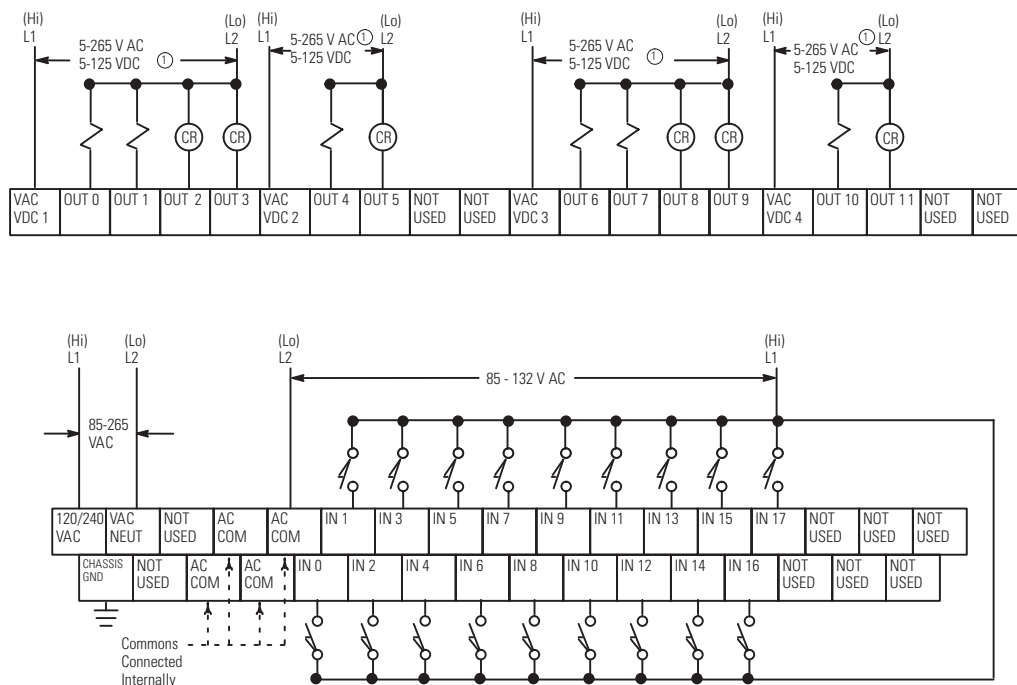


1. The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

2. 24V dc, 200mA user power is available for sensors.

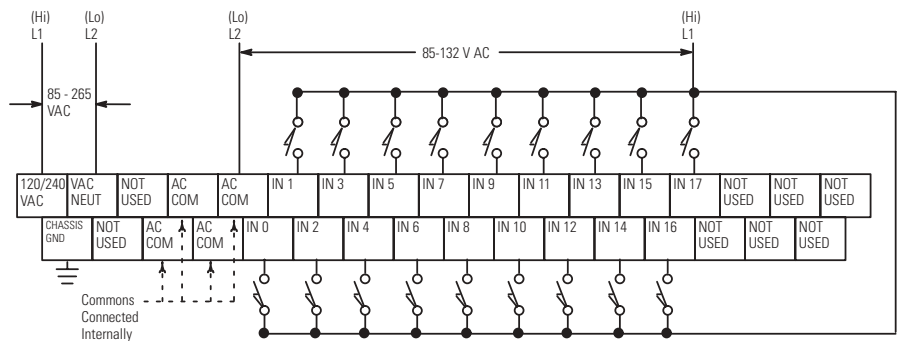
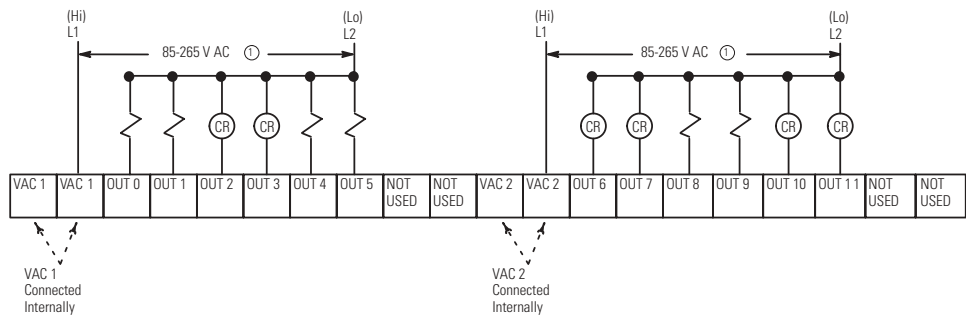
The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

### 1747-L30A



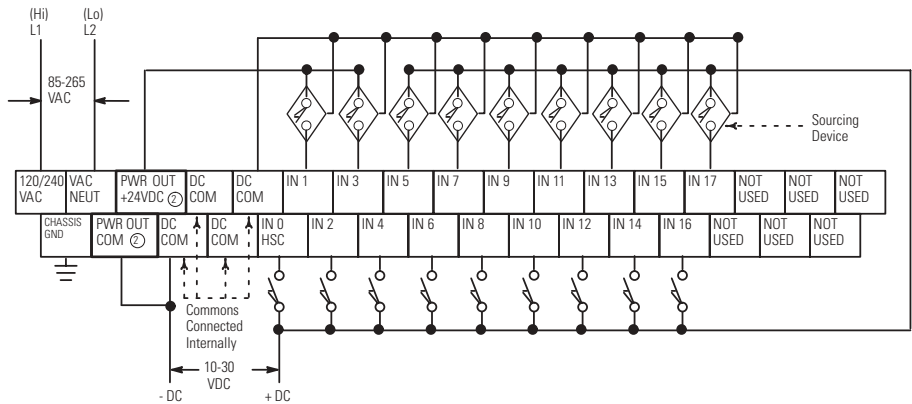
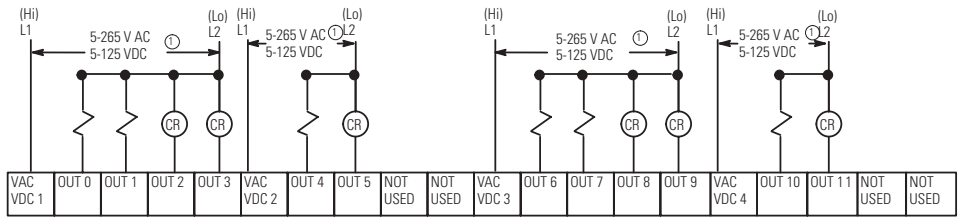
These outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

1747-L30B

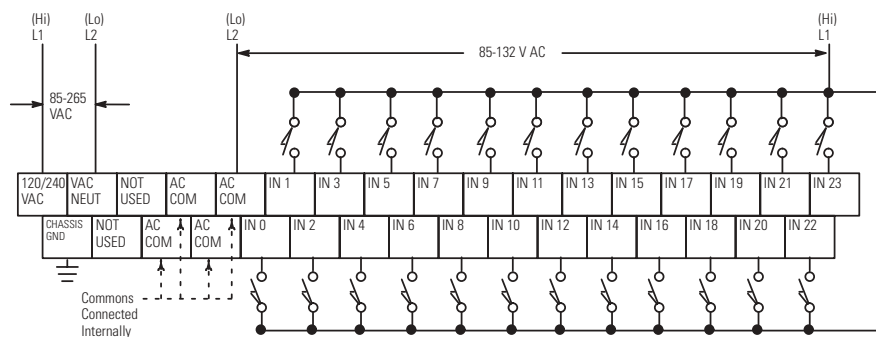
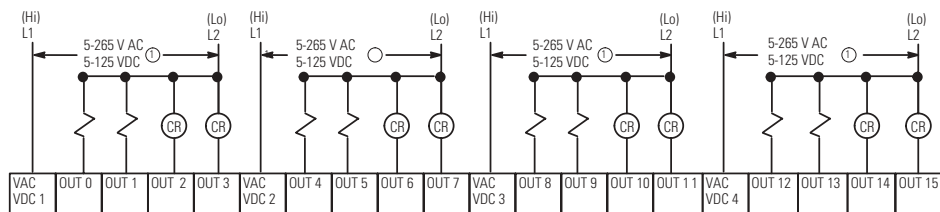


These outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

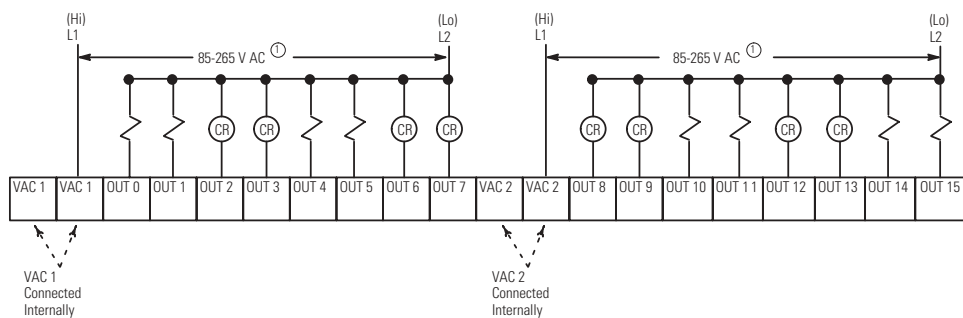
1747-L30C



1. The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.
2. 24 VDC, 200mA user power is available for sensors.

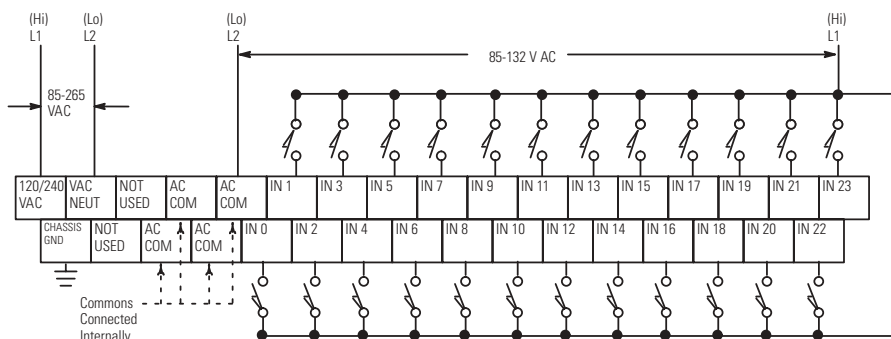
**1747-L40A**

The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

**1747-L40B**

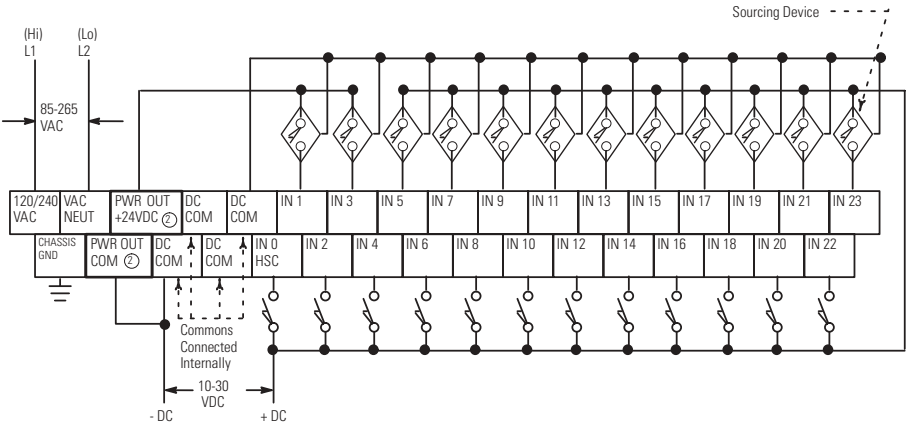
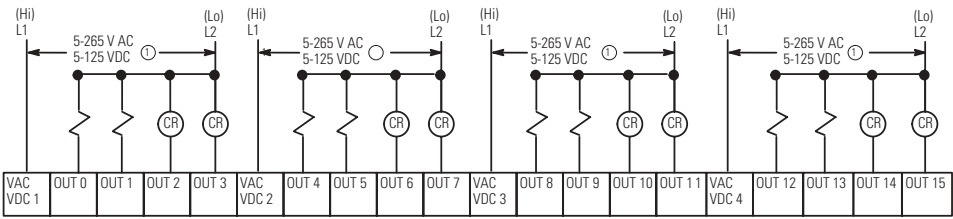
VAC 1  
Connected  
Internally

VAC 2  
Connected  
Internally



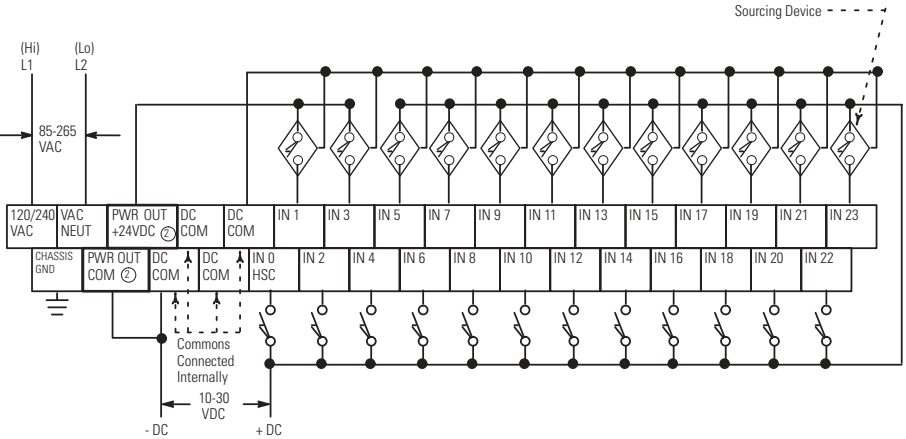
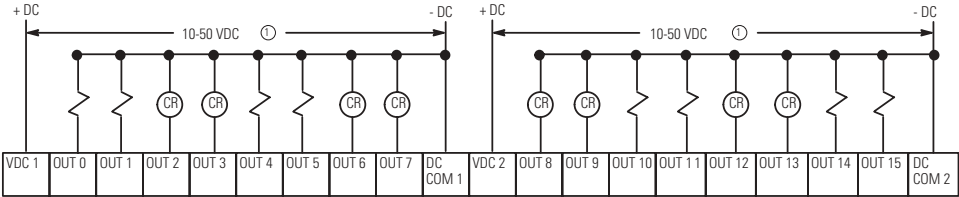
The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.

1747-L40C



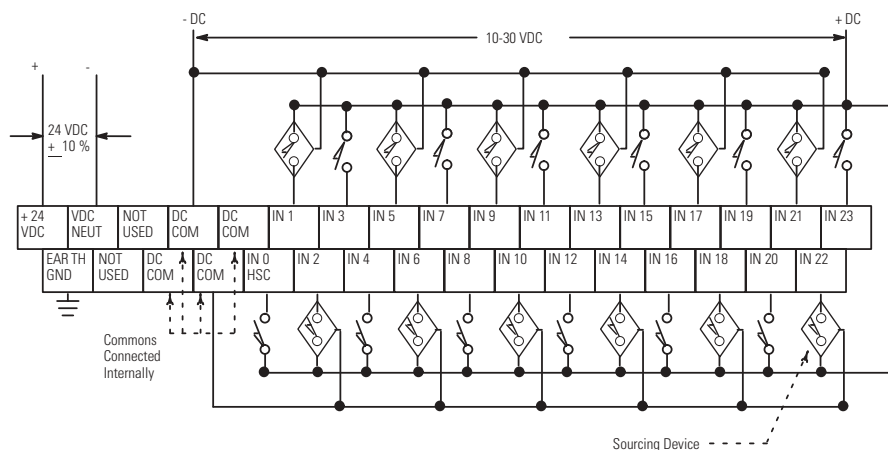
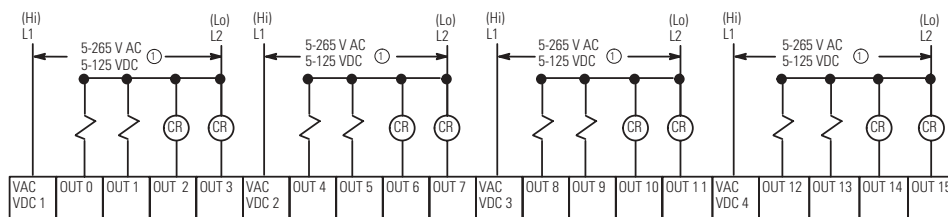
1. The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.
2. 24 VDC, 200mA user power is available for sensors.

1747-L40E



1. The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.
2. 24 VDC, 200mA user power is available for sensors.

# 1747-L40F

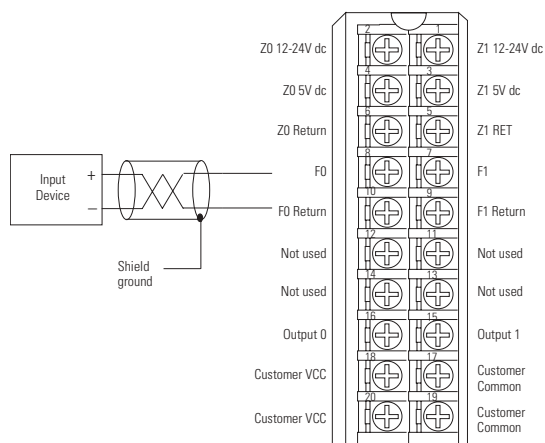


1. The outputs are isolated in groups as shown. Therefore, different voltages can be applied to each group as the specific application requires.



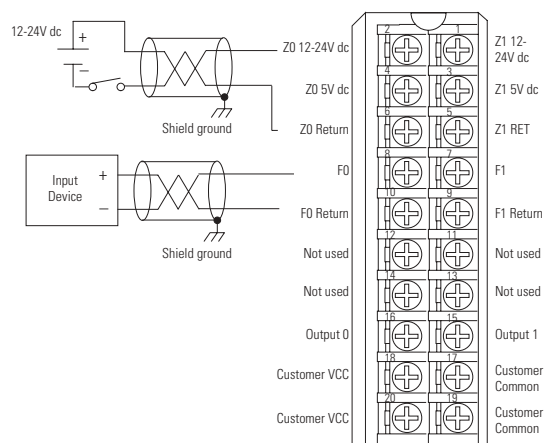
## 1756 ControlLogix I/O Modules

### 1756-CFM - Standard Flowmeter Wiring



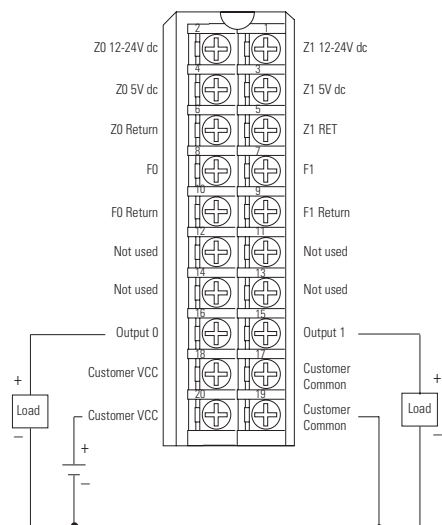
- NOTES:
1. This wiring diagram can be used in applications with 50mV (magnetic pickup), 1.3V (TTL), and 4V (preamp level) thresholds. You must use RSLogix 5000 to choose the appropriate threshold level for your application.
  2. Do not connect more than 2 wires to any single terminal.

### 1756-CFM - Standard Prover/Detector Wiring



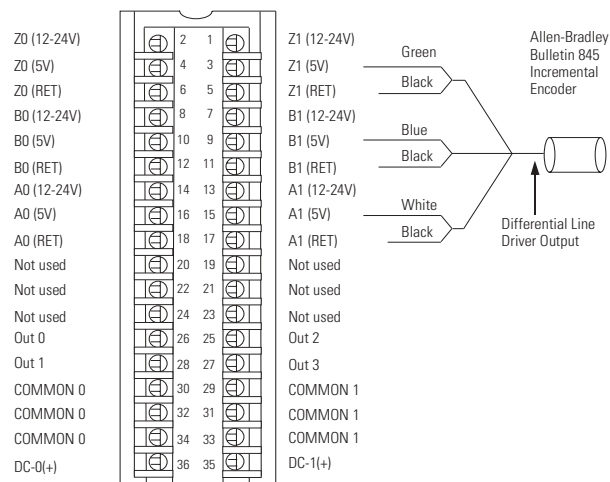
- NOTE:
1. The wiring example above shows a 12-24V dc standard prover connected to the module. If you use a 5V dc standard prover, make sure the positive wire is connected to the 5V terminal (e.g. Z0 5V dc).
  2. Do not connect more than 2 wires to any terminal.

### 1756-CFM - Standard Output



- NOTES:
1. If separate power sources are used, do not exceed the specified isolation voltage.
  2. Do not connect more than 2 wires to any single terminal.

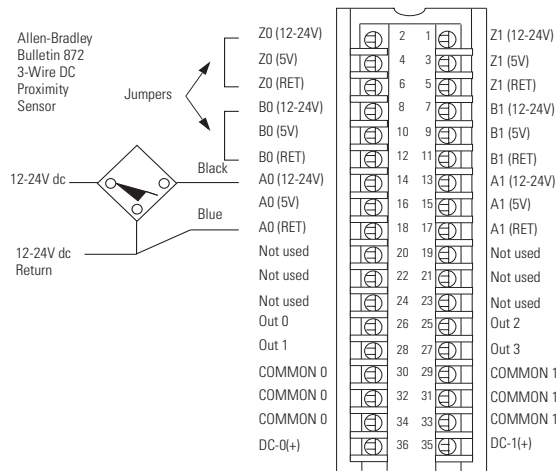
### 1756-HSC - 845 Incremental Encoder



Application :	A1 Connections:	B1 Connections:	Z1 Connections :
Differential Line Driver Output (40mA)	White - A1 (5V) Black of white - A1 (RET)	Blue - B1 (RET) Black of blue - B1 (5V)	Green - Z1 (5V) Black of green - Z1 (RET)

NOTE: Do not connect more than 2 wires to any single terminal.

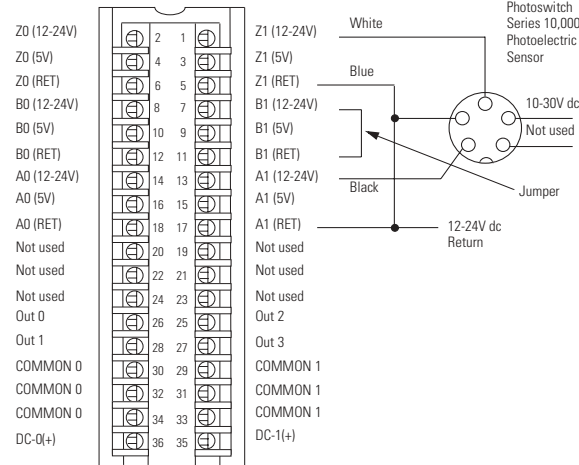
1756-HSC - 872 3-Wire DC Proximity Sensor



Appli cation :	A0 Conne cti ons:	B0 Conne cti ons:	Z0 Con ne ct i ons :
PNP (Sourcing) N.O.	Black - A0 (12-24V) Blue, PS(-)- A0 (RET)	Jumper B0 (12-24V) to B0 (RET)	Jumper Z0 (12-24V) to Z0 (RET)

NOTE: Do not connect more than 2 wires to any single terminal.

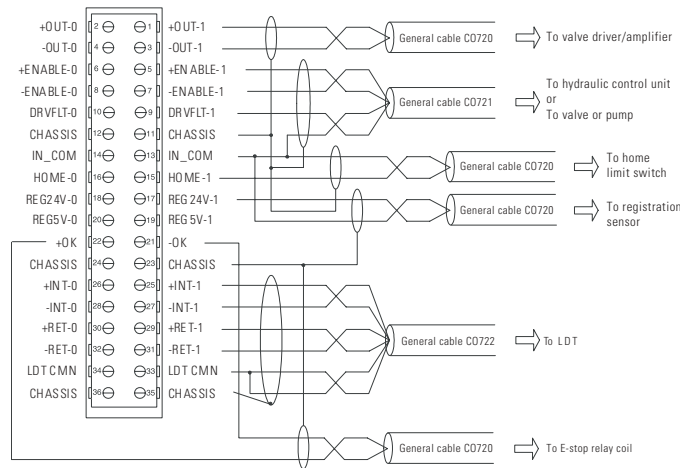
1756-HSC - Photoswitch Series 10,000  
Photoelectric Sensor



Appli cation :	A1 Conne cti ons:	B1 Conne cti ons:	Z1 Con ne ct i ons :
Any	Black - A1 (12-24V) Blue - A1 (RET)	Jumper B1 (12-24V) to B1 (RET)	White - Z1 (12-24V) Blue - Z1 (RET)

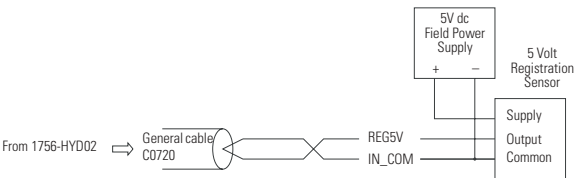
NOTE: Do not connect more than 2 wires to any single terminal.

1756-HYD02

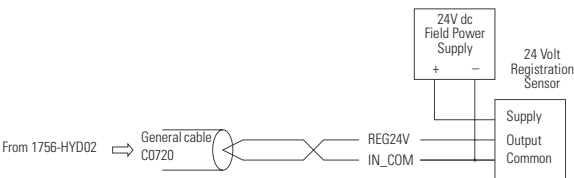


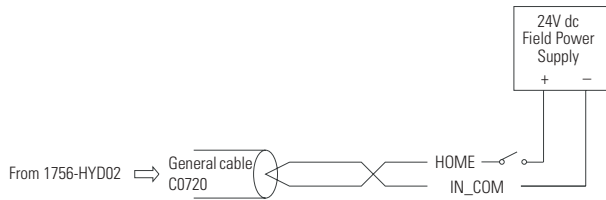
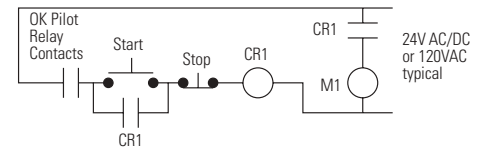
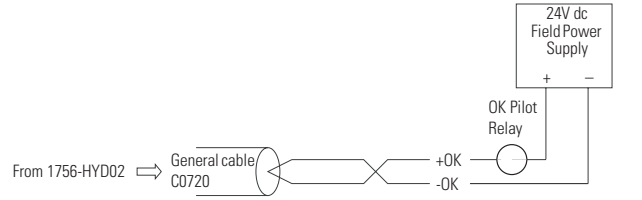
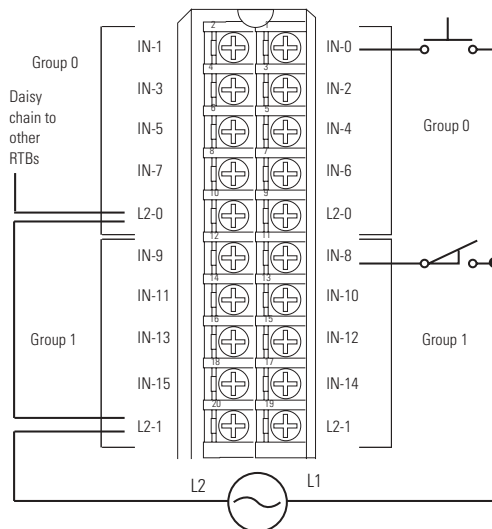
NOTES: 1. This is a general wiring example illustrating Axis 1 wiring only. Other configurations are possible with Axis wiring identical to Axis 1.  
2. Make sure that any transducer connected to the 1756-HYD02 module uses an external interrogation signal.  
3. Do not exceed the specified isolation voltage between power sources.

1756-HYD02 - Wiring 5V Sensors

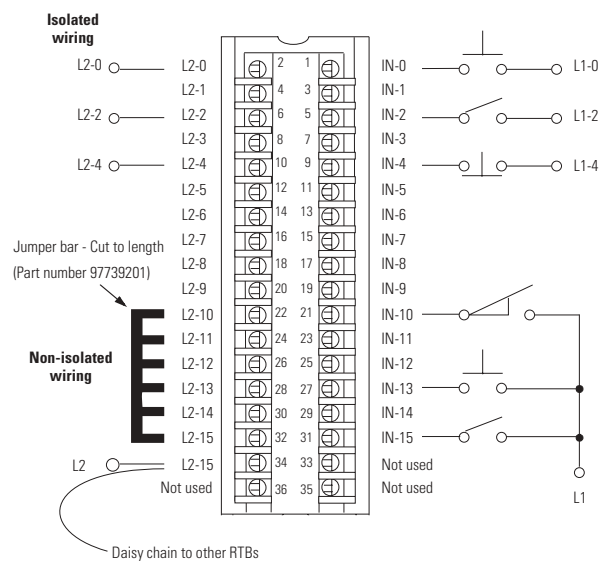


1756-HYD02 - Wiring 24V Sensors



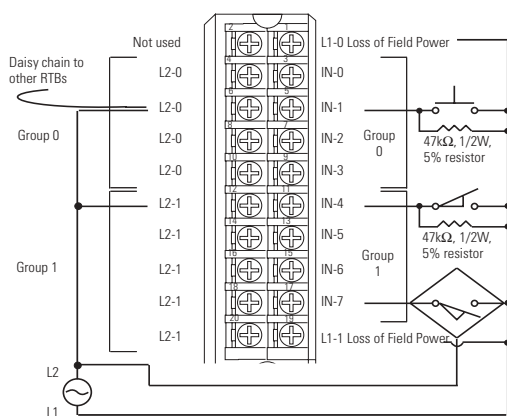
**1756-HYD02 - Wiring Home Limit Switch****1756-HYD02 - Wiring OK Contacts****1756-IA16**

- NOTES:
1. All terminals with the same name are connected together on the module. For example, L2 can be connected to any terminal marked L2-0.
  2. When you daisy chain from a group to another RTB, always connect the daisy chain as shown above. Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.

**1756-IA16I**

- NOTES
1. All terminals with the same name are connected together on the module. For example, L2 can be connected to either terminal marked L2-15.
  2. When you use the second L2-15 terminal to daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.

## 1756-IA8D



- NOTES: 1. All terminals with the same name are connected together on the module. For example, L2 can be connected to any terminal marked L2-0.
2. This wiring example shows a single voltage source.
3. When you daisy chain from a group to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
4. If separate power sources are used, do not exceed the specified isolation voltage.

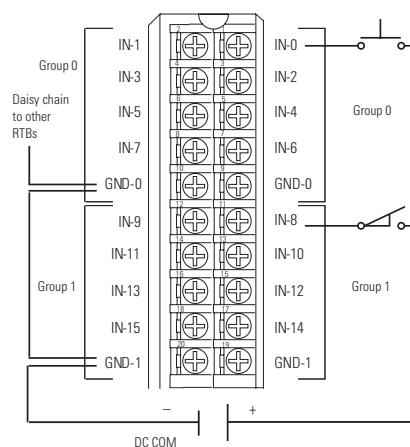
Resistors are not necessary if Wire Off diagnostic is not used.

#### To Determine Leakage Resistor

(P/S = Field side power supply)  
 $R_{LEAK} \text{ Maximum} = (P/S \text{ Voltage} - 19V \text{ ac}) / 1.5 \text{ mA}$   
 $R_{LEAK} \text{ Minimum} = (P/S \text{ Voltage} - 20V \text{ ac}) / 2.5 \text{ mA}$

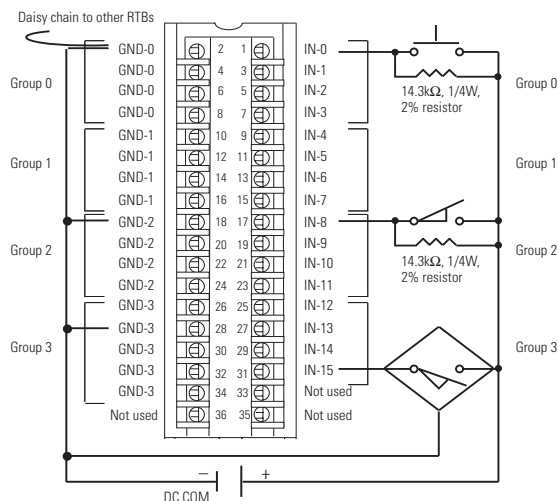
Recommended Values	
P/S Voltage	$R_{LEAK}$ , 1/2W, 5%
100V ac +/-10%	43kΩ
110V ac +/-10%	47kΩ
115V ac +/-10%	47kΩ
120V ac +/-10%	51kΩ

## 1756-IB16



- NOTES: 1. All terminals with the same name are connected together on the module. For example, DC COM can be connected to either terminal marked GND-0.
2. When you daisy chain from a group to another RTB, always connect the daisy chain as shown above. Do not connect more than 2 wires to any single terminal.
3. This wiring example shows a single voltage source.
4. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-IB16D



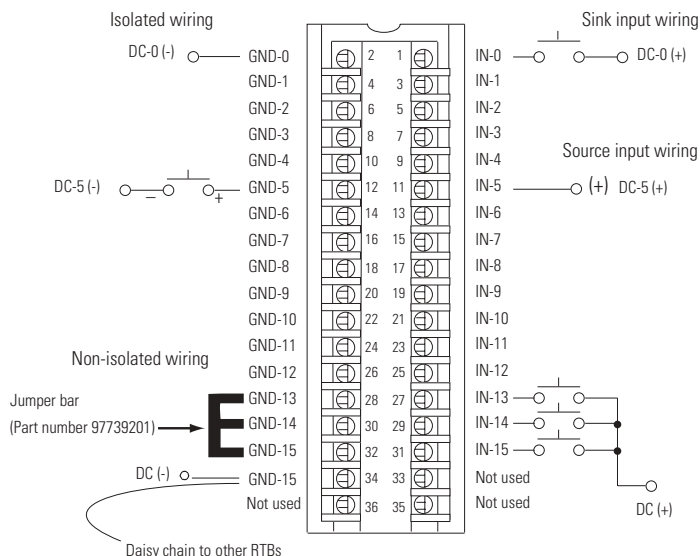
- NOTES: 1. All terminals with the same name are connected together on the module.
2. This wiring example shows a single voltage source.
3. When you daisy chain from a group to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
4. Resistors are not necessary if Wire Off diagnostic is not used.
5. If separate power sources are used, do not exceed the specified isolation voltage.

#### To Determine Leakage Resistor

(P/S = Field side power supply)  
 $R_{LEAK} \text{ Maximum} = (P/S \text{ Voltage} - 4.6V \text{ dc}) / 1.21 \text{ mA}$   
 $R_{LEAK} \text{ Minimum} = (P/S \text{ Voltage} - 5V \text{ dc}) / 1.5 \text{ mA}$

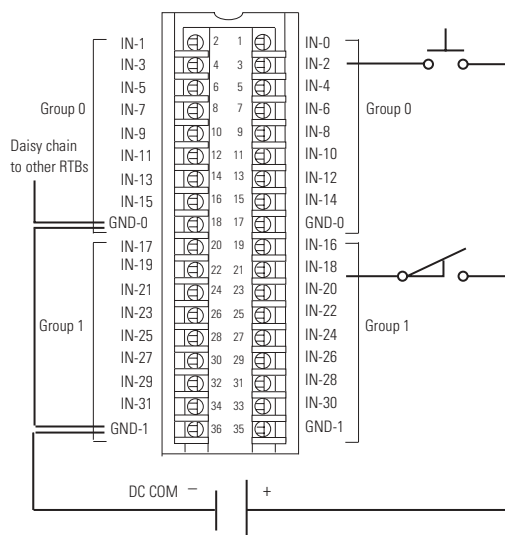
Recommended Values	
P/S Voltage	$R_{LEAK}$ , 1/4W, 2%
12V dc +/-5%	5.23kΩ
24V dc +/-5%	14.3kΩ

## 1756-IB16I



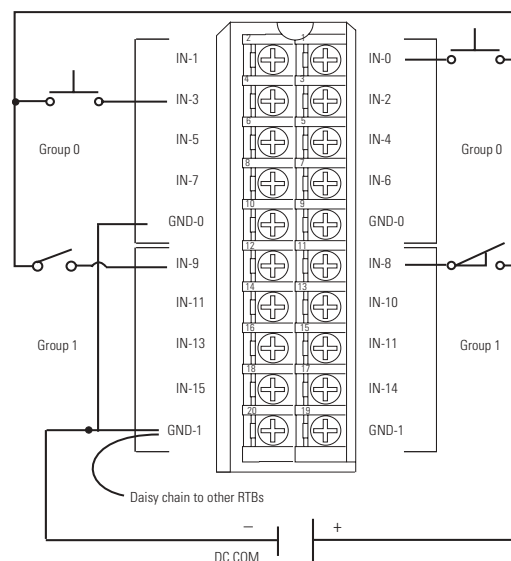
- NOTES: 1. All terminals with the same name are connected together on the module. For example, DC (-) can be connected to either terminal marked GND-15.
2. When you use the second GND-15 terminal to daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
3. Each input can be wired in a sink or source configuration, as shown above.
4. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-IB32/B



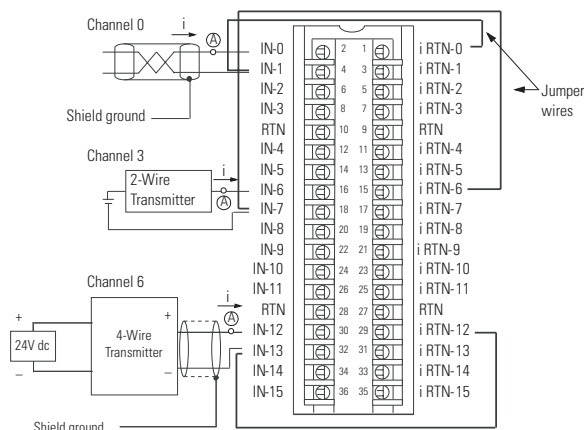
- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC COM can be connected to either terminal marked GND-1.
  2. When you daisy chain to other RTBs, always connect the daisy chain as shown above. Do not connect more than 2 wires to any single terminal at any time.
  3. This wiring example shows a single voltage source.
  4. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-IC16



- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC COM can be connected to any terminal marked GND-1.
  2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.
  4. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-IF16 – Differential Current Applications



## NOTES:

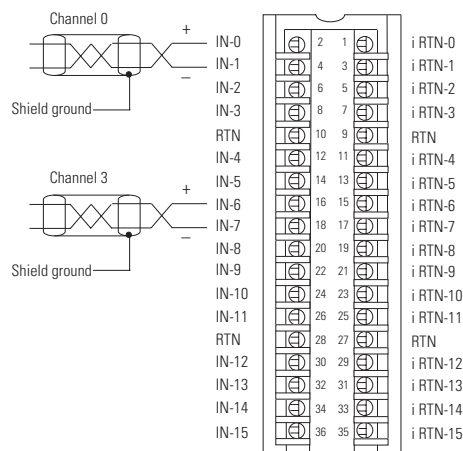
1. Use the table below when wiring your module in differential current mode.

This channel:	Uses these terminals:	This channel:	Uses these terminals:
Channel 0	IN-0 (+), IN-1 (-) & i RTN-0	Channel 4	IN-8 (+), IN-9 (-) & i RTN-8
Channel 1	IN-2 (+), IN-3 (-) & i RTN-2	Channel 5	IN-10 (+), IN-11 (-) & i RTN-10
Channel 2	IN-4 (+), IN-5 (-) & i RTN-4	Channel 6	IN-12 (+), IN-13 (-) & i RTN-12
Channel 3	IN-6 (+), IN-7 (-) & i RTN-6	Channel 7	IN-14 (+), IN-15 (-) & i RTN-14

2. All terminals marked RTN are connected internally.
3. A 249  $\Omega$  current loop resistor is located between IN-x and i RTN-x terminals.
4. If multiple (+) or multiple (-) terminals are tied together, connect that tie point to a RTN terminal to maintain the module's accuracy.
5. Place additional loop devices (e.g. strip chart recorders, etc.) at the A location in the current loop.
6. Do not connect more than two wires to any single terminal.

IMPORTANT: When operating in 4 channel, high speed mode, only use channels 0, 2, 4 and 6.

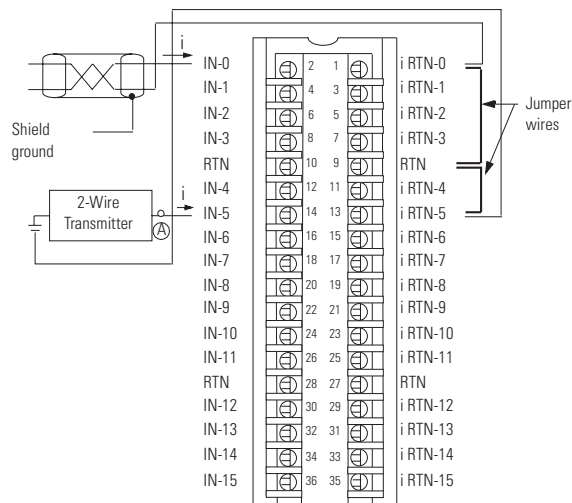
## 1756-IF16 – Differential Voltage Applications



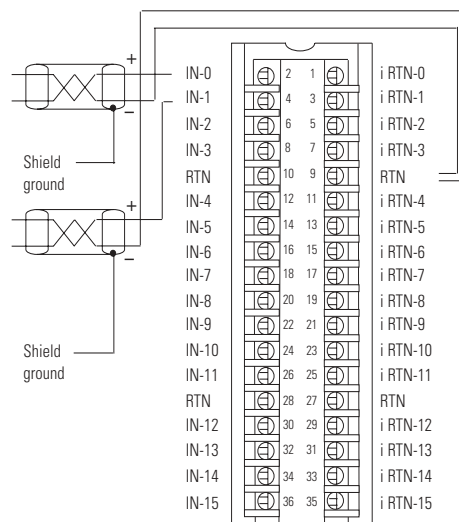
## NOTES: 1. Use the following chart when wiring your module in differential mode

This channel:	Uses these terminals:	This channel:	Uses these terminals:
Channel 0	IN-0 (+) & IN-1 (-)	Channel 4	IN-8 (+) & IN-9 (-)
Channel 1	IN-2 (+) & IN-3 (-)	Channel 5	IN-10 (+) & IN-11 (-)
Channel 2	IN-4 (+) & IN-5 (-)	Channel 6	IN-12 (+) & IN-13 (-)
Channel 3	IN-6 (+) & IN-7 (-)	Channel 7	IN-14 (+) & IN-15 (-)

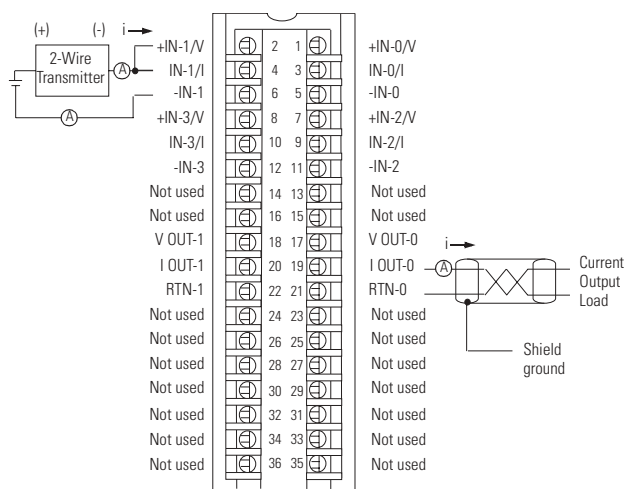
2. When operating in 4 channel, high speed mode, only use channels 0, 2, 4 and 6
3. All terminals marked RTN are connected internally.
4. If multiple (+) or multiple (-) terminals are tied together, connect that tie point to terminal to maintain the module's accuracy.
5. Terminals marked RTN and i RTN are not used for differential voltage wiring.
6. Do not connect more than 2 wires to any single terminal.

**1756-IF16 – Single-Ended Current Applications**

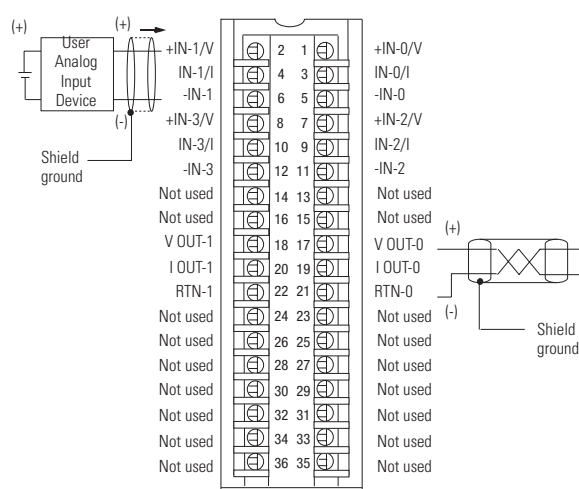
- NOTES:
1. All terminals marked RTN are connected internally.
  2. A 249Ω current loop resistor is located between IN-x and i RTN-x terminals.
  3. For current applications, all terminals marked i RTN must be wired to terminals marked RTN.
  4. Place additional loop devices (e.g. strip chart recorders, etc.) at the A location.
  5. Do not connect more than 2 wires to any single terminal.

**1756-IF16 – Single-Ended Voltage Applications**

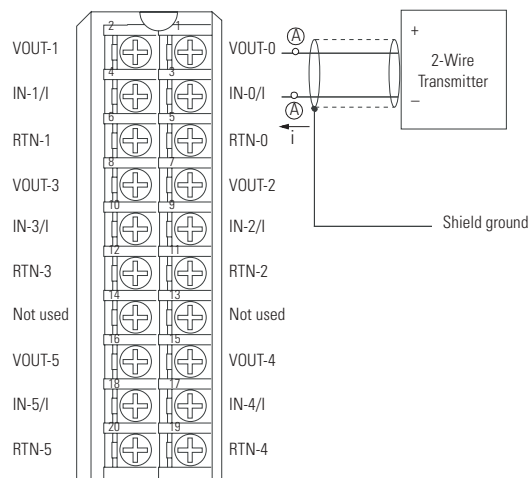
- NOTES:
1. All terminals marked RTN are connected internally.
  2. Terminals marked i RTN are not used for single-ended voltage wiring.
  3. Do not connect more than 2 wires to any single terminal.

**1756-IF4FXOF2F Current Mode**

NOTE: Place additional loop devices (e.g. strip chart recorders) at any A location.

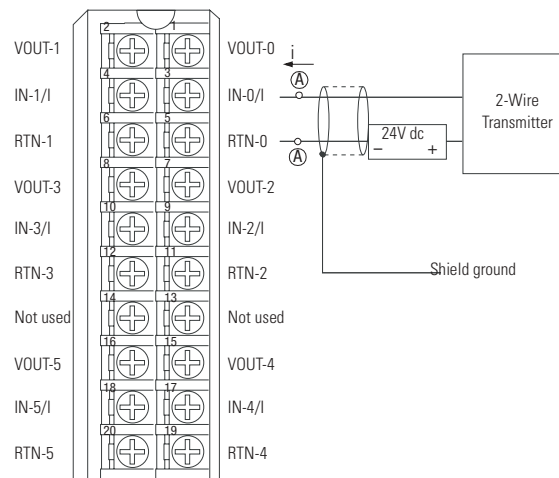
**1756-IF4FXOF2F Voltage Mode**

### 1756-IF6CIS - 2-Wire transmitter connected to the module and the module providing 24V dc loop power



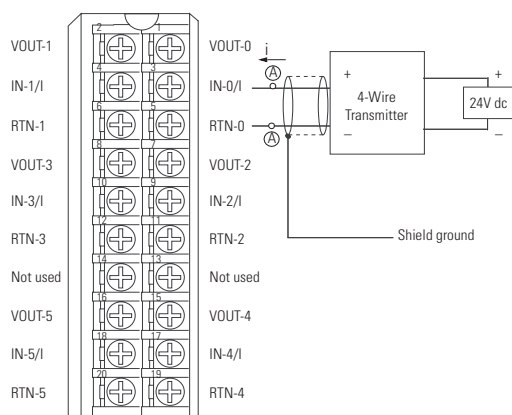
- NOTES:
1. Do not connect more than 2 wires to any single terminal.
  2. Place additional loop devices (e.g. strip chart recorders) at either A location in the current loop.

### 1756-IF6CIS - 2-Wire transmitter connected to the module and an external, user-provided power supply providing 24V dc loop power



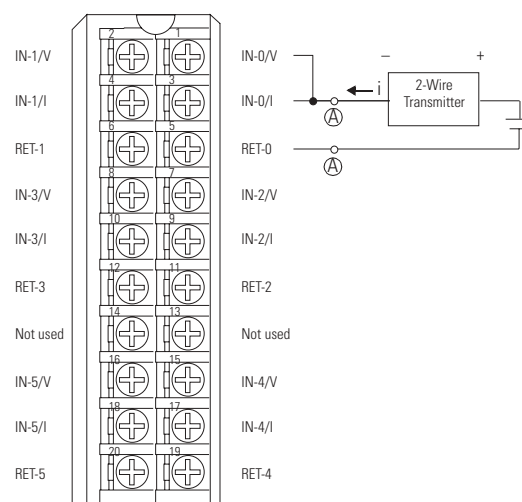
- NOTES:
1. If separate power sources are used, do not exceed the specified isolation voltage.
  2. Do not connect more than 2 wires to any single terminal.
  3. Place additional loop devices (e.g. strip chart recorders) at either A location in the current loop.

### 1756-IF6CIS - 4-Wire transmitter connected to the module and an external, user-provided power supply providing 24V dc loop power



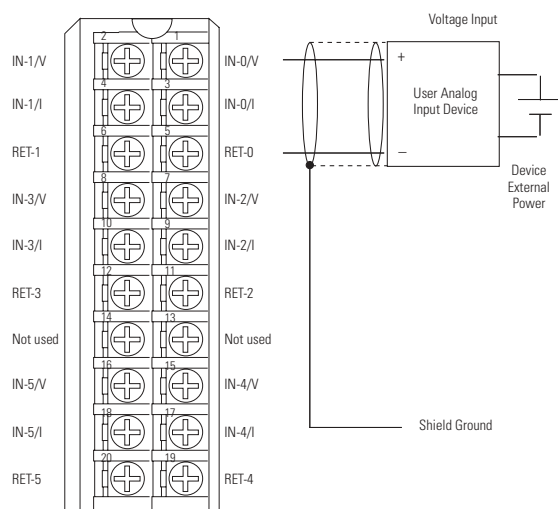
- NOTES:
1. If separate power sources are used, do not exceed the specified isolation voltage.
  2. Do not connect more than 2 wires to any single terminal.
  3. Place additional loop devices (e.g. strip chart recorders) at either A location in the current loop.

### 1756-IF6I - Current Application with 2-Wire Transmitter



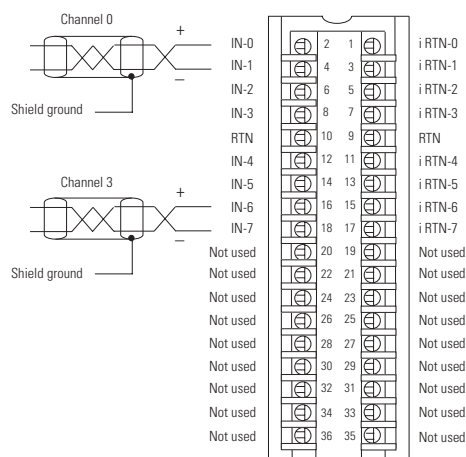
- NOTES:
1. Place additional loop devices (e.g. strip chart recorders, etc.) at either A location.
  2. If separate power sources are used, do not exceed the specified isolation voltage.

### 1756-IF6I - Voltage Application



NOTES: Do not connect more than 2 wires to any single terminal.

## 1756-IF8 – Differential Voltage Applications



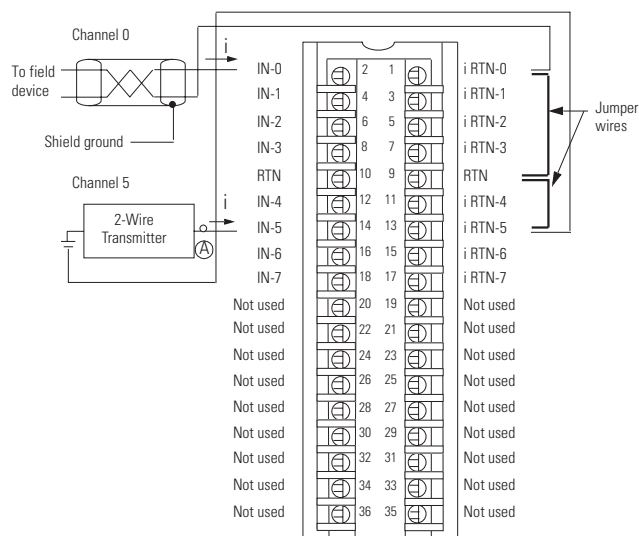
NOTES: 1. Use the following chart when wiring your module in differential mode.

This channel:	Uses these terminals:	This channel:	Uses these terminals:
Channel 0	IN-0 & IN-1	Channel 2	IN-4 & IN-5
Channel 1	IN-2 & IN-3	Channel 3	IN-6 & IN-7

2. When operating in 2 channel, high speed mode, only use channels 0 and 2.
3. All terminals marked RTN are connected internally.
4. If multiple (+) or multiple (-) terminals are tied together, connect that tie point to a RTN terminal to maintain the module's accuracy.
5. Terminal marked RTN or i RTN are not used in differential voltage applications.
6. Do not connect more than 2 wires to any single terminal.

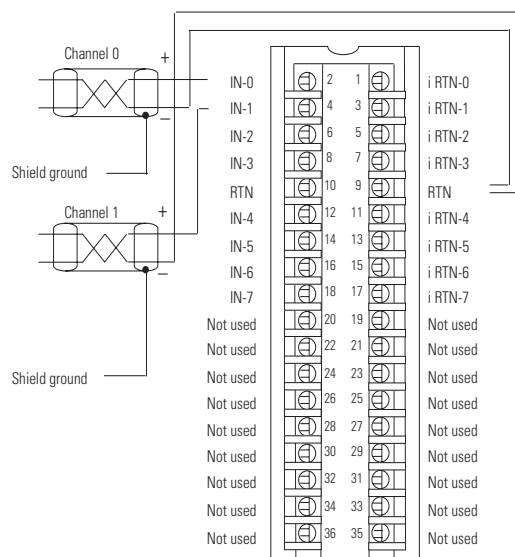


## 1756-IF8 – Single-Ended Current Applications



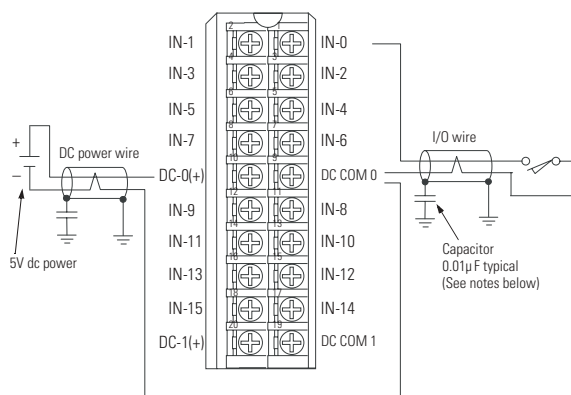
- NOTES:
1. All terminals marked RTN are connected internally.
  2. For current applications, all terminals marked iRTN must be wired to terminals marked RTN.
  3. A 249Ω current loop resistor is located between IN-x and i RTN-x terminals.
  4. Place additional loop devices (e.g. strip chart recorders, etc.) at the A location.
  5. Do not connect more than 2 wires to any single terminal.

## 1756-IF8 – Single-Ended Voltage Applications



- NOTES:
1. All terminals marked RTN are connected internally.
  2. Terminals marked iRTN are not used for single-ended voltage wiring.
  3. Do not connect more than 2 wires to any single terminal.

## 1756-IG16



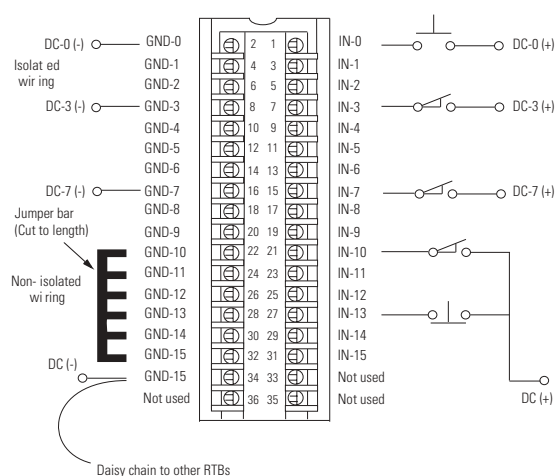
## GENERAL NOTES:

1. We recommend you use Belden M 8761 cable where shielded cables are shown.
2. Do not connect more than two wires to any single terminal.

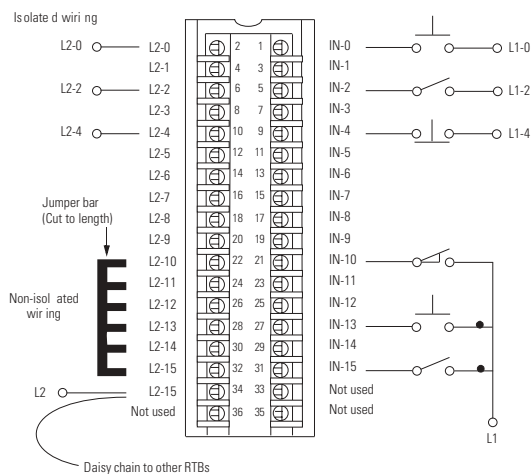
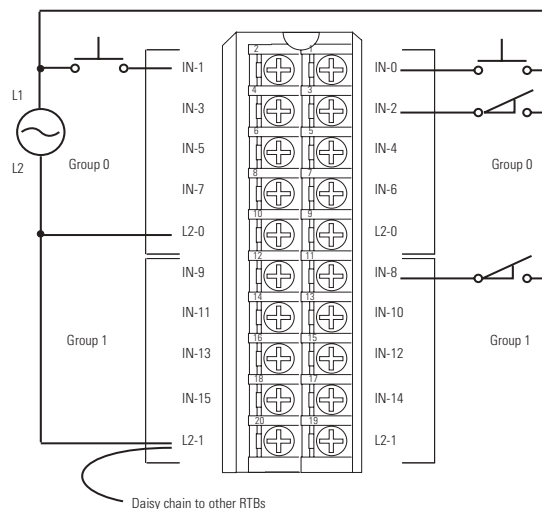
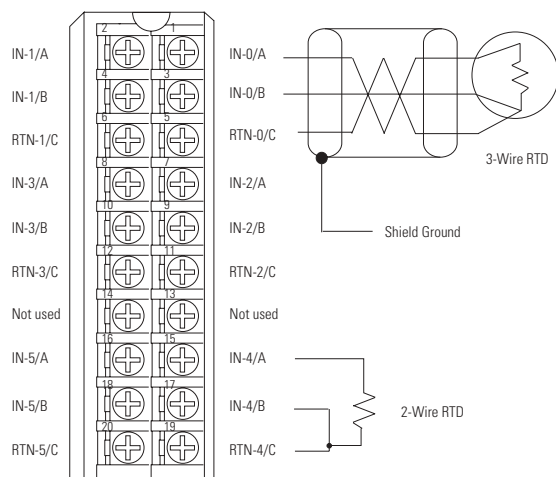
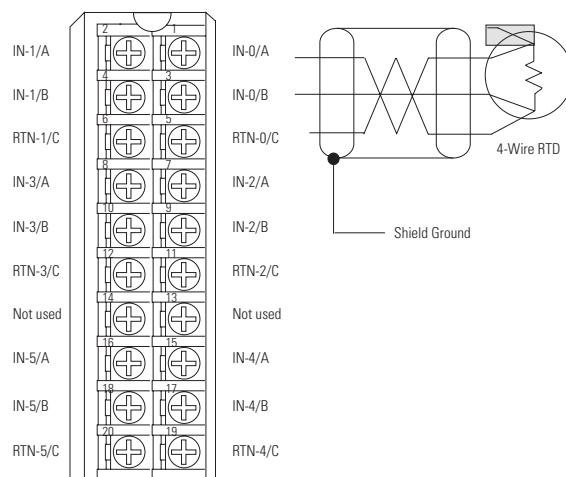
## CE REQUIREMENT NOTES:

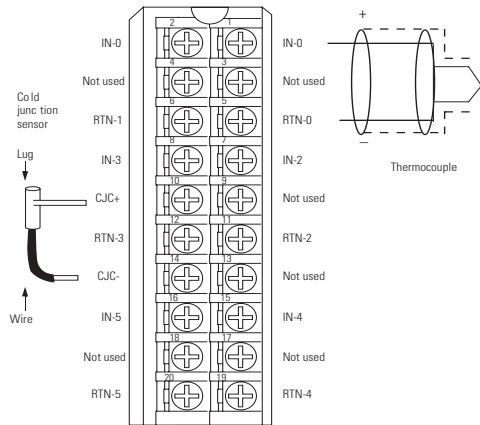
1. DC power wire and I/O wire should not exceed 10m (30ft) in length.
2. The 0.01µF capacitors shown above must be rated for 2000V dc.

## 1756-IH16I

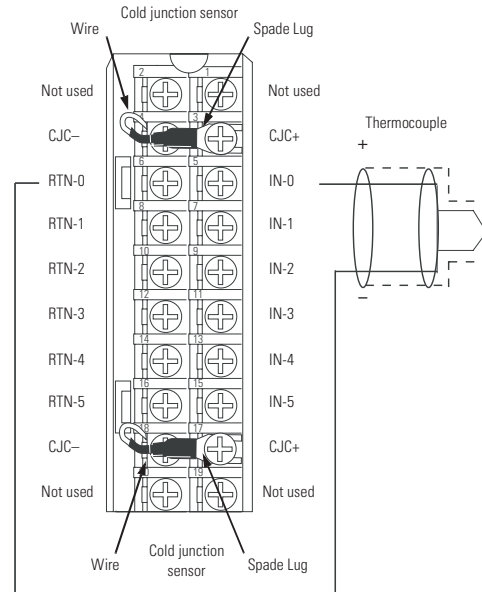


- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC (-) can be connected to either terminal marked GND-15.
  2. When you use the second GND-15 terminal to daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
  3. If separate power sources are used, do not exceed the specified isolation voltage.

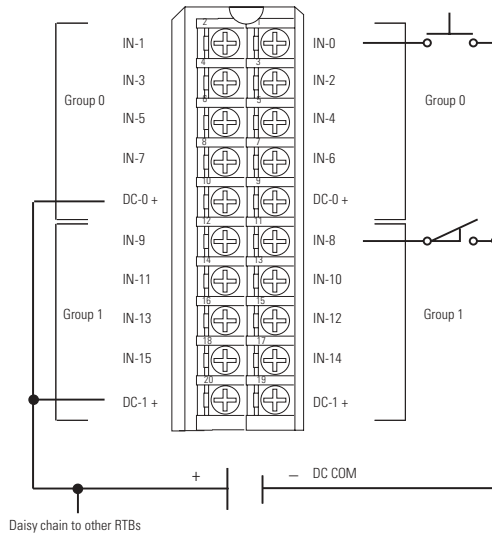
**1756-IM16I****1756-IN16****1756-IR6I – 2 or 3-Wire RTD****1756-IR6I – 4-Wire RTD**

**1756-IT6I**

- NOTES:
1. If separate power sources are used, do not exceed the specified isolation voltage.
  2. Do not connect more than 2 wires to any single terminal.
  3. The part number for the cold junction sensor used on the 1756-IT6I module is 94238301.

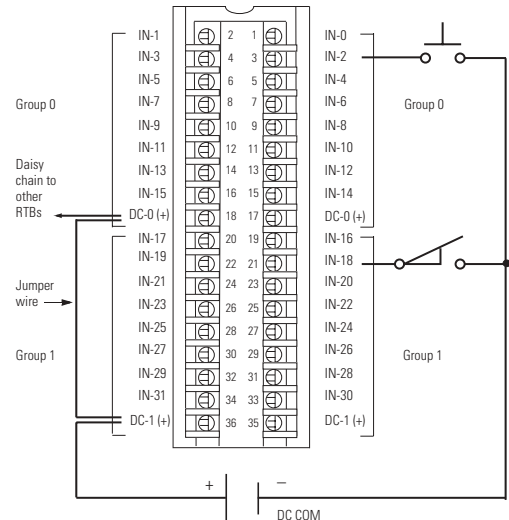
**1756-IT6I2****NOTES:**

1. Do not connect more than 2 wires to any single terminal.
2. The part number for the cold junction sensor used on the 1756-IT6I2 module is 94286501.

**1756-IV16**

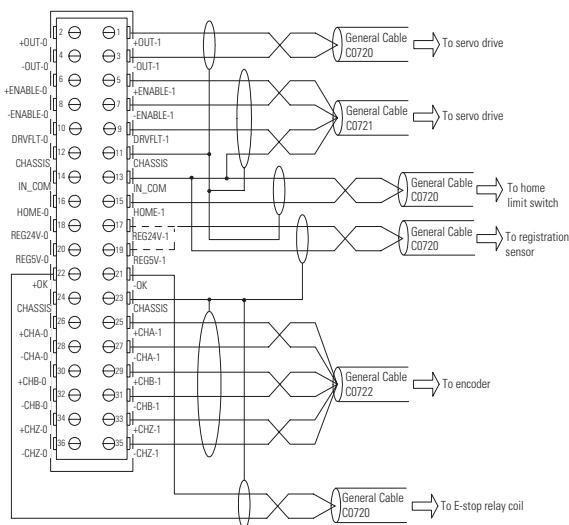
Daisy chain to other RTBs

- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC (+) can be connected to either terminal marked DC-1+.
  2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.
  4. If separate power sources are used, do not exceed the specified isolation voltage.

**1756-IV32**

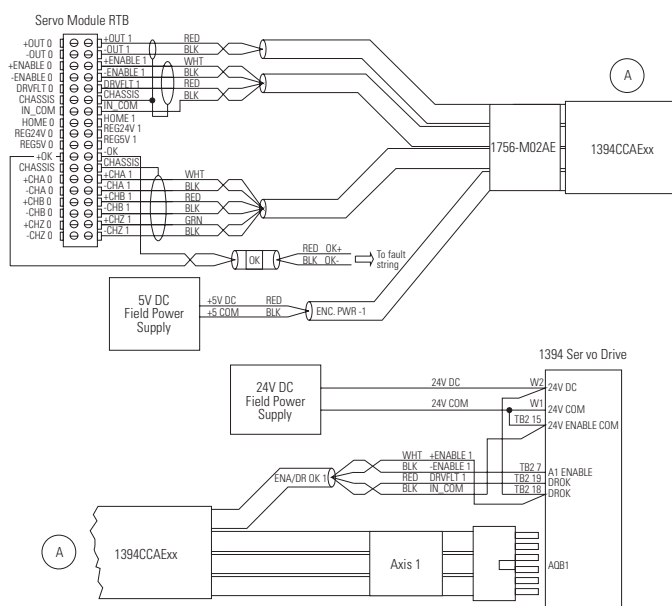
- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC (+) can be connected to either terminal marked DC-1 (+).
  2. Do not physically connect more than two wires to a single RTB terminal. When jumpering I/O groups together and daisy chain wiring to adjacent modules, follow the wiring method shown above.
  3. This wiring example shows a single voltage source.
  4. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-M02AE – Wiring to a Servo Module RTB



This is a general wiring example illustrating Axis 1 wiring only. Other configurations are possible with Axis 0 wiring identical to Axis 1.

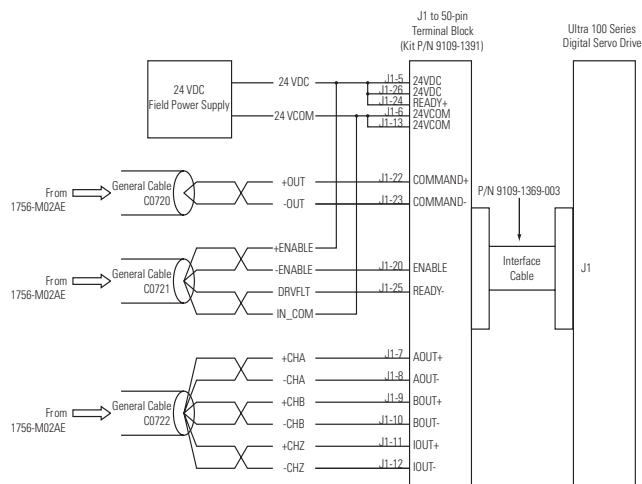
### 1756-M02AE – Wiring to 1394 Servo Drive (in Torque Mode only)



NOTES:

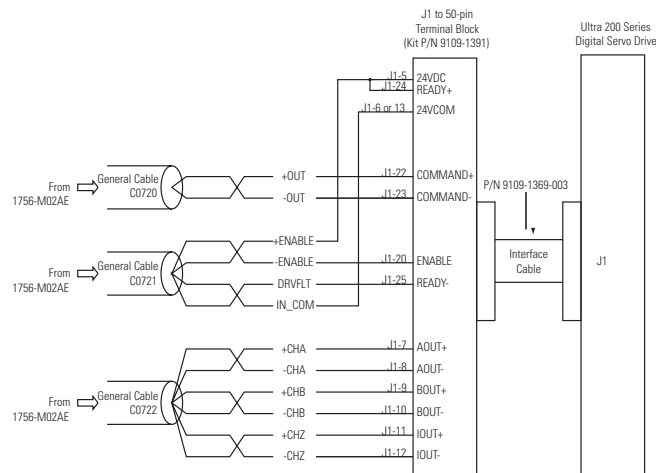
1. The wiring diagram illustrates Axis 1 wiring only. Other configurations are possible.
2. The 1394-CCAExx cable is wired to connect to torque command reference input pins.
3. An external +5V power supply is required to power the encoder driver circuit of the 1394 servo drive. Because this connection is shared by all four axis encoder driver circuits, only one connection is needed to the +5V supply system.
4. The xx in the cable number is the length of the cable. Options are 5, 10, 25 and 50 feet.

## 1756-M02AE – Wiring to an Ultra 100 Series Drive

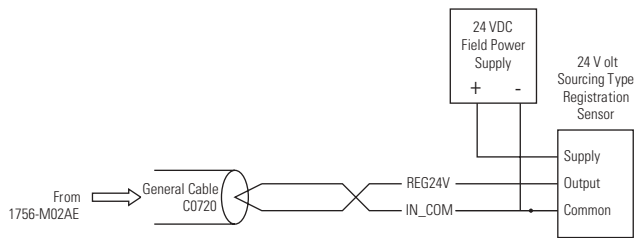
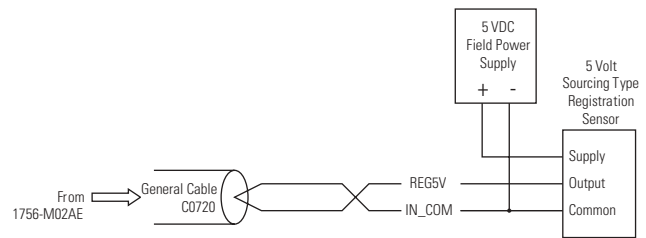


This is general wiring example only. Other configurations are possible. For more information, refer to the Ultra 100 series installation manual, publication number 1398-5.2.

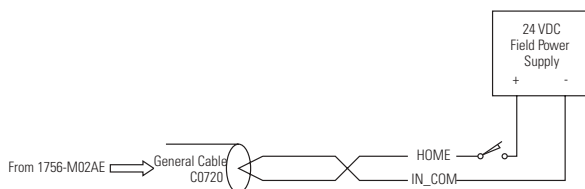
## 1756-M02AE – Wiring to an Ultra 200 Series Drive



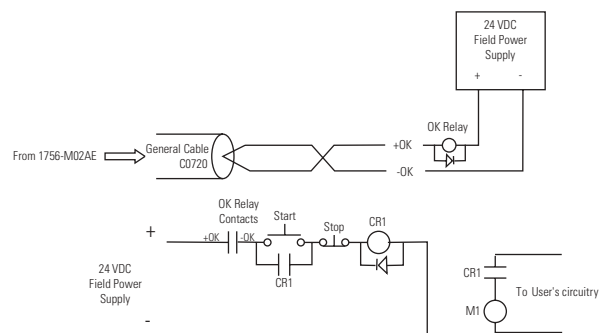
This is general wiring example only. Other configurations are possible. For more information, refer to the Ultra 200 series installation manual, publication number 1398-5.0.

**1756-M02AE – Wiring 24V Registration Sensors****1756-M02AE – Wiring 5V Registration Sensors**

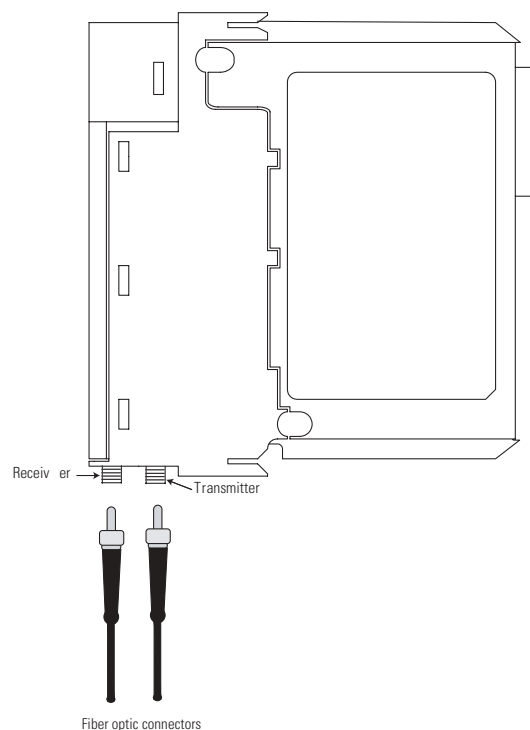
The registration inputs to the servo module support 24V or 5V registration sensors. These inputs must be wired to receive source current from the sensor. Only use sourcing type sensors.

**1756-M02AE – Wiring Home Limit Switch Input**

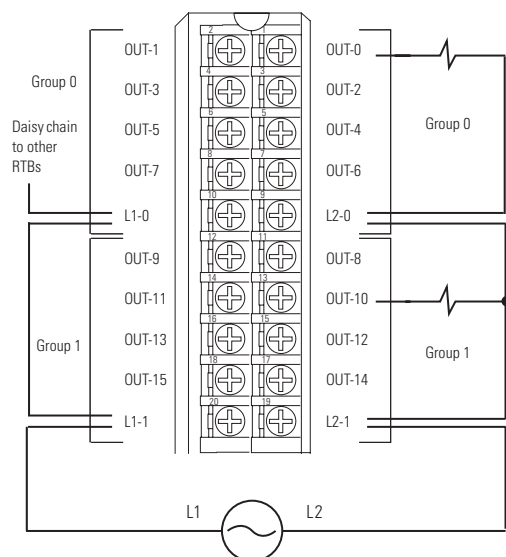
The home limit switch inputs to the servo module are designed for 24V nominal operation. These inputs should be wired for current sourcing operation.

**1756-M02AE – Wiring OK Contacts**

When the OK Relay is loaded with an inductive load, use a counter-EMF suppression diode across the load. The maximum rating of the OK relay contacts must not exceed 60V dc.

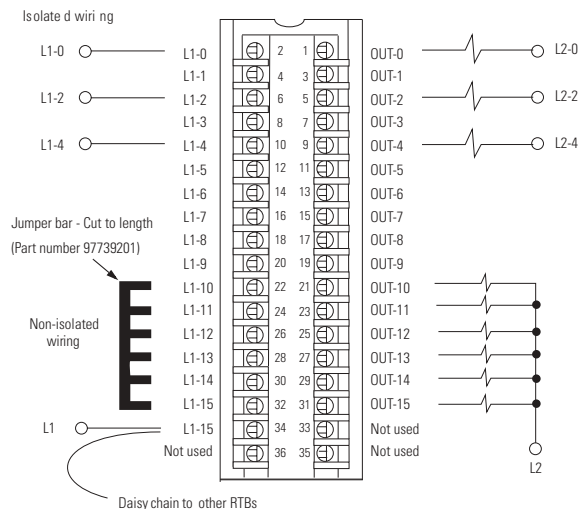
**1756-M08SE and 1756-M16SE**

1756-0A16



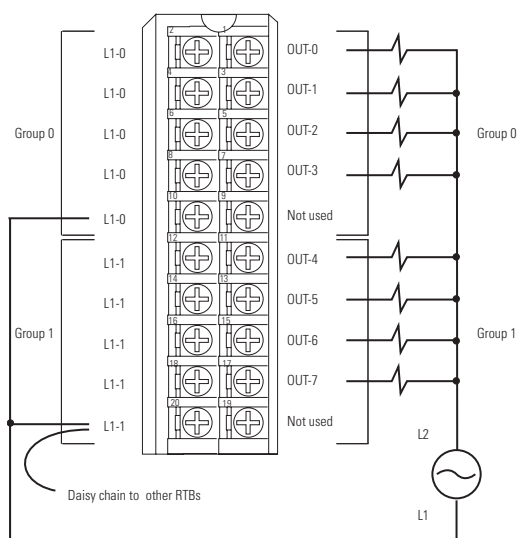
- NOTES: 1. This wiring example shows a single voltage source.  
 2. When you daisy chain from a group to other RTBs, always connect the daisy chain as shown. Do not connect more than 2 wires to any single terminal at any time.

1756-0A16I



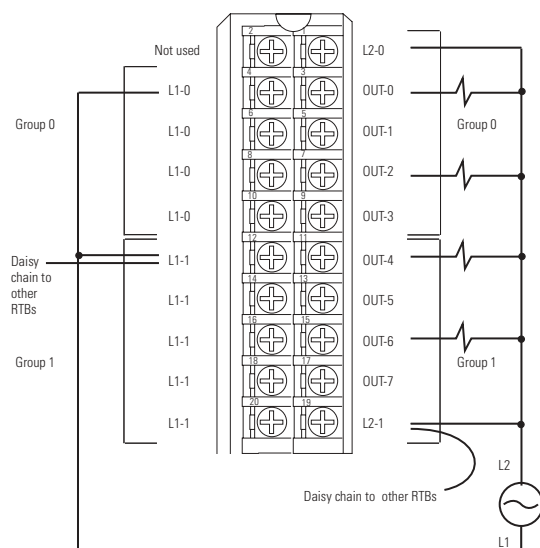
- NOTES: 1. All terminals with the same name are connected together on the module. For example, L1 can be connected to either terminal marked L1-0.  
 2. When you use the second L1-15 terminal to daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.

1756-0A8

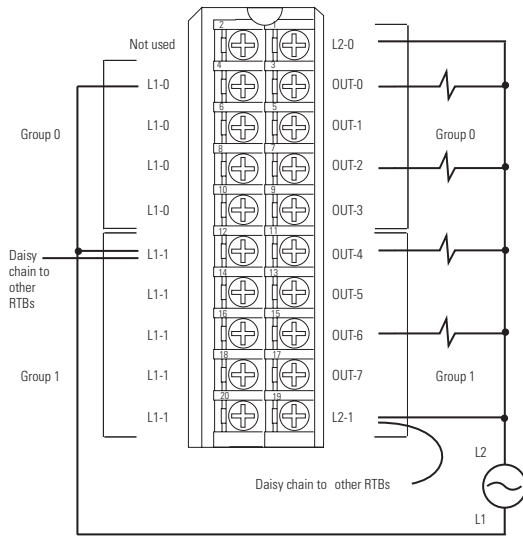


- NOTES: 1. All terminals with the same name are connected together on the module. For example, L1 can be connected to any terminal marked L1-0.  
 2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.  
 3. This wiring example shows a single voltage source.

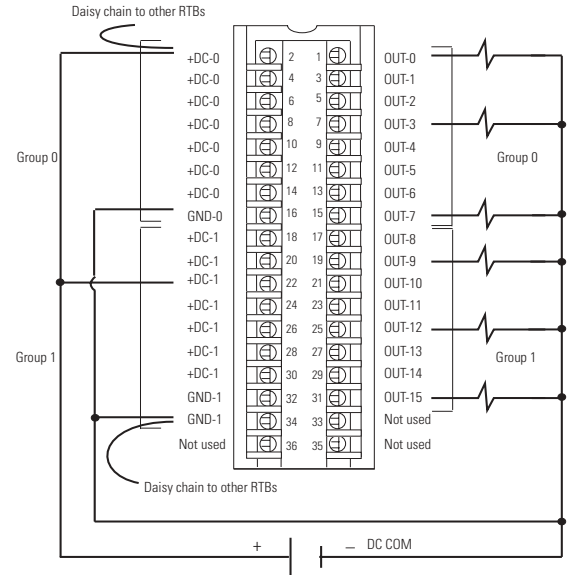
1756-0A8D



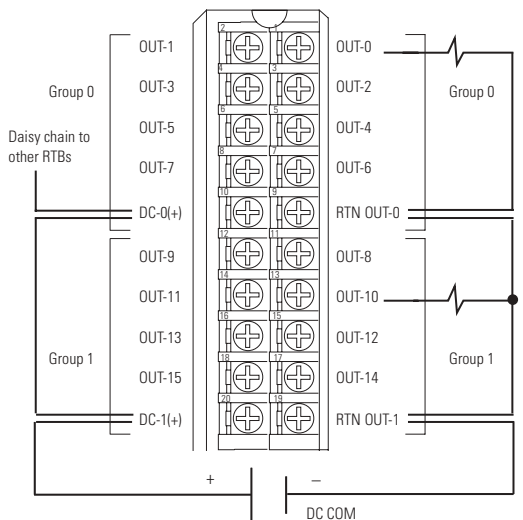
- NOTES: 1. All terminals with the same name are connected together on the module. For example, L1 can be connected to any terminal marked L1-0.  
 2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.  
 3. This wiring example shows a single voltage source.

**1756-0A8E**

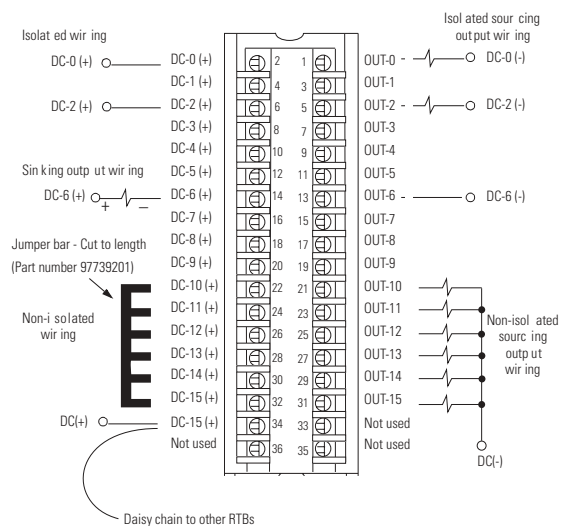
- NOTES:
1. All terminals with the same name are connected together on the module. For example, L1 can be connected to any terminal marked L1-0.
  2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.

**1756-0B16D**

- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC COM can be connected to either terminal marked GND-1.
  2. When you daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.
  4. If separate power sources are used, do not exceed the specified isolation voltage.

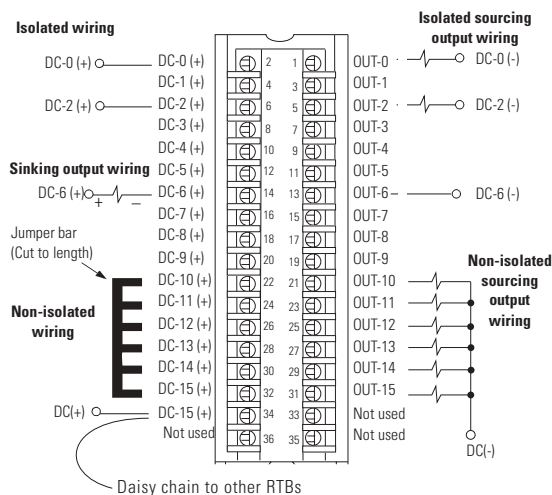
**1756-0B16E**

- NOTES:
1. When you daisy chain from a group to another RTB, always connect the daisy chain as shown above. Do not connect more than 2 wires to any single terminal.
  2. This wiring example shows a single voltage source.
  3. If separate power sources are used, do not exceed the specified isolation voltage.

**1756-0B16I**

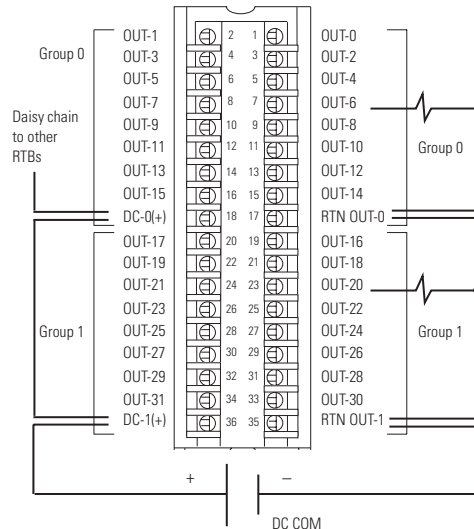
- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC (+) can be connected to either terminal marked DC-15.
  2. When you use the second DC-15 (+) terminal to daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
  3. Outputs can be wired in a sink or source configuration as shown above.
  4. If separate power sources are used, do not exceed the specified isolation voltages.

1756-OB16IS



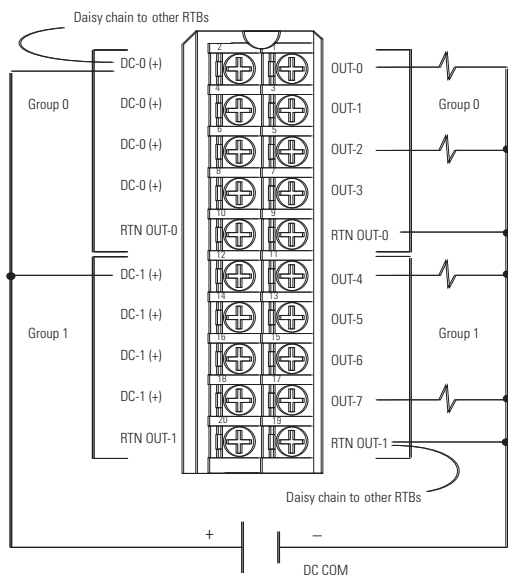
- NOTES: 1. All terminals with the same name are connected together on the module. For example, DC (+) can be connected to either terminal marked DC-15.
2. When you use the second DC-15 (+) terminal to daisy chain to other RTBs, always connect the daisy chain as shown in the example above. Do not connect more than 2 wires to any single terminal.
  3. Outputs can be wired in a sink or source configuration as shown above.
  4. If separate power sources are used, do not exceed the specified isolation voltages.

**1756-OB32**



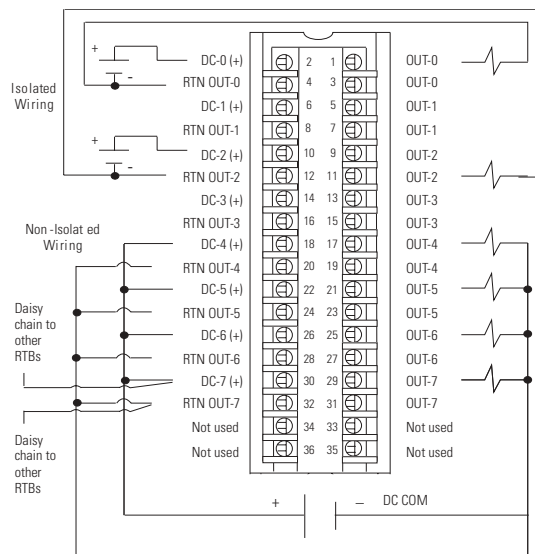
- NOTES: 1. When you daisy chain from a group to another RTB, always connect the daisy chain as shown above. Do not connect more than 2 wires to any single terminal.
2. This wiring example uses a single voltage source.
3. If separate power sources are used, do not exceed the specified isolation voltage.

**1756-OB8**



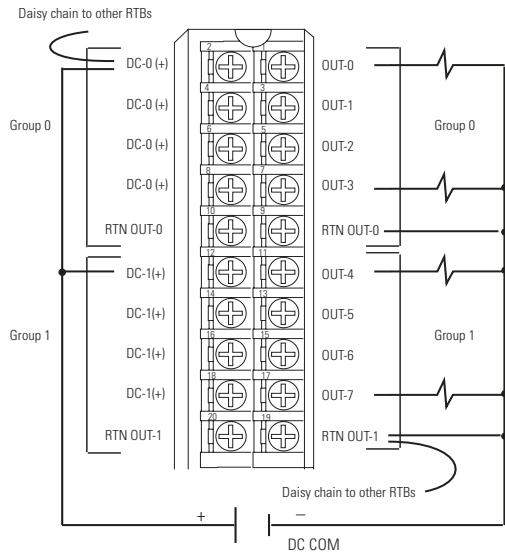
- NOTES:
1. All terminals with the same name are connected on the module. For example, DC COM can be connected to either terminal marked RTN OUT-1.
  2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown.  
Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.
  4. If separate power sources are used, do not exceed the specified isolation voltage.

**1756-0B8EI**

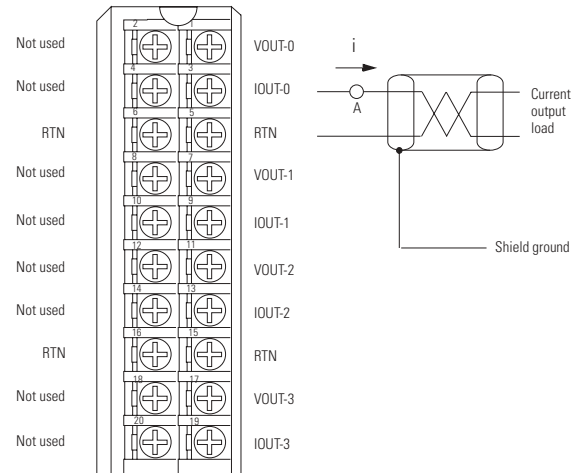


- NOTES**
1. All terminals with the same name are connected together on the module. For example, the load can be connected to either terminal marked OUT-0.
  2. When you daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above.  
Do not connect more than 2 wires to any single terminal.
  3. If separate power sources are used, do not exceed the specified isolation voltage.

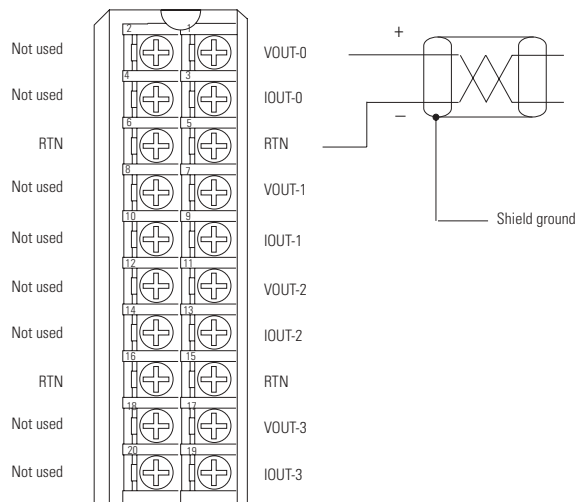


**1756-0C8**

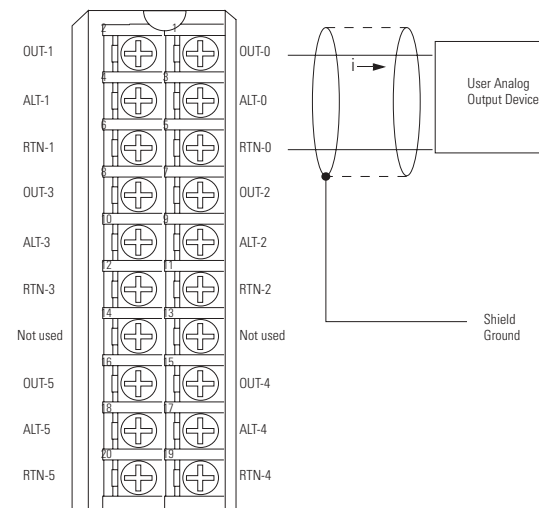
- NOTES:
1. All terminals with the same name are connected together on the module. For example, DC COM can be connected to either terminal marked RTN OUT-1.
  2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.
  4. If separate power sources are used, do not exceed the specified isolation voltage.

**1756-0F4 – Current Applications**

- NOTES:
1. Place additional loop devices (e.g strip chart recorders) at the A location shown above.
  2. Do not connect more than 2 wires to any single terminal.
  3. All RTN terminals are connected internally.

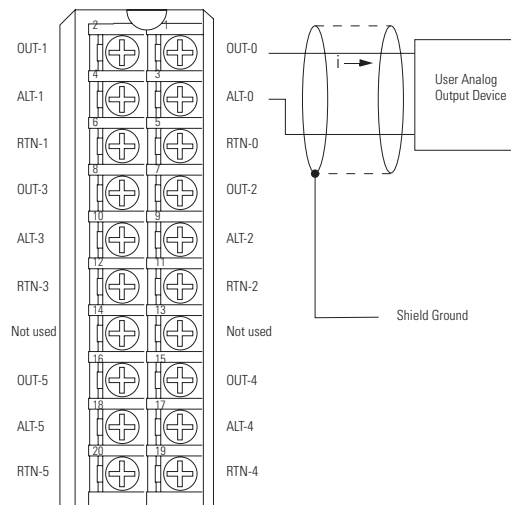
**1756-0F4 – Voltage Applications**

- NOTES:
1. Do not connect more than 2 wires to any single terminal.
  2. All RTN terminals are connected internally.

**1756-0F6CI – 0 - 550Ω Applications**

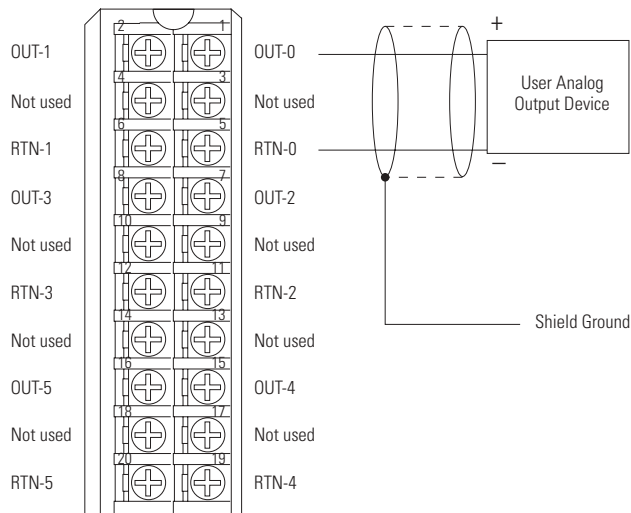
- NOTES:
1. Place additional devices anywhere in the loop.
  2. Do not connect more than 2 wires to any single terminal.

### 1756-OF6CI – 551 - 1000 $\Omega$ Applications



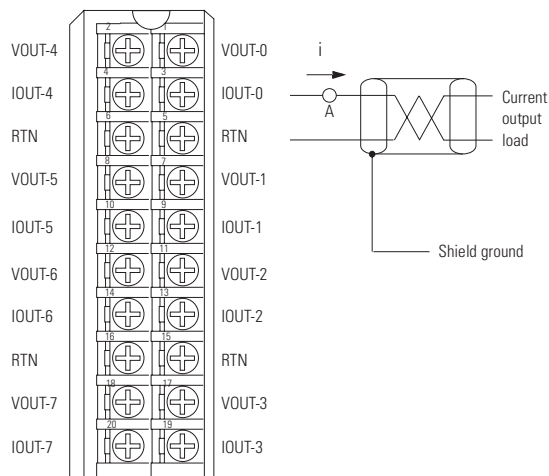
- NOTES:
1. Place additional devices anywhere in the loop.
  2. Do not connect more than 2 wires to any single terminal.

### 1756-OF6VI



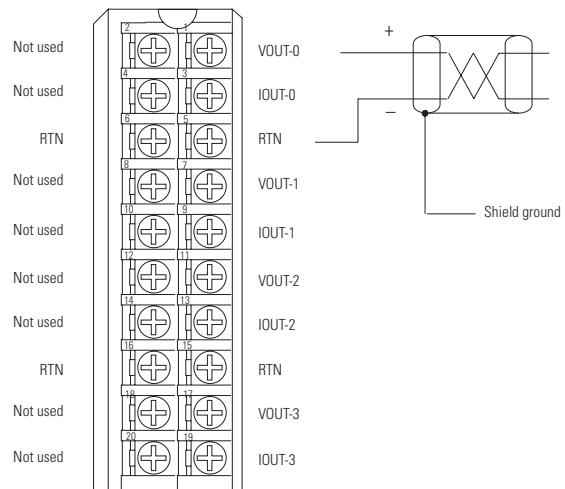
- NOTES:
1. Do not connect more than 2 wires to any single terminal.

### 1756-OF8 – Current Applications

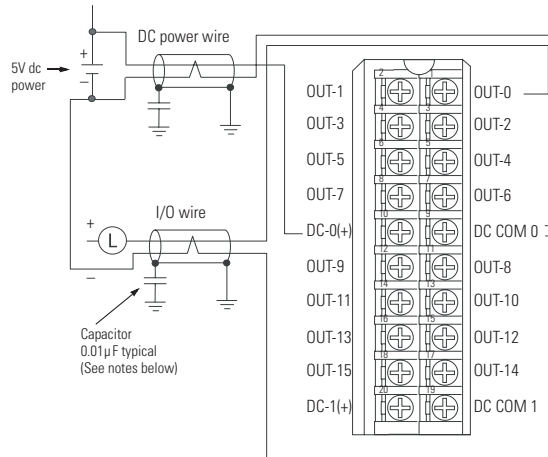


- NOTES:
1. Place additional loop devices (e.g strip chart recorders) at the A location shown above.
  2. Do not connect more than 2 wires to any single terminal.
  3. All RTN terminals are connected internally.

### 1756-OF8 – Voltage Applications



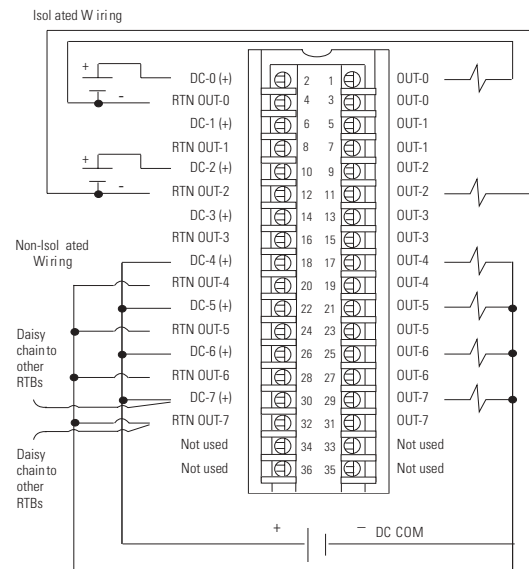
- NOTES:
1. Do not connect more than 2 wires to any single terminal.
  2. All RTN terminals are connected internally.

**1756-0G16****GENERAL NOTES:**

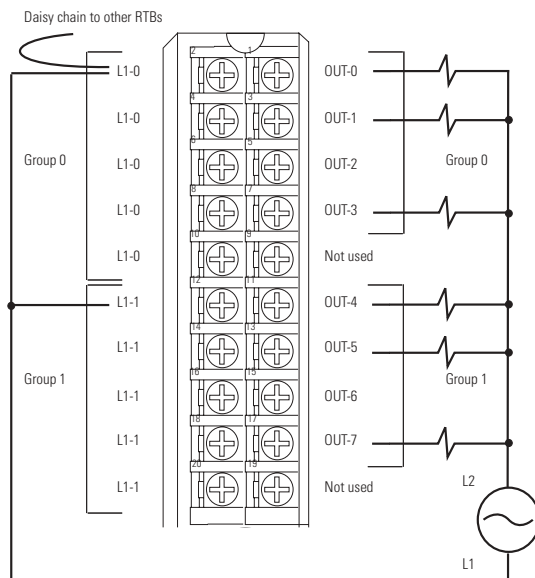
1. We recommend you use Belden M 8761 cable where shielded cables are shown.
2. Do not connect more than two wires to any single terminal.

**CE REQUIREMENT NOTES:**

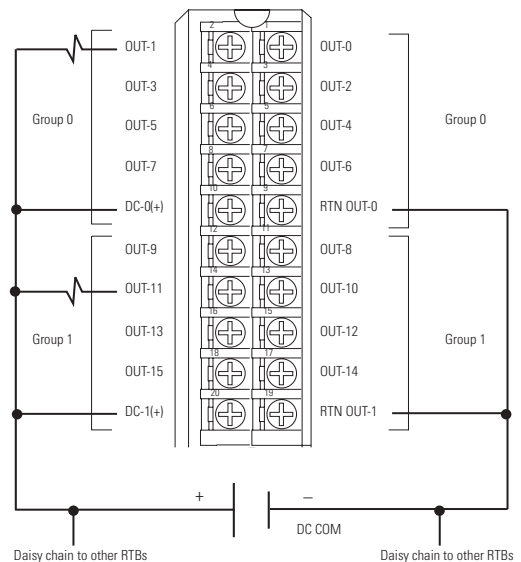
1. DC power wire and I/O wire should not exceed 10m (30ft) in length.
2. The 0.01 μF capacitors shown must be rated for 2000V dc.

**1756-0H8I****NOTES**

1. All terminals with the same name are connected together on the module. For example, the load can be connected to either terminal marked OUT-0.
2. When you daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
3. If separate power sources are used, do not exceed the specified isolation voltage.

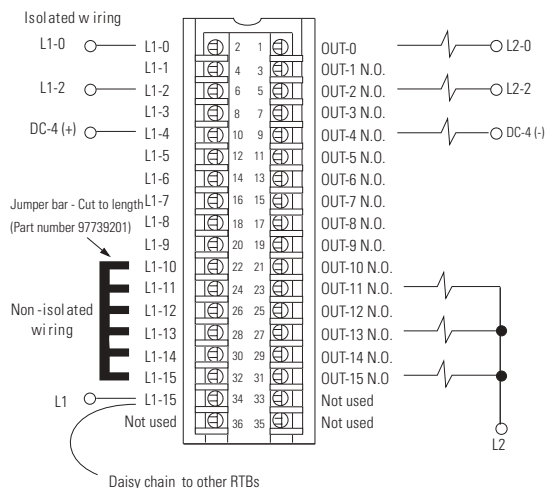
**1756-0N8**

- NOTES:**
1. All terminals with the same name are connected together on the module. For example, L1 can be connected to any terminal marked L1-1.
  2. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
  3. This wiring example shows a single voltage source.

**1756-0V16E**

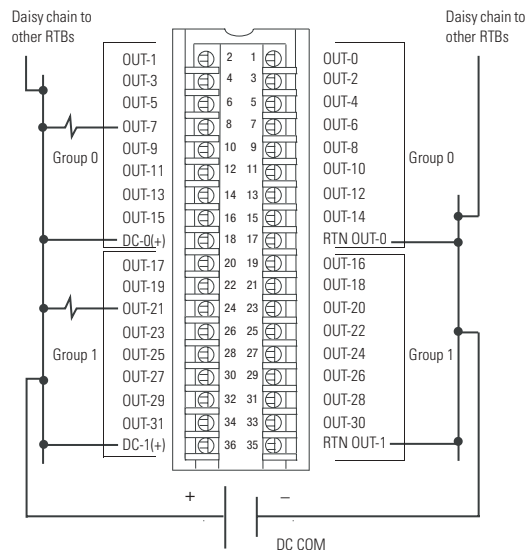
- NOTES:**
1. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above. Do not connect more than 2 wires to any single terminal.
  2. This wiring example shows a single voltage source.
  3. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-OW16I



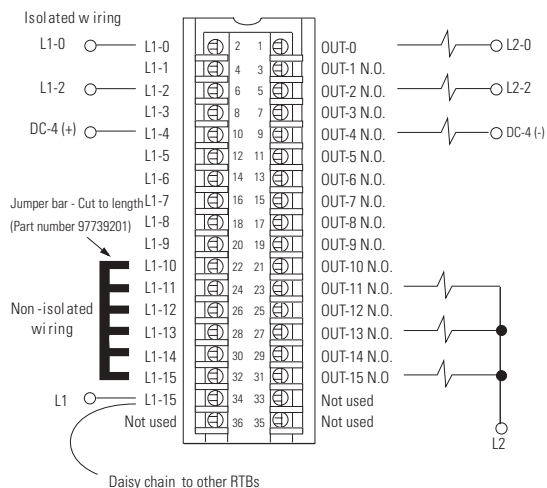
- NOTES: 1. All terminals with the same name are connected together on the module. For example, L1 can be connected to either terminal marked L1-15.
2. When daisy chaining the second L1-15 terminal to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
3. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-OV32E



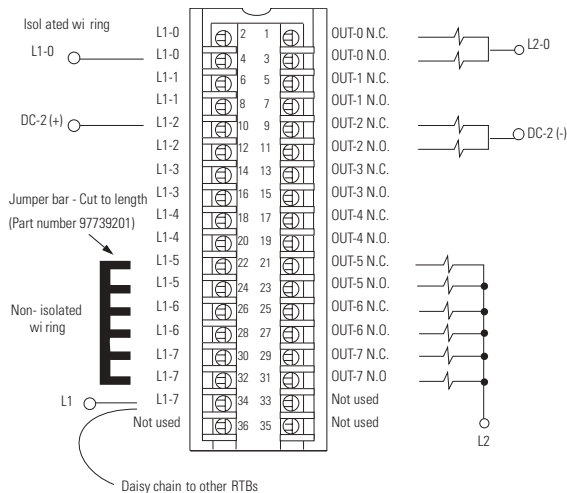
- NOTES: 1. When you daisy chain from a group to another RTB, always connect the daisy chain to the terminal directly connected to the supply wire, as shown above.
2. This wiring example uses a single voltage source.
3. If separate power sources are used, do not exceed the specified isolation voltage.
4. Do not physically connect more than two wires to a single RTB terminal.

## 1756-OW16I



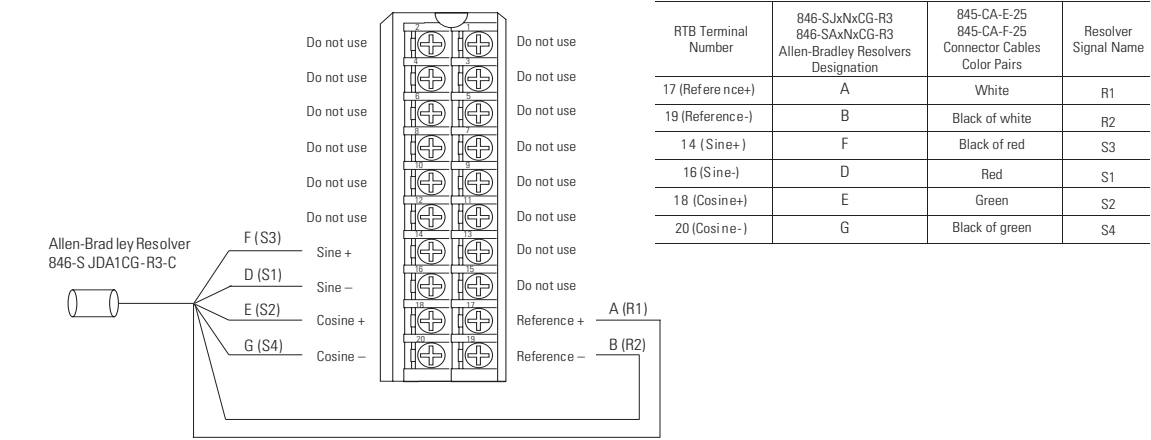
- NOTES: 1. All terminals with the same name are connected together on the module. For example, L1 can be connected to either terminal marked L1-15.
2. When daisy chaining the second L1-15 terminal to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
3. If separate power sources are used, do not exceed the specified isolation voltage.

## 1756-OX8I



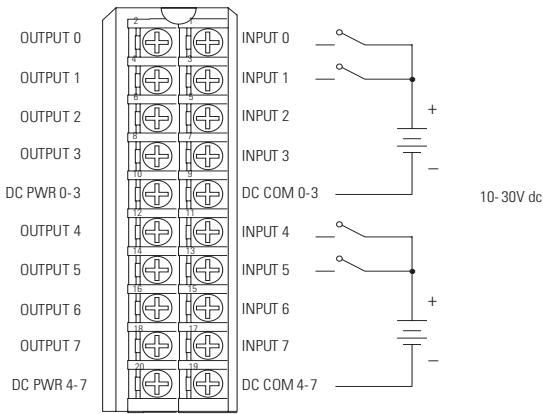
- NOTES: 1. All terminals with the same name are connected together on the module. For example, L1-0 can be connected to either terminal marked L1-0.
2. When you use the third L1-7 terminal to daisy chain to other RTBs, always connect the daisy chain to the terminal directly connected to the supply wire, as shown in the example above. Do not connect more than 2 wires to any single terminal.
3. If separate power sources are used, do not exceed the specified isolation voltage.

1756-PLS Resolver Module



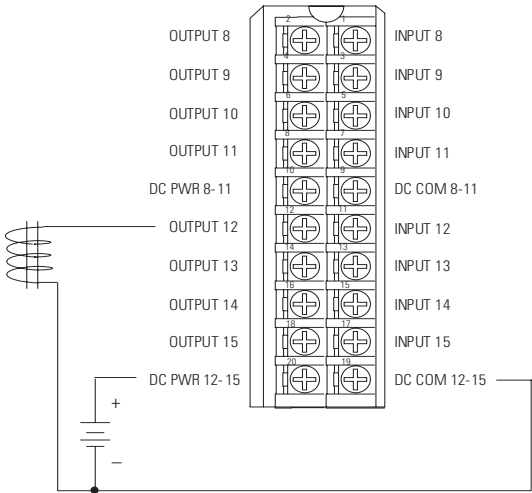
NOTE: Do not connect more than 2 wires to any single terminal.

1756-PLS Left Section I/O Module



NOTE: Do not connect more than 2 wires to any single terminal.

1756-PLS Right Section I/O Module



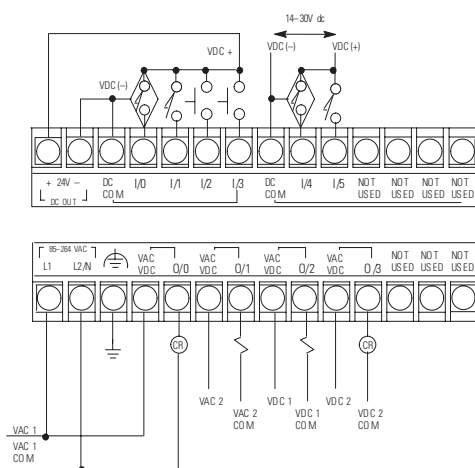
NOTE: Do not connect more than 2 wires to any single terminal.

## Notes:

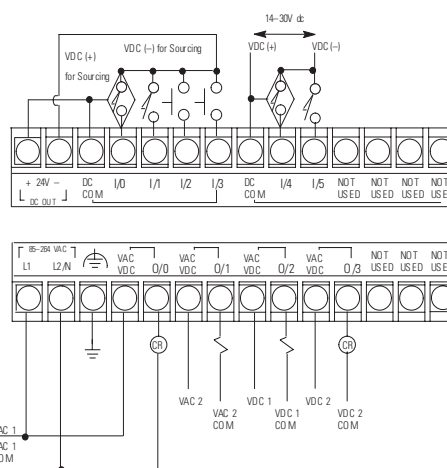
## 1761 Controller I/O on MicroLogix 1000 Controllers

### 1761-L10BWA

Sinking Input Configuration

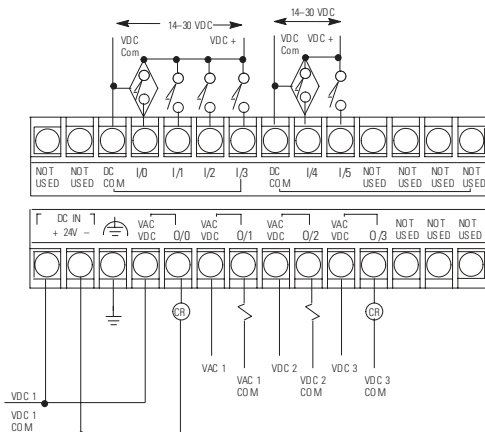


Sourcing Input Configuration

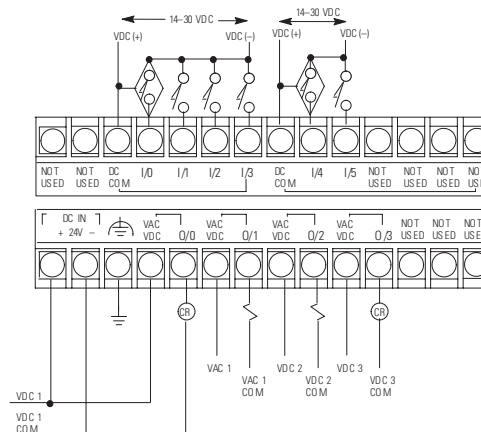


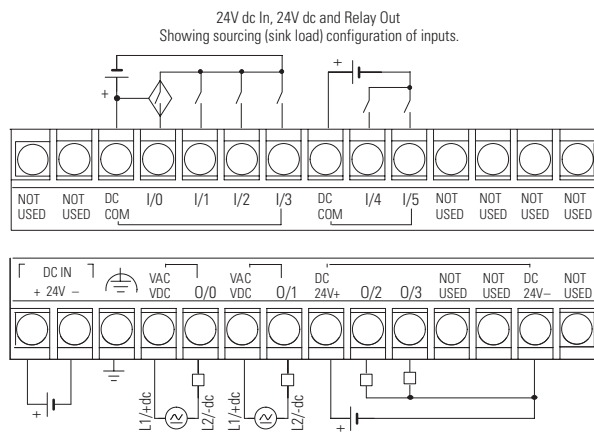
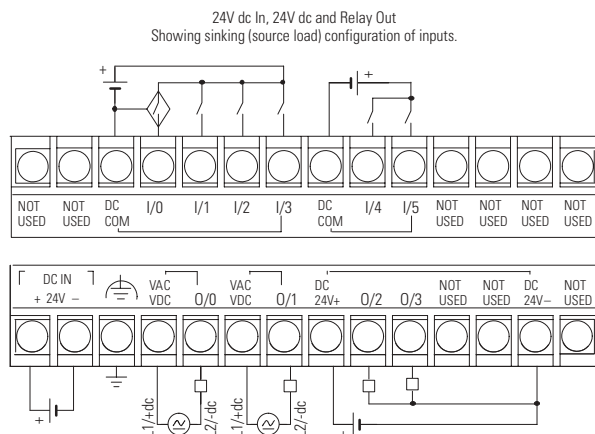
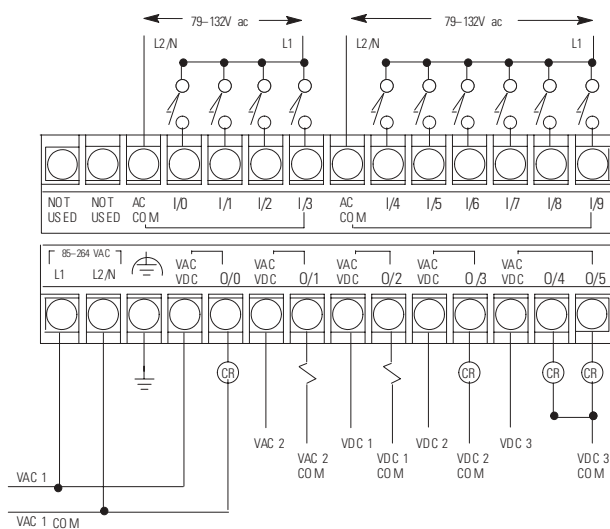
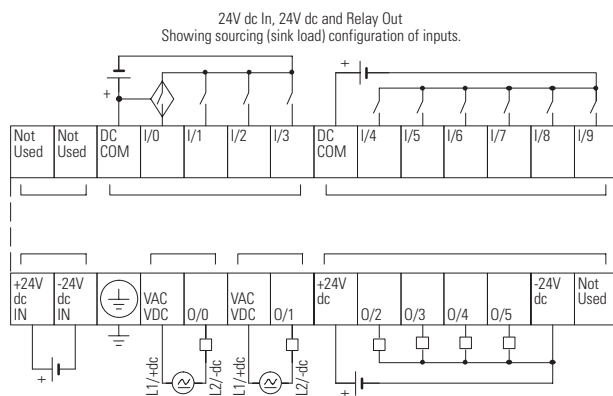
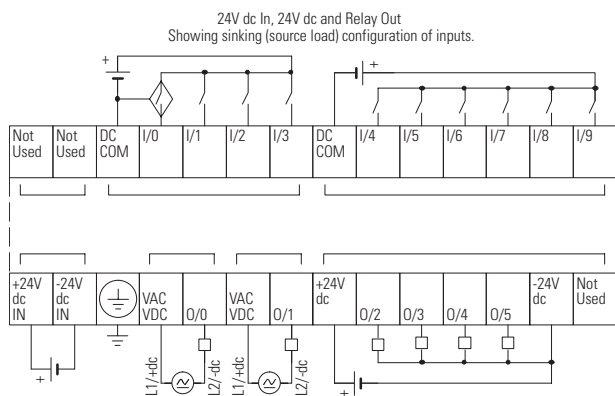
### 1761-L10BWB

Sinking Input Configuration

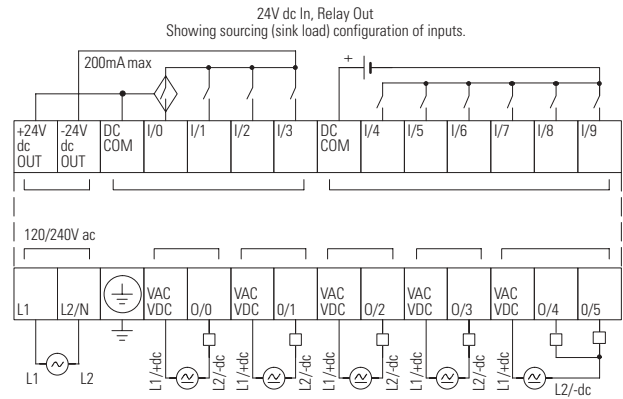
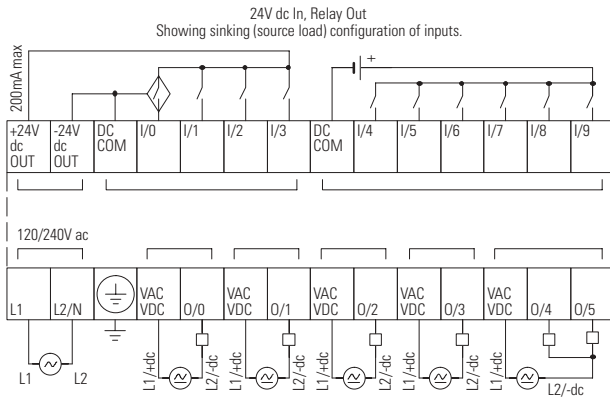
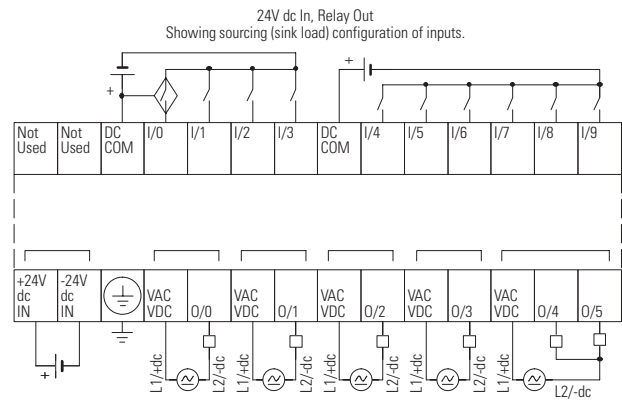
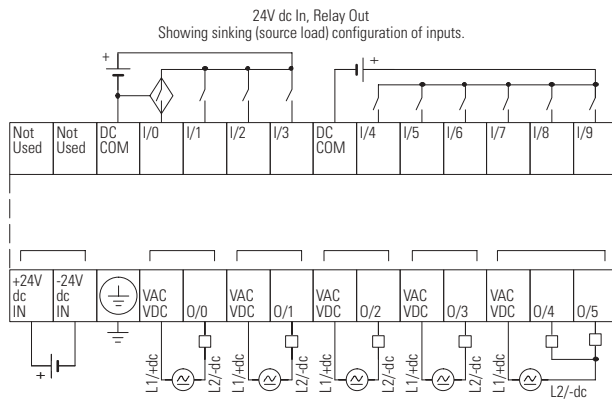
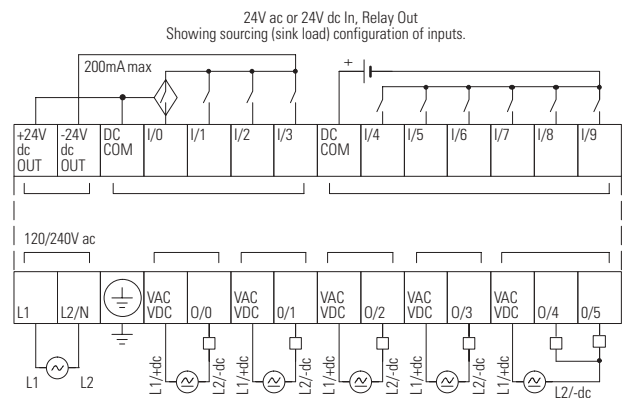
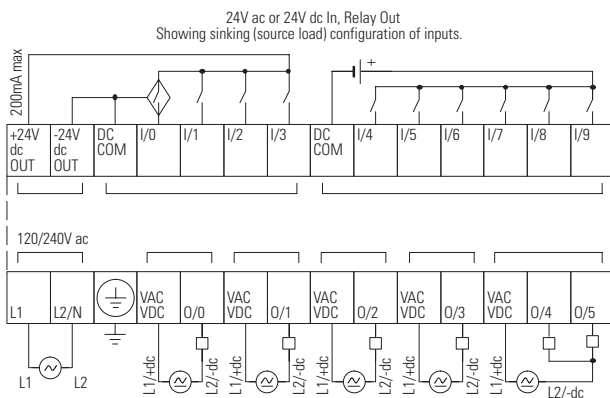


Sourcing Input Configuration



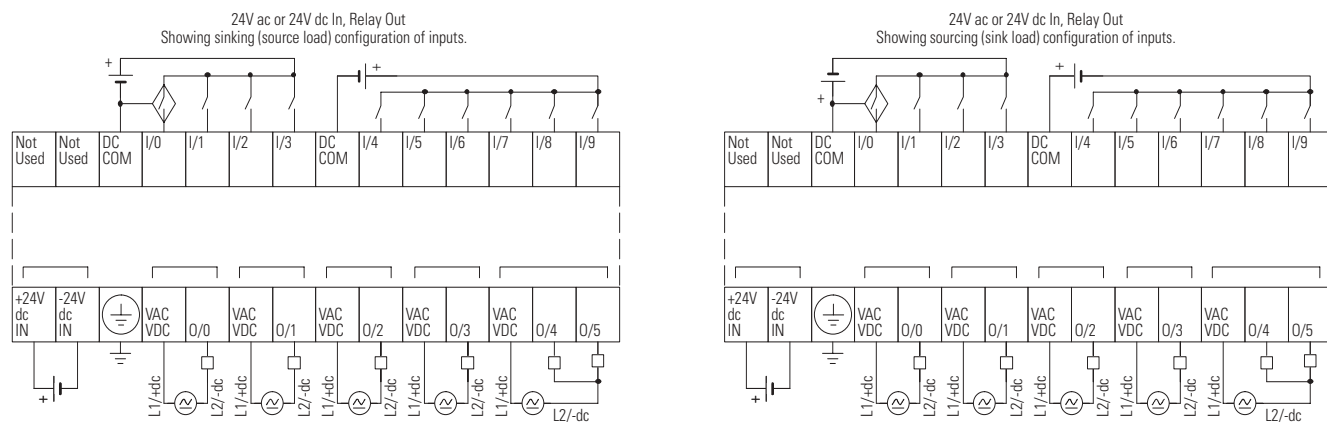
**1761-L10BxB****1761-L16AWA****1761-L16BBB**



**1761-L16BWA****1761-L16BWB****1761-L16NWA**

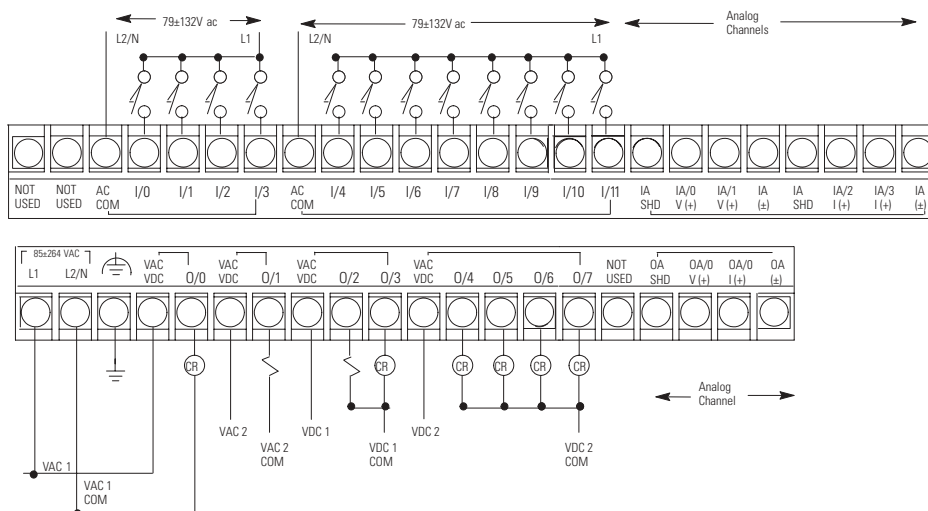
Input circuits on this module are capable of 24V ac or 24V dc operation.

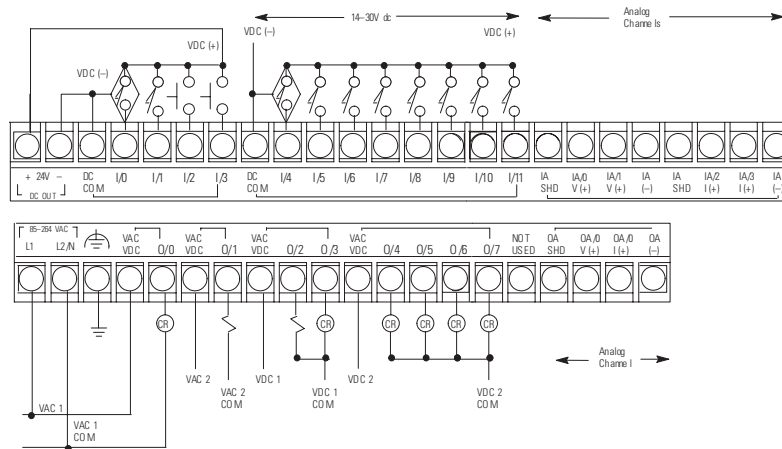
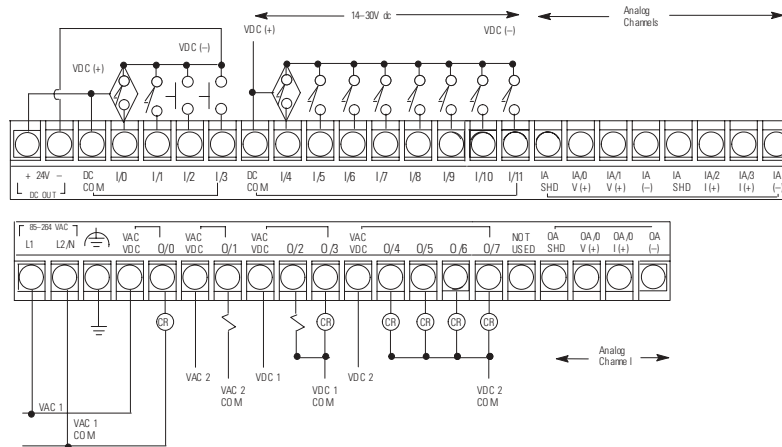
### 1761-L16NWB



Input circuits on this module are capable of 24V ac or 24V dc operation.

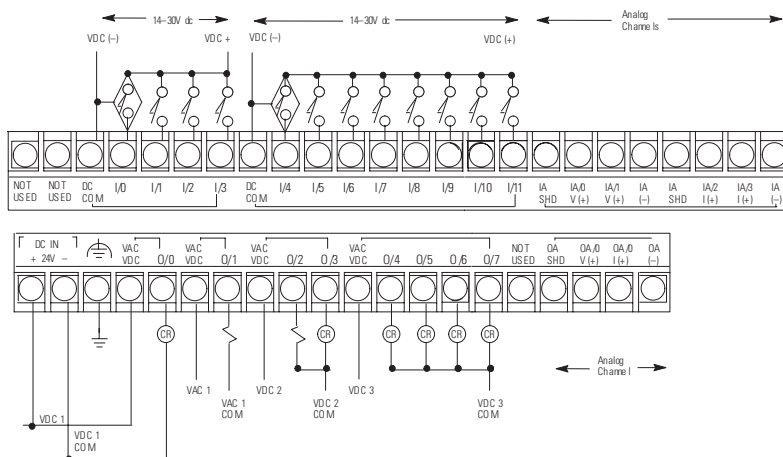
### 1761-L20AWA-5A



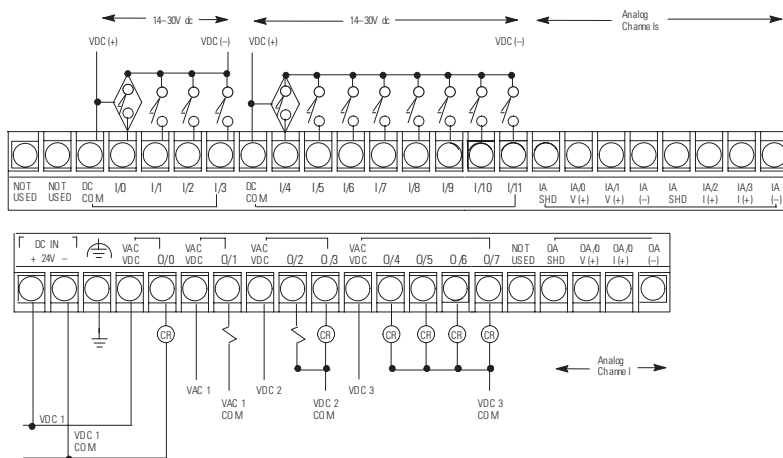
**1761-L20BWA-5A****Sinking Input Configuration****Sourcing Input Configuration**

### 1761-L20BWB-5A

#### Sinking Input Configuration

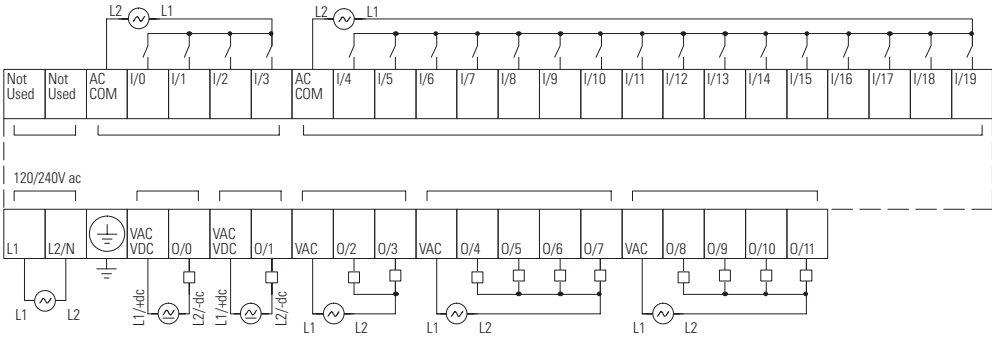


#### Sourcing Input Configuration



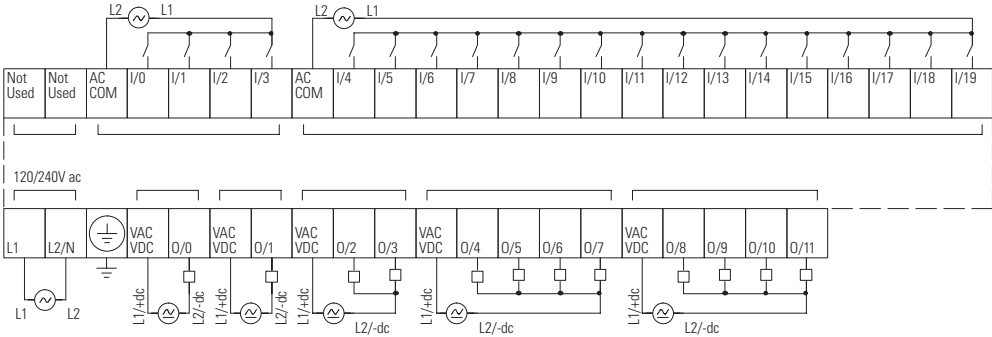
**1761-L32AAA**

120V ac In, 120/240V ac and Relay Out



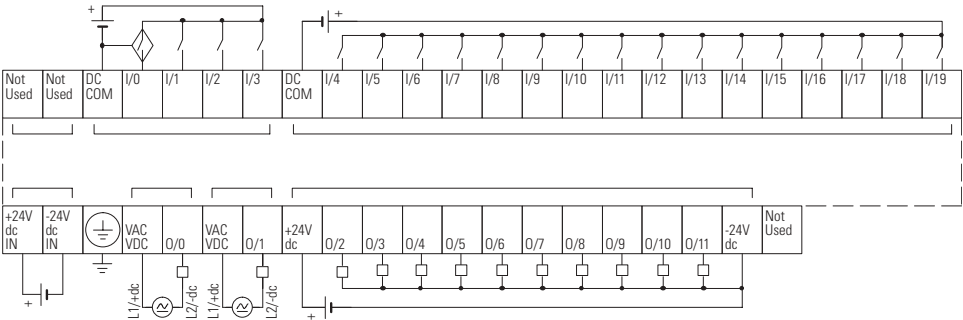
**1761-L32AWA**

120V ac In, Relay Out

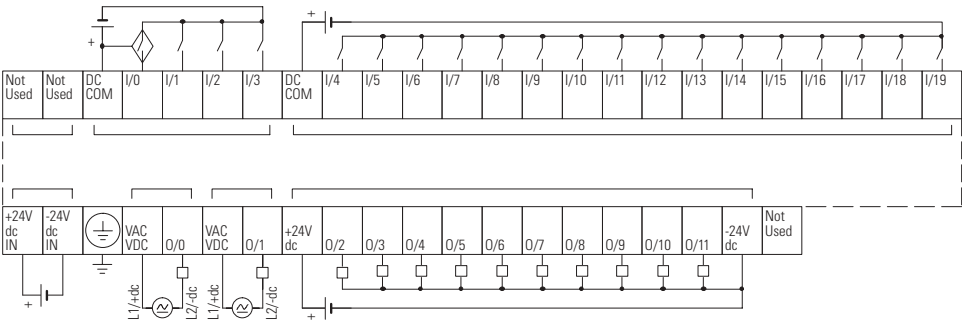


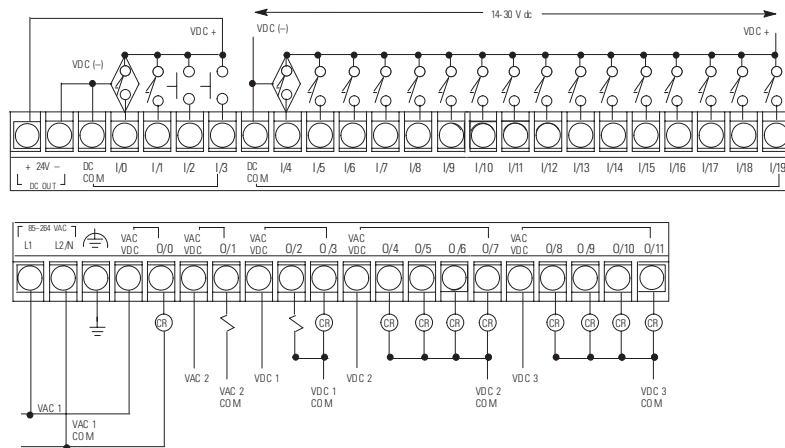
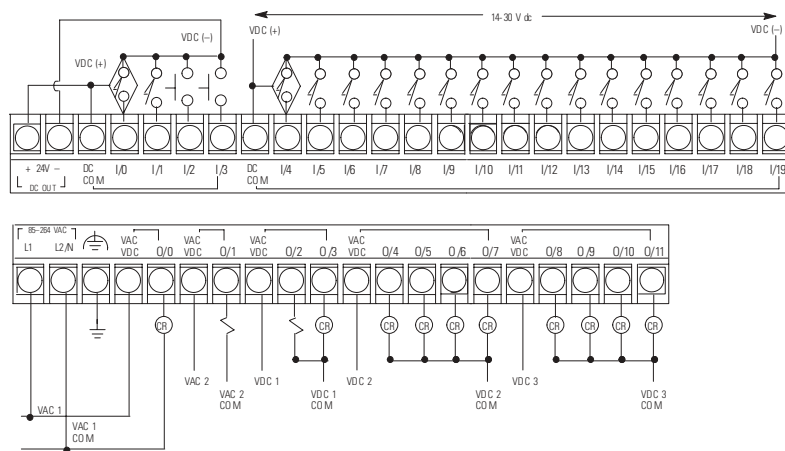
1761-L32BBB

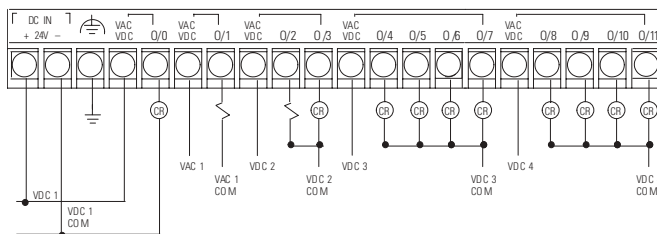
24V dc In, 24V dc and Relay Out  
Showing sinking (source load) configuration of inputs.



24V dc In, 24V dc and Relay Out  
Showing sourcing (sink load) configuration of inputs.



**1761-L32BWA****Sinking Input Configuration****Sourcing Input Configuration**





# 1762 I/O on MicroLogix 1200 Controllers

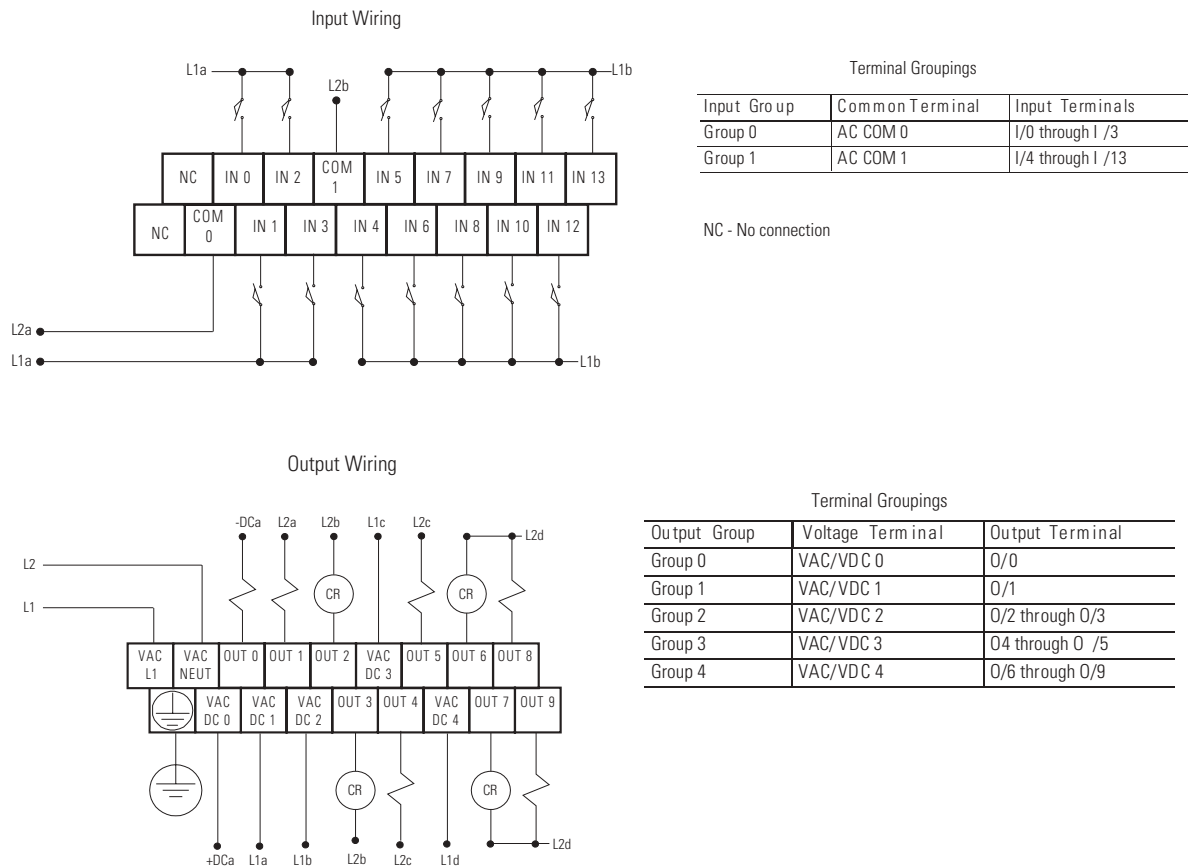
Unlike the other product sections in this document, this section does not list the 1762 catalog numbers in alphabetical order; instead, we first list the embedded controller I/O catalog numbers first because of their regular use in most 1762 applications.

**IMPORTANT**

As you use this section, keep the following in mind:

- Catalog numbers that begin with 1762-Lxx (e.g. 1762-L24AWA) represent embedded I/O products
- Catalog numbers that begin in any combination other than 1762-Lxx (e.g. 1762-IA8) represent expansion I/O products

## 1762-L24AWA



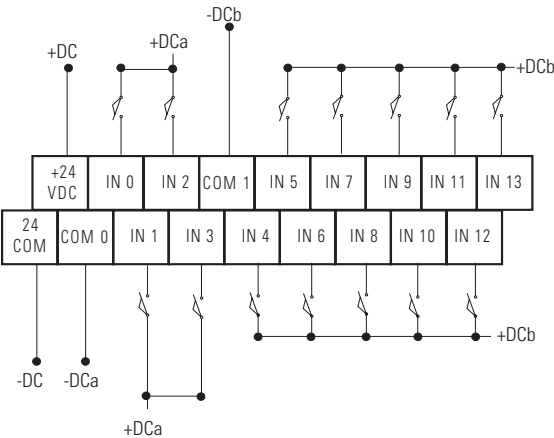
Output Wiring

Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VAC/VDC 2	O/2 through O/3
Group 3	VAC/VDC 3	O4 through O /5
Group 4	VAC/VDC 4	O/6 through O/9

1762-L24BWA

Sinking Input Wiring



Terminal Groupings

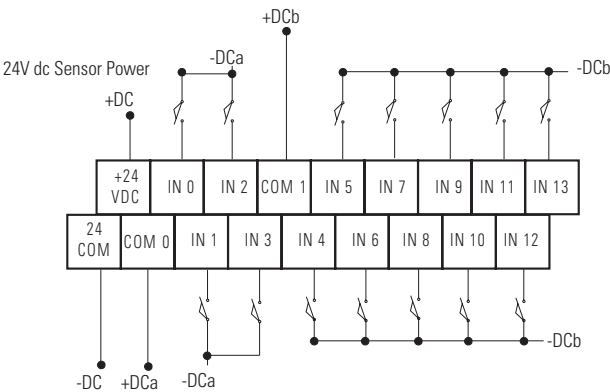
Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I /3
Group 1	DC COM 1	I/4 through I /13

ATTENTION



The 24V dc sensor power source must not be used to power output circuits. It should only be used to power input devices (e.g. sensors, switches).

Sourcing Input Wiring



Terminal Groupings

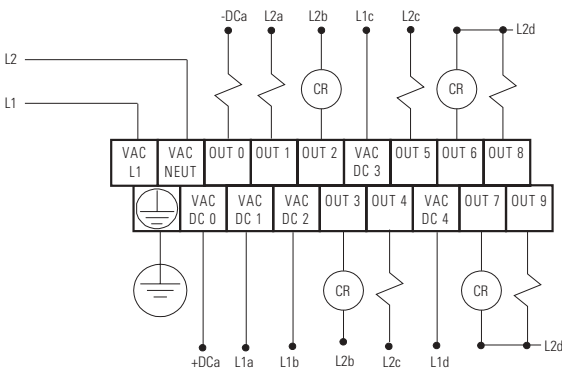
Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I /3
Group 1	DC COM 1	I/4 through I /13

ATTENTION



The 24V dc sensor power source must not be used to power output circuits. It should only be used to power input devices (e.g. sensors, switches).

Output Wiring

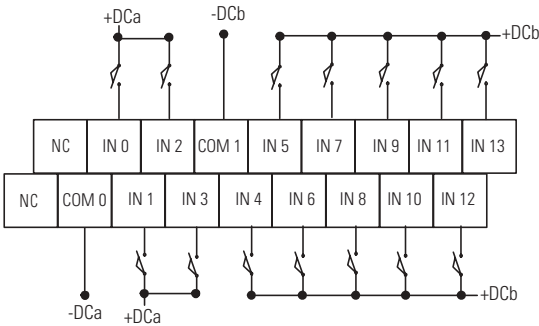


Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VAC/VDC 2	O/2 through O/3
Group 3	VAC/VDC 3	O4 through O /5
Group 4	VAC/VDC 4	O/6 through O/9

1762-L24BXB

Sinking Input Wiring

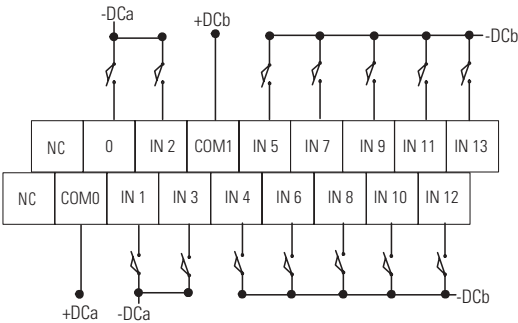


Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I /3
Group 1	DC COM 1	I/4 through I /13
Group 0	AC COM 0	I/0 through I /3

NC - No connection

Sourcing Input Wiring

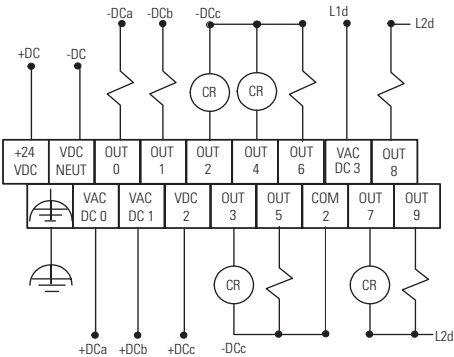


Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I /3
Group 1	DC COM 1	I/4 through I /13
Group 0	AC COM 0	I/0 through I /3

NC - No connection

Output Wiring

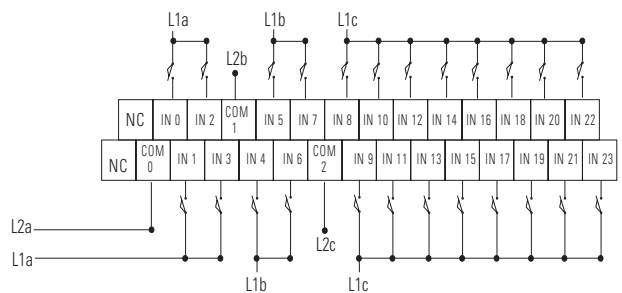


Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VDC 2, VDC COM 2	O/2 through O/6
Group 3	VAC/VDC 3	O/7 through O/9

1762-L40AWA

Input Wiring

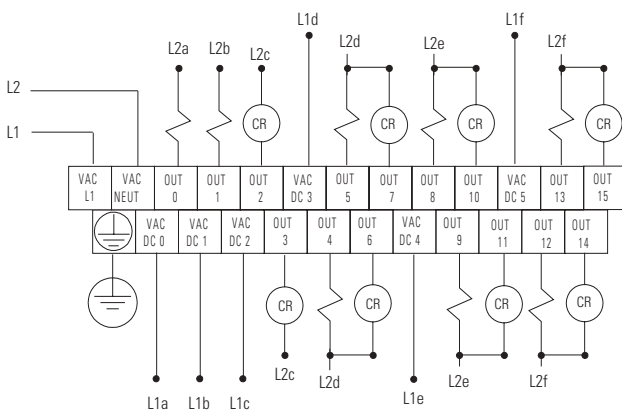


Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	AC COM 0	I/0 through I/3
Group 1	AC COM 1	I/4 through I/7
Group 2	AC COM 2	I/8 through I/23

NC - No connection

Output Wiring

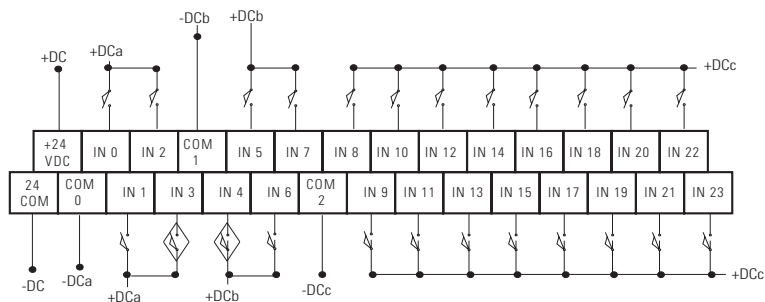


Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VAC/VDC 2	O/2 through O/3
Group 3	VAC/VDC 3	O/4 through O/7
Group 4	VAC/VDC 4	O/8 through O/11
Group 5	VAC/VDC 5	O/12 through O/15

1762-L40BWA

Sinking Input Wiring



Terminal Groupings

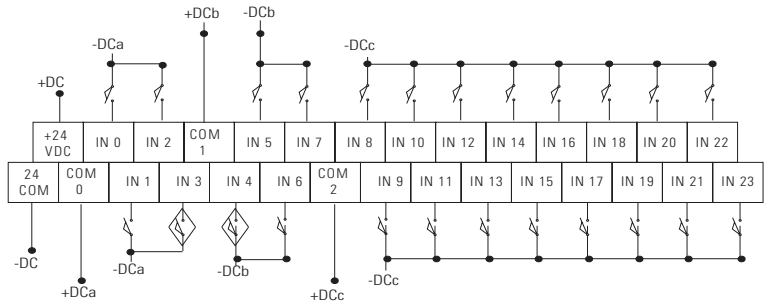
Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/23

ATTENTION



The 24V dc sensor power source must not be used to power output circuits. It should only be used to power input devices (e.g. sensors, switches).

Sourcing Input Wiring



Terminal Groupings

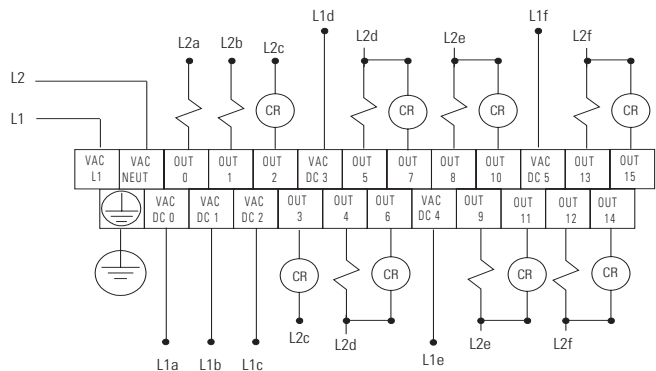
Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/23

ATTENTION



The 24V dc sensor power source must not be used to power output circuits. It should only be used to power input devices (e.g. sensors, switches).

Output Wiring

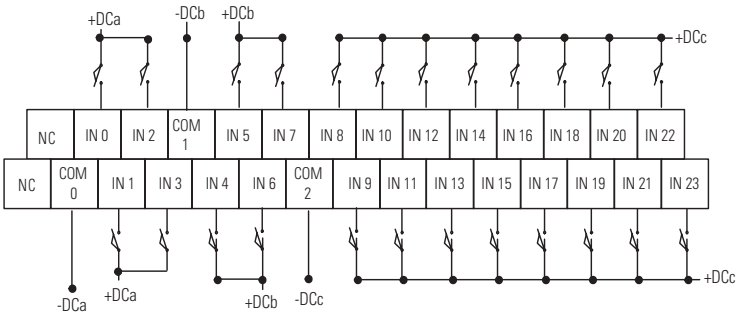


Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VAC/VDC 2	O/2 through O/3
Group 3	VAC/VDC 3	O/4 through O/7
Group 4	VAC/VDC 4	O/8 through O/11
Group 5	VAC/VDC 5	O/12 through O/15

1762-L40BXB

Sinking Input Wiring

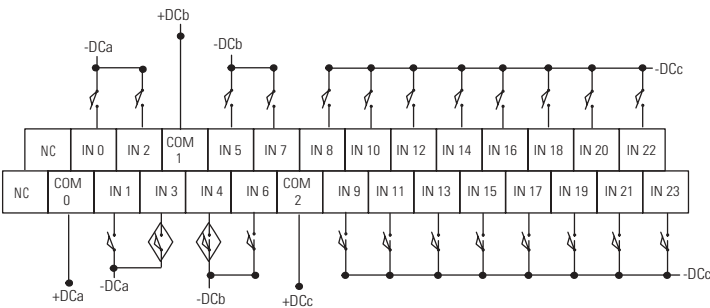


Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/23

NC - No connection

Sourcing Input Wiring

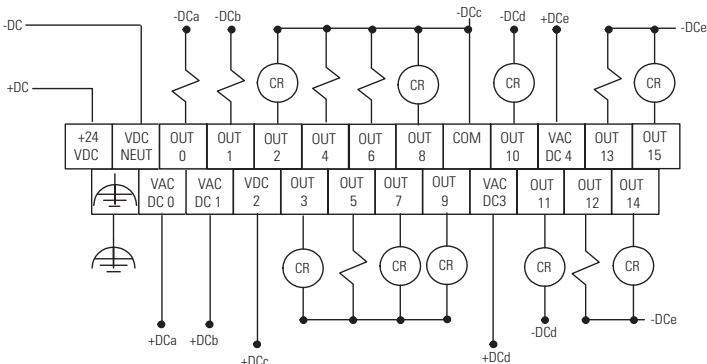


Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/23

NC - No connection

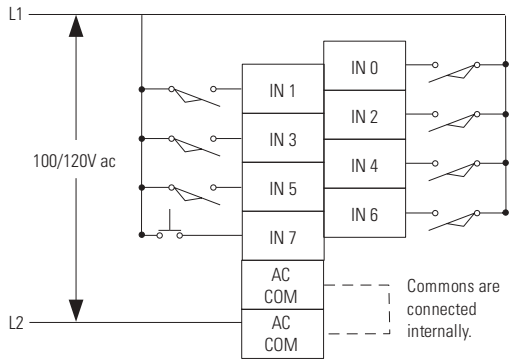
Output Wiring



Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VDC 2, VDC COM 2	O/2 through O/9
Group 3	VAC/VDC 3	O/10 through O/11
Group 4	VAC/VDC 4	O/12 through O/15

1762-IA8



ATTENTION



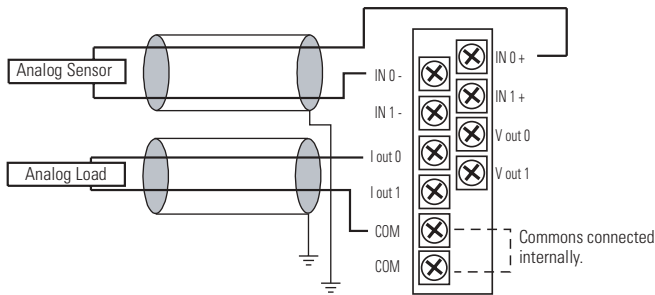
Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

A current limiting resistor can be used to limit inrush current; however, the operating characteristics of the ac input circuit will be affected. If a 6.8KΩ resistor is placed in series with the input, the inrush current is reduced to 35 mA. In this configuration the minimum on-state voltage increases to 92V ac. Before adding the resistor in a hazardous environment, be sure to consider the operating temperature of the resistor and the temperature limits of the environment. The operating temperature of the resistor must remain below the temperature limit of the environment.

Also, this product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Additional grounding connections from the module's mounting tabs or DIN rail (if used) are not required unless the mounting surface cannot be grounded.

1762-IF40F2

Differential Sensor Transmitter Types

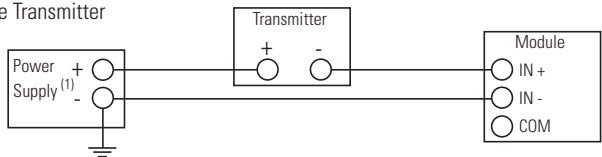


ATTENTION

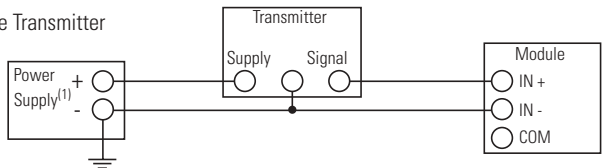


Analog outputs may fluctuate for less than a second when power is applied or removed. This characteristic is common to most analog outputs. While the majority of loads will not recognize this short signal, it is recommended that preventive measures be taken to ensure that connected equipment is not affected.

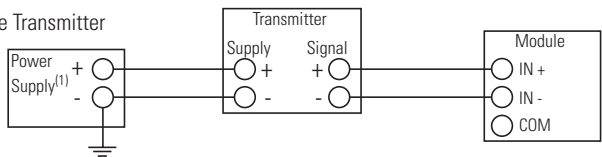
2-Wire Transmitter



3-Wire Transmitter



4-Wire Transmitter



Grounding the cable shield at the module end only usually provides sufficient noise immunity. However, for best cable shield performance, earth ground the shield at both ends, using a 0.01μF capacitor at one end to block AC power ground currents, if necessary.

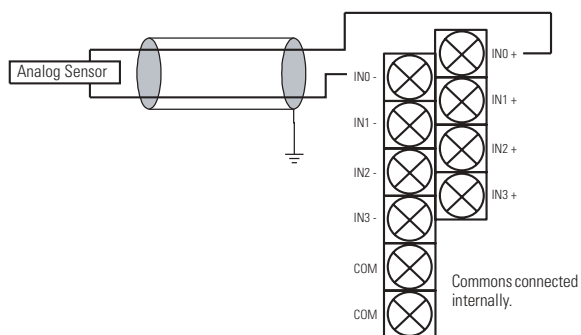
All power supplies rated N.E.C. Class 2.

Select the input type, current or voltage, using the switch located on the module's circuit board and the input type/range selection bits in the Configuration Data File.

The output type selection, current or voltage, is made by wiring to the appropriate terminals, Iout or Vout, and by the type/range selection bits in the Configuration Data File.

**1762-IF4**

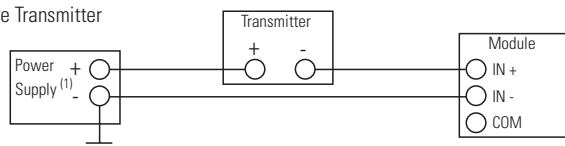
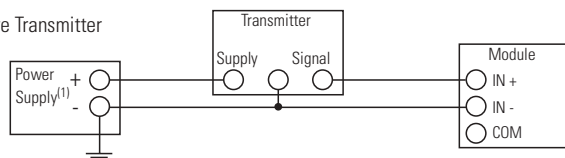
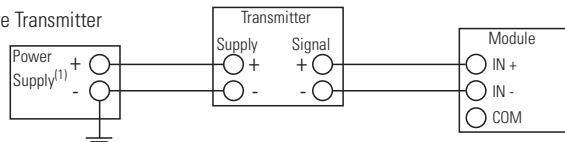
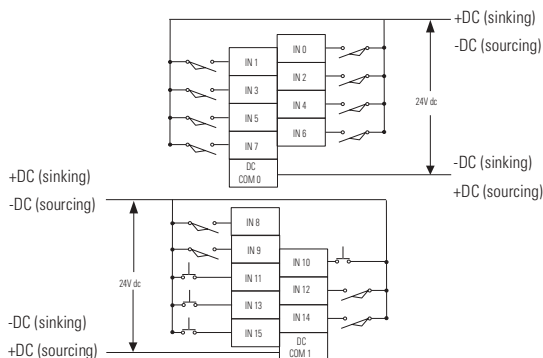
## Differential Sensor Transmitter Types



Grounding the cable shield at the module end only usually provides sufficient noise immunity. However, for best cable shield performance, earth ground the shield at both ends, using a 0.01µF capacitor at one end to block AC power ground currents, if necessary.

All power supplies rated N.E.C. Class 2.

Select the input type, current or voltage, using the switch located on the module's circuit board and the input type/range selection bits in the Configuration Data File.

**2-Wire Transmitter****3-Wire Transmitter****4-Wire Transmitter****1762-IQ16****ATTENTION**

Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

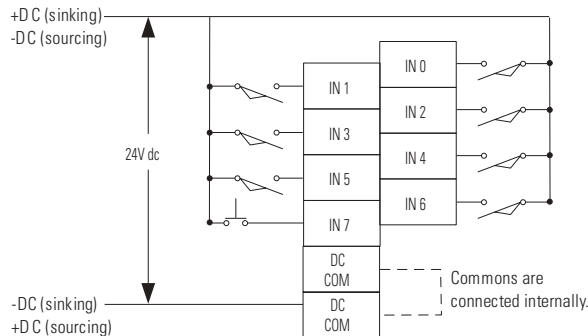
Miswiring of the module to an AC power source will damage the module.

**Sinking/Sourcing Inputs** - Sourcing/sinking describes the current flow between the I/O module and the field device. Sourcing I/O circuits supply (source) current to sinking field devices. Sinking I/O circuits are driven by a current sourcing field device. Field devices connected to the negative side (DC Common) of the field power supply are sinking field devices. Field devices connected to the positive side (+V) of the field supply are sourcing field devices.

Also, this product is intended to be mounted to a well-grounded mounting surface such as a metal panel.



**1762-IQ8**

**ATTENTION**

Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

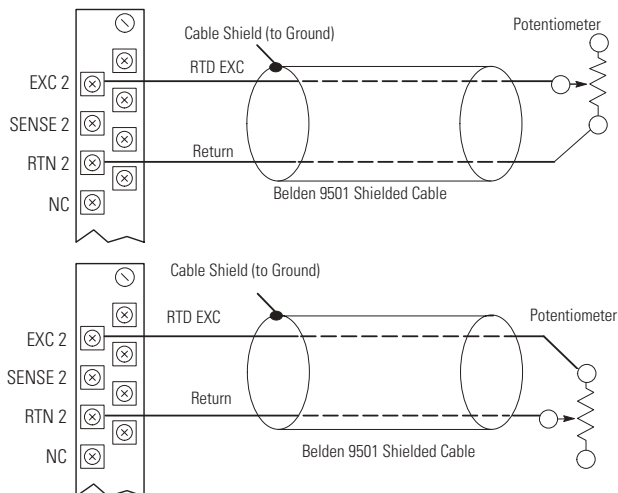


Miswiring of the module to an AC power source will damage the module.

Sinking/Sourcing Inputs - Sourcing/sinking describes the current flow between the I/O module and the field device. Sourcing I/O circuits supply (source) current to sinking field devices. Sinking I/O circuits are driven by a current sourcing field device. Field devices connected to the negative side (DC Common) of the field power supply are sinking field devices. Field devices connected to the positive side (+V) of the field supply are sourcing field devices.

Also, this product is intended to be mounted to a well-grounded mounting surface such as a metal panel.

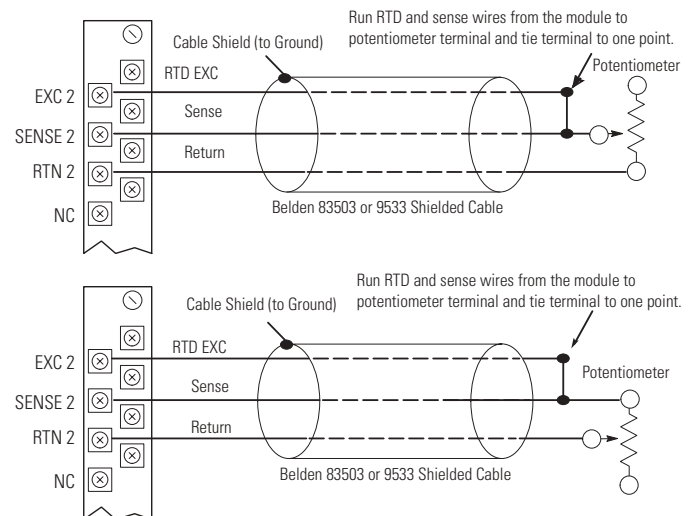
### 1762-IR4 2-Wire Potentiometer Interconnection



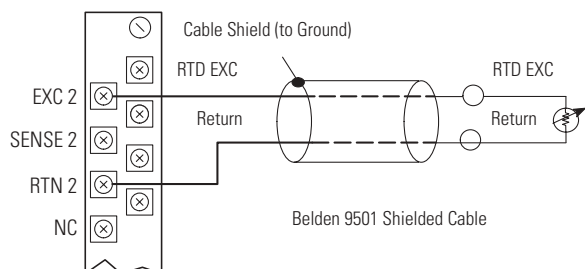
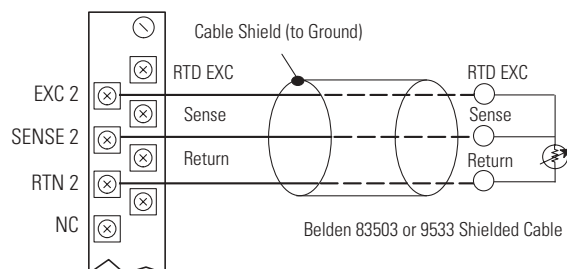
**TIP:** The potentiometer wiper arm can be connected to either the EXC or return terminal depending on whether you want increasing or decreasing resistance.

**IMPORTANT:** Using 2-wire configurations does not permit the module to compensate for resistance error due to lead wire length. The resulting analog data includes the effect of this uncompensated lead wire resistance. The module continues to place the uncompensated analog data in the input data file, but the open-circuit status bit (OCx) is set in word 4 of the input data file for any enabled channel using a 2-wire configuration. These status bits may be used in the control program to indicate that the analog data includes error due to uncompensated lead wires.

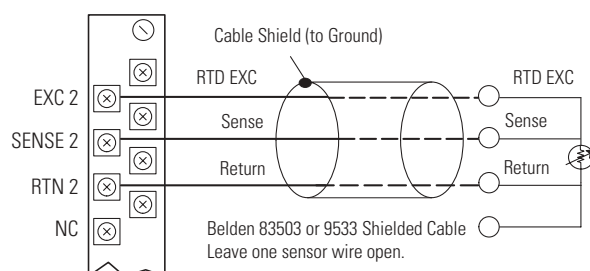
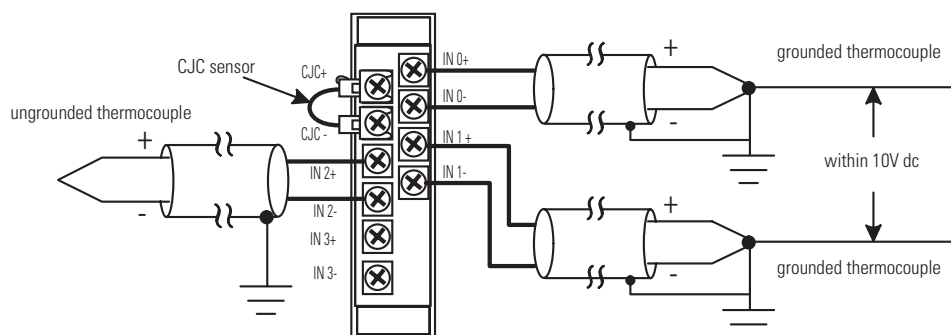
### 1762-IR4 3-Wire Potentiometer Interconnection



**TIP:** The potentiometer wiper arm can be connected to either the EXC or return terminal depending on whether you want increasing or decreasing resistance.

**1762-IR4 2-Wire RTD****1762-IR4 3-Wire RTD**

**IMPORTANT:** Using 2-wire configurations does not permit the module to compensate for resistance error due to lead wire length. The resulting analog data includes the effect of this uncompensated lead wire resistance. The module continues to place the uncompensated analog data in the input data file, but the open-circuit status bit (OCx) is set in word 4 of the input data file for any enabled channel using a 2-wire configuration. These status bits may be used in the control program to indicate that the analog data includes error due to uncompensated lead wires.

**1762-IR4 4-Wire RTD****1762-IT4****COLD JUNCTION COMPENSATION**

To obtain accurate readings from each of the channels, the temperature between the thermocouple wire and the input channel must be compensated for. A cold junction compensating thermistor has been integrated in the terminal block. The thermistor must remain installed to retain accuracy.

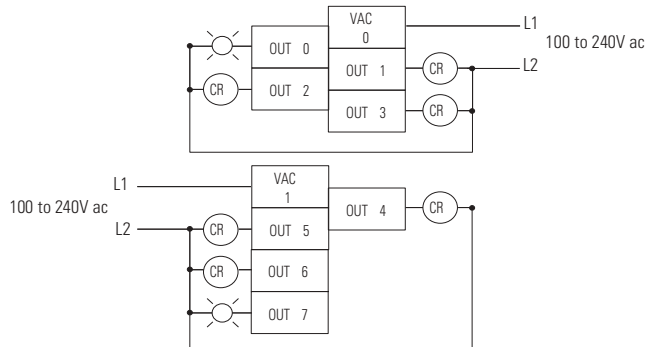
**ATTENTION**

Do not remove or loosen the cold junction compensating thermistor assembly. This assembly is critical to ensure accurate thermocouple input readings at each channel. The module will operate in the thermocouple mode, but at reduced accuracy if the CJC sensor is removed.

**IMPORTANT:** When using grounded and/or exposed thermocouples that are touching electrically conductive material, the ground potential between any two channels cannot exceed  $\pm 10V$  dc, or temperature readings will be inaccurate.

**TIP:** When using an ungrounded thermocouple, the shield must be connected at the module end.

1762-OA8



ATTENTION

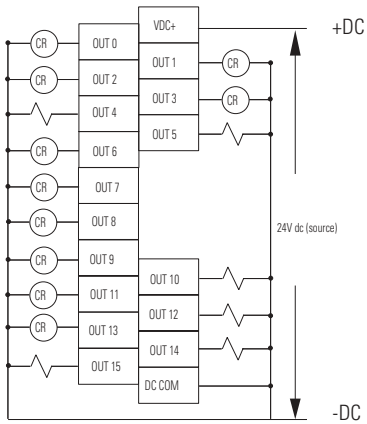


Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

Miswiring of the module to an AC power source will damage the module.

To limit the effects of leakage current through triac outputs, a loading resistor can be connected in parallel with your load. For typical 120V ac applications, use a 15k ohm, 2W resistor. For typical 240V ac applications, use a 15k ohm, 5W resistor.

1762-OB16



ATTENTION

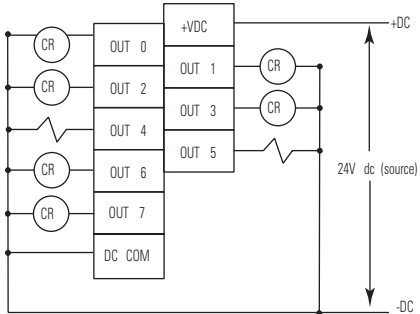


Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

Miswiring of the module to an AC power source will damage the module.

Surge Suppression – Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.

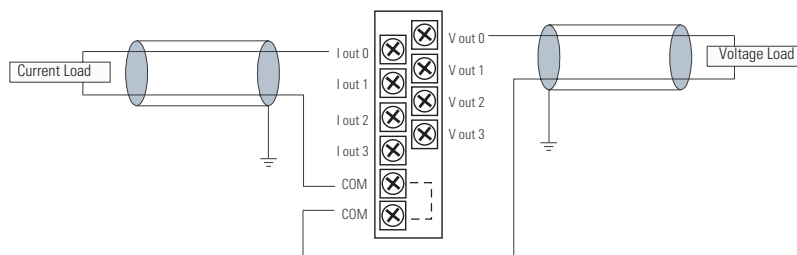
1762-OB8



ATTENTION



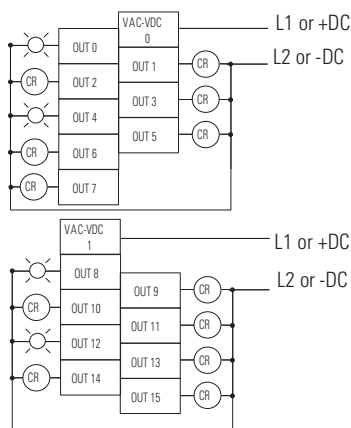
Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

**1762-OF4****ATTENTION**

Analog outputs may fluctuate for less than a second when power is applied or removed. This characteristic is common to most analog outputs. While the majority of loads will not recognize this short signal, it is recommended that preventive measures be taken to ensure that connected equipment is not affected.

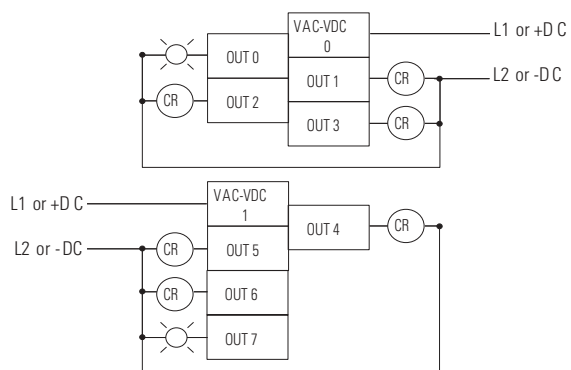
**TIP**

Grounding the cable shield at the module end only usually provides sufficient noise immunity. However, for best cable shield performance, earth ground the shield at both ends, using a 0.01  $\mu$ F capacitor at one end to block AC power ground currents, if necessary.

**1762-OW16****ATTENTION**

Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

**Surge Suppression** – Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.

**1762-OW8****ATTENTION**

Be careful when stripping wires. Wire fragments that fall into a module could cause damage when power is applied. Once wiring is complete, ensure the module is free of all metal fragments.

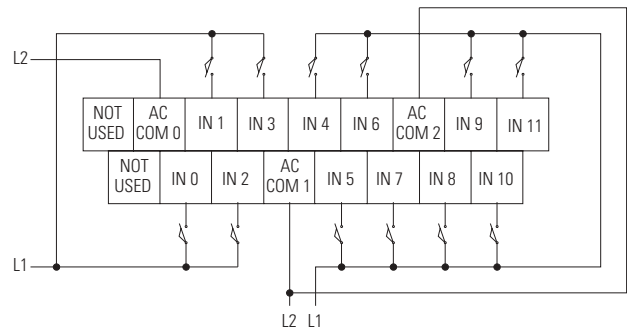
**Surge Suppression** – Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.

# 1764 Controller I/O on MicroLogix 1500 Controllers

**IMPORTANT** Expansion I/O for the MicroLogix 1500 controllers is accomplished with the 1769 Compact I/O modules. For more information on wiring the 1769 Compact I/O modules, see Chapter 9.

1764-24AWA

Input Terminals

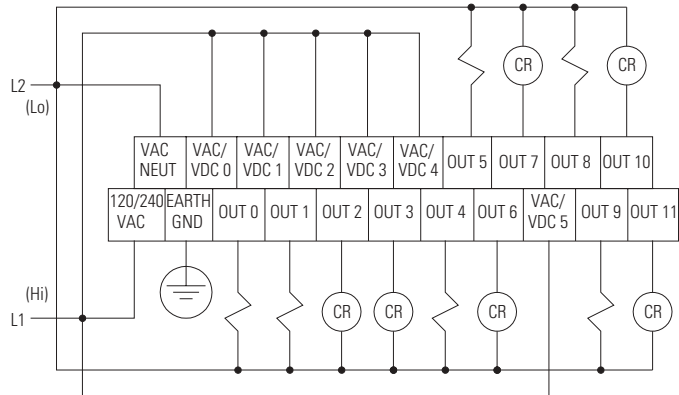


"NOT USED" terminals are not intended for use as connection points.

Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	AC COM 0	I/0 through I/3
Group 1	AC COM 1	I/4 through I/7
Group 2	AC COM 2	I/8 through I/11

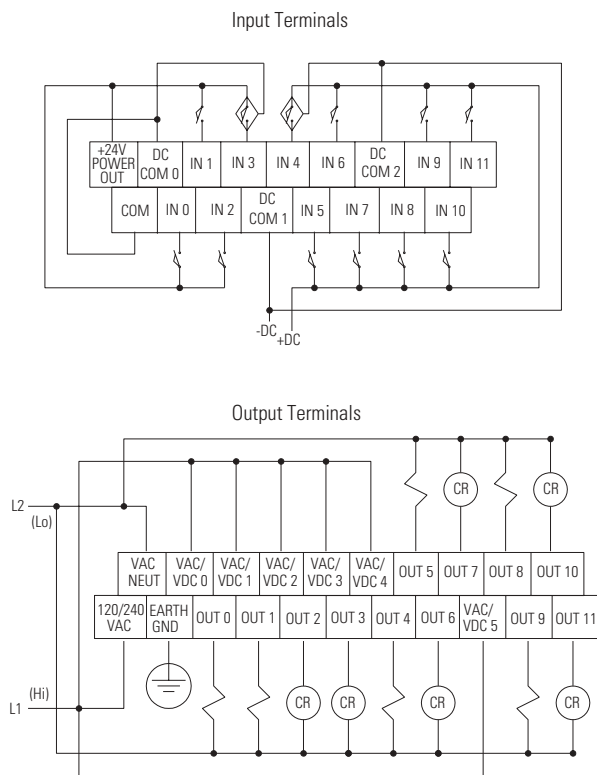
Output Terminals



Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VAC/VDC 2	O/2
Group 3	VAC/VDC 3	O/3
Group 4	VAC/VDC 4	O/4 through O/7
Group 5	VAC/VDC 5	O/8 through O/11

### 1764-24BWA - Sinking Inputs



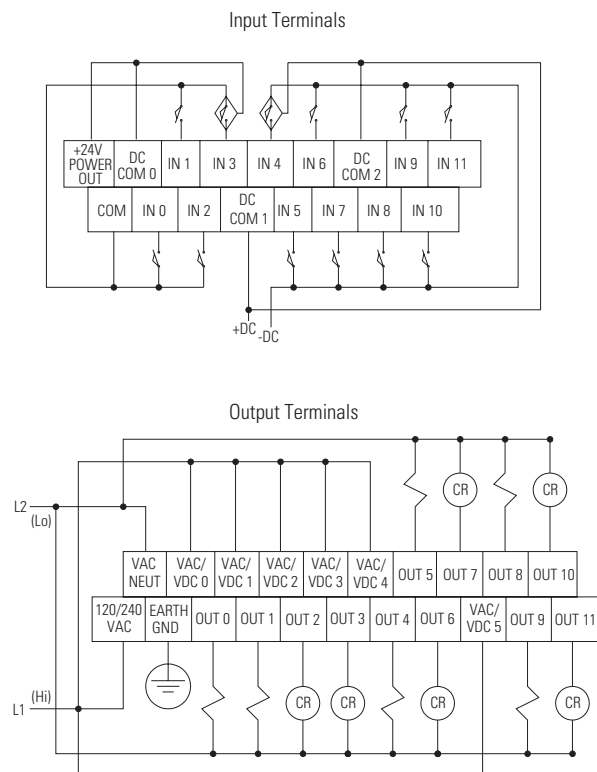
Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/11

Terminal Groupings

Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VAC/VDC 2	O/2
Group 3	VAC/VDC 3	O/3
Group 4	VAC/VDC 4	O/4 through O/7
Group 5	VAC/VDC 5	O/8 through O/11

### 1764-24BWA - Sourcing Inputs

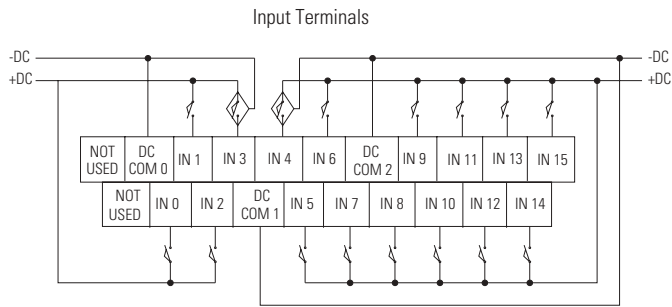


Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/11

Terminal Groupings

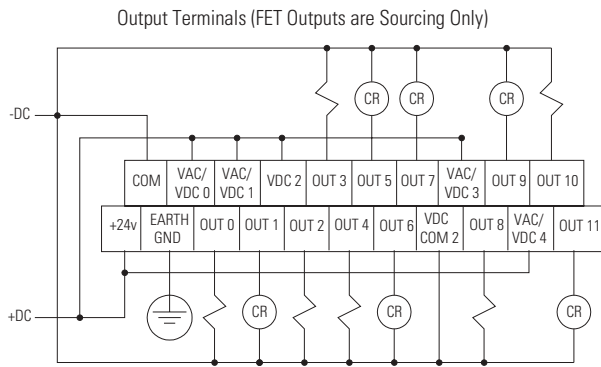
Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VAC/VDC 2	O/2
Group 3	VAC/VDC 3	O/3
Group 4	VAC/VDC 4	O/4 through O/7
Group 5	VAC/VDC 5	O/8 through O/11

**1764-28BxB - Sinking Inputs**

"NOT USED" terminals are not intended for use as connection points.

Terminal Groupings

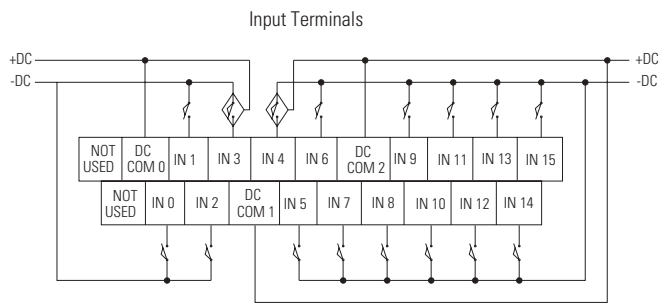
Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/15



Outputs 2 - 7 are FET outputs

Terminal Groupings

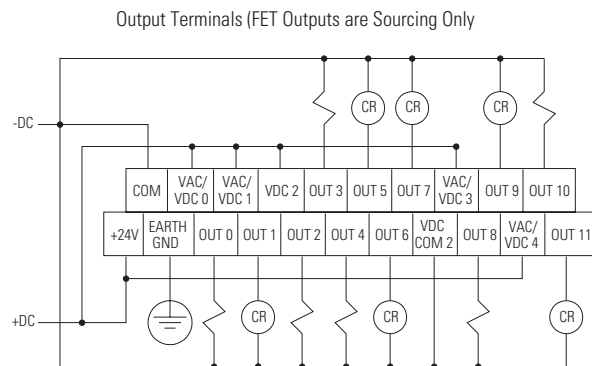
Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VDC 2, VDC COM 2	O/2 through O/7
Group 3	VAC/VDC 3	O/8 and O/9
Group 4	VAC/VDC 4	O/10 and O/11

**1764-28BxB - Sourcing Inputs**

"NOT USED" terminals are not intended for use as connection points.

Terminal Groupings

Input Group	Common Terminal	Input Terminal
Group 0	DC COM 0	I/0 through I/3
Group 1	DC COM 1	I/4 through I/7
Group 2	DC COM 2	I/8 through I/15



Outputs 2 - 7 are FET outputs

Terminal Groupings

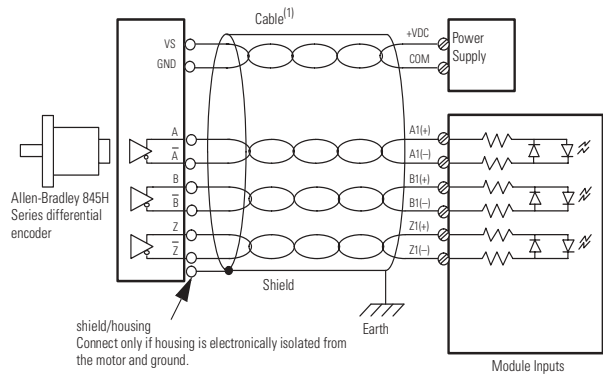
Output Group	Voltage Terminal	Output Terminal
Group 0	VAC/VDC 0	O/0
Group 1	VAC/VDC 1	O/1
Group 2	VDC 2, VDC COM 2	O/2 through O/7
Group 3	VAC/VDC 3	O/8 and O/9
Group 4	VAC/VDC 4	O/10 and O/11

## **Notes:**



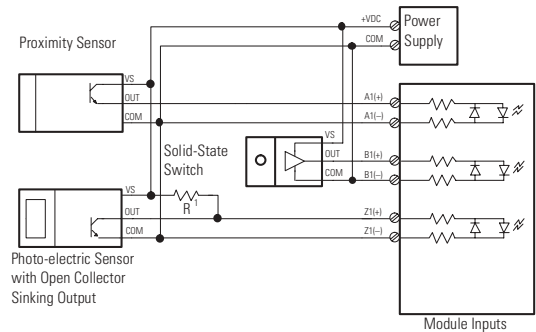
1769 Compact I/O Modules

1769-HSC – Differential Encoder applications



1. Refer to your encoder manual for proper cable type. The type of cable used should be twisted pair, individually shielded cable with a maximum length of 300m (1000 ft.).

1769-HSC – Discrete Device applications



1. External resistors are required if they are not internal to the sensor. The pull-up resistor (R) value depends on the power supply value. The table below shows the maximum resistor values for typical supply voltages. To calculate the maximum resistor value, use the following formula:

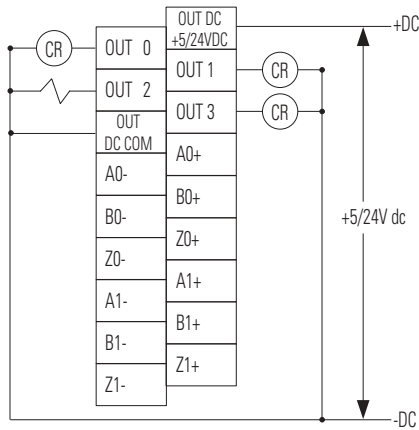
$$R = \frac{(V_{dc} - V_{min})}{I_{min}}$$

where: R = maximum pull-up resistor value  
Vdc = power supply voltage  
Vmin = 2.6V dc  
Imin = 6.8 mA

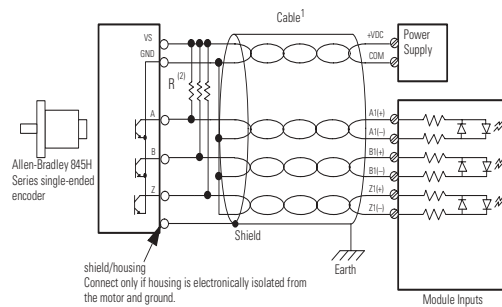
Power Supply Voltage (V dc)	Maximum Pull-Up Resistor Value (a)
5V dc	35.2 Ω
12V dc	1382 Ω
24V dc	3147 Ω

(a) Resistance values may change, depending on your application. The minimum resistor (R) value depends on the current sinking capability of the sensor. Refer to your sensor's documentation.

### 1769-HSC – Output Device applications



### 1769-HSC – Single-Ended Encoder applications



1. Refer to your encoder manual for proper cable type. The type of cable used should be twisted pair, individually shielded cable with a maximum length of 300m (1000ft).
2. External resistors are required if they are not internal to the sensor. The pull-up resistor (R) value depends on the power supply value. The table below shows the maximum resistor values for typical supply voltages. To calculate the maximum resistor value, use the following formula:

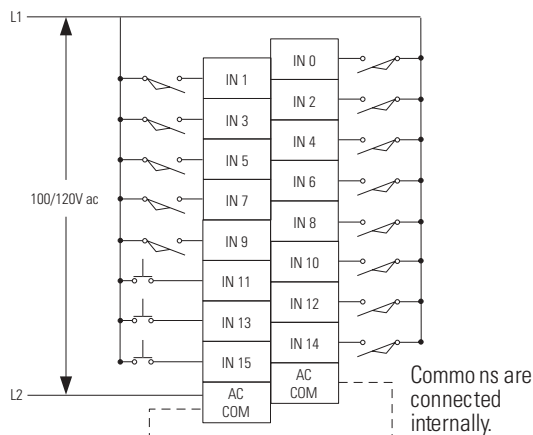
$$R = \frac{(Vdc - Vmin)}{Imin}$$

where: R = maximum pull-up resistor value  
Vdc = power supply voltage  
Vmin = 2.6V dc  
Imin = 6.8 mA

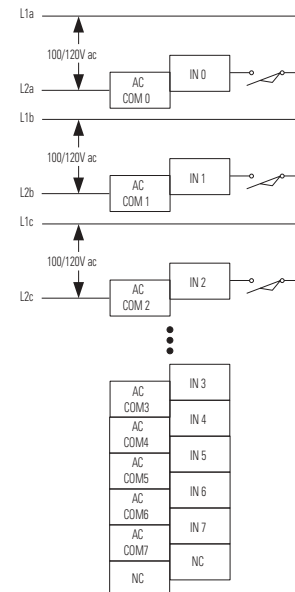
Power Supply Voltage (V dc)	Maximum Pull-Up Resistor Value (a)
5V dc	352 Ω
12 V dc	1382 Ω
24 V dc	3147 Ω

(a) Resistance values may change, depending on your application. The minimum resistor (R) value depends on the current sinking capability of the sensor. Refer to your sensor's documentation.

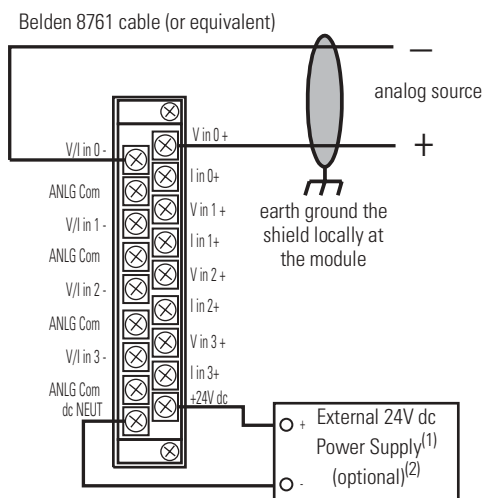
### 1769-IA16



### 1769-IA8I

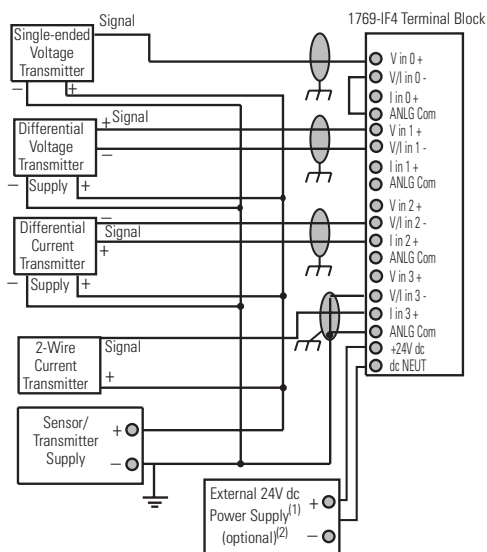


### 1769-IF4 – Differential Inputs applications



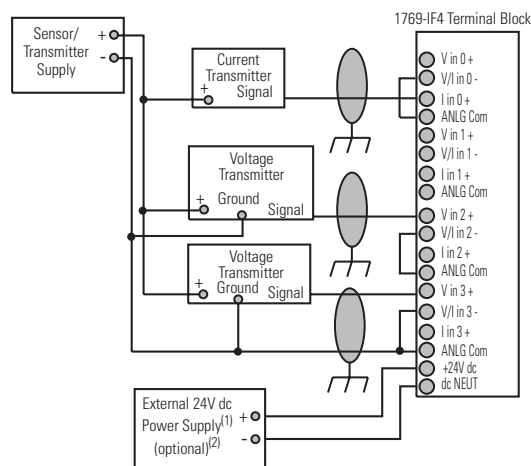
1. The external power supply must be rated Class 2, with a 24V dc range of 20.4 to 26.4V dc and 60 mA minimum.
2. Series B and later modules provide this option.

### 1769-IF4 – Mixed Transmitter Type applications



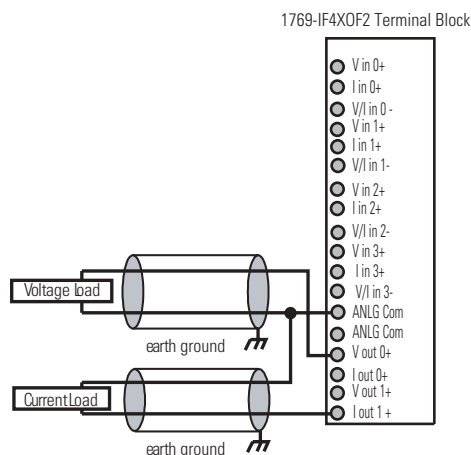
1. The external power supply must be rated Class 2, with a 24V dc range of 20.4 to 26.4V dc and 60 mA minimum.
2. Series B and later modules provide this option.

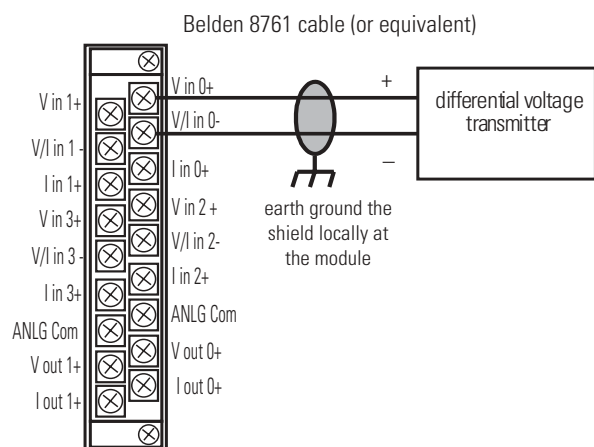
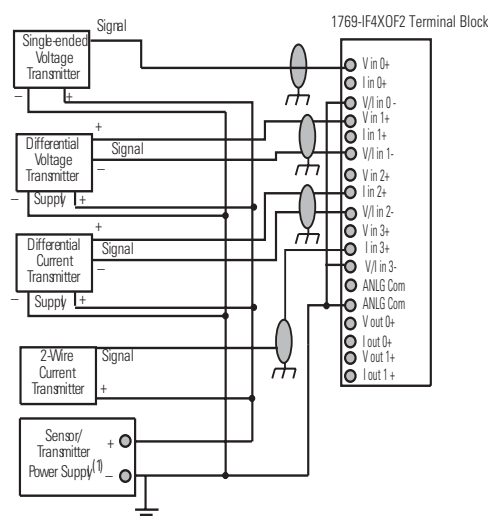
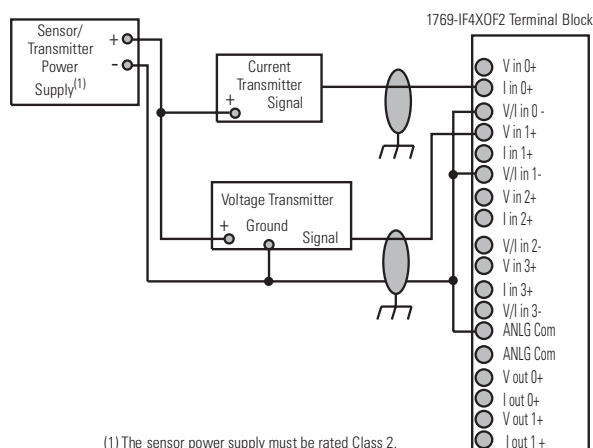
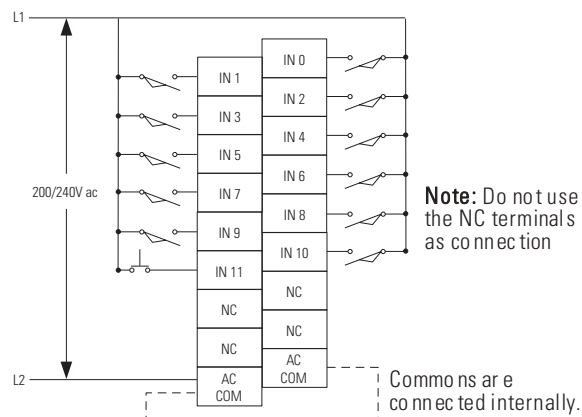
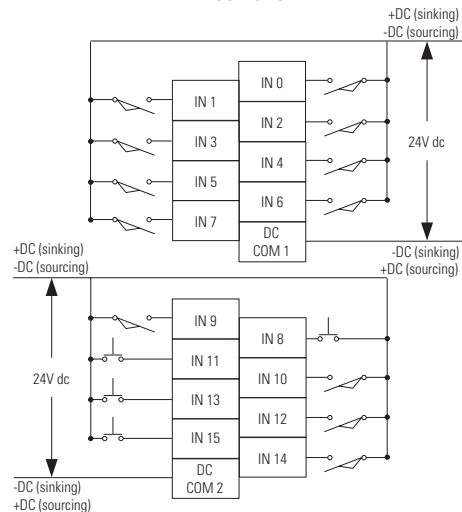
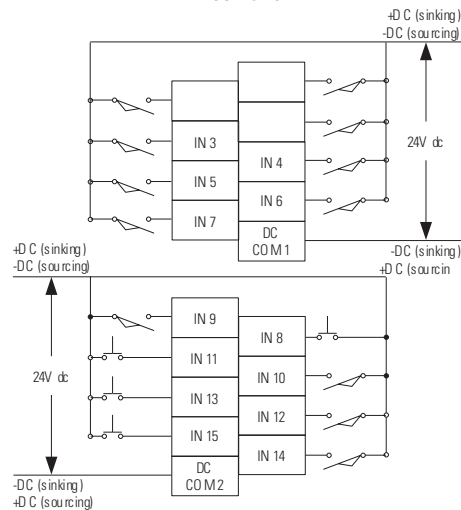
### 1769-IF4 – Single-Ended Sensor/Transmitter Type applications

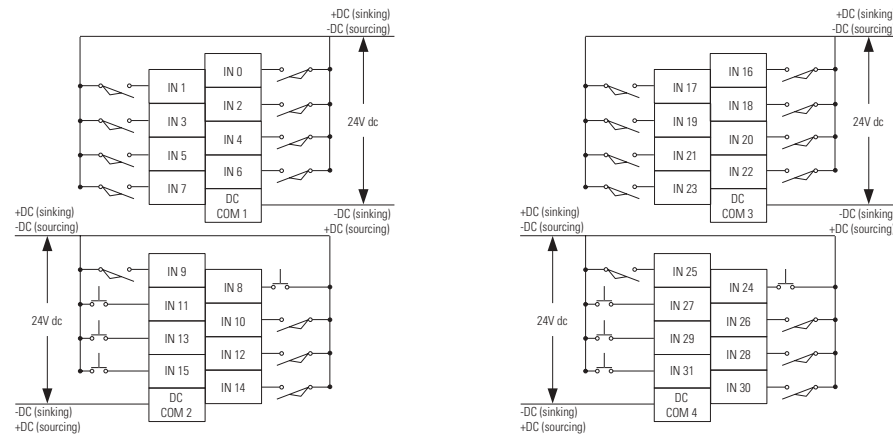
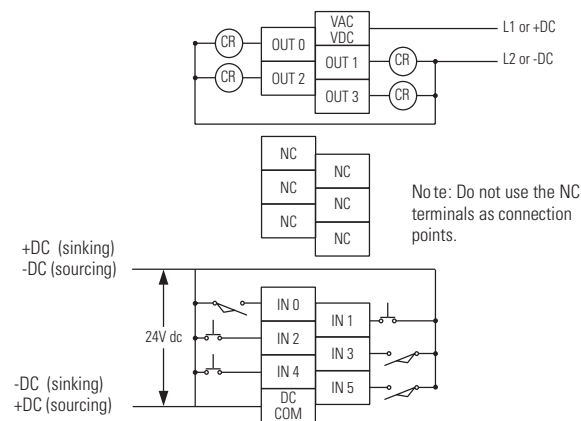


1. The external power supply must be rated Class 2, with a 24V dc range of 20.4 to 26.4V dc and 60 mA minimum.
2. Series B and later modules provide this option.

### 1769-IF4XOF2 – Analog Output Device applications

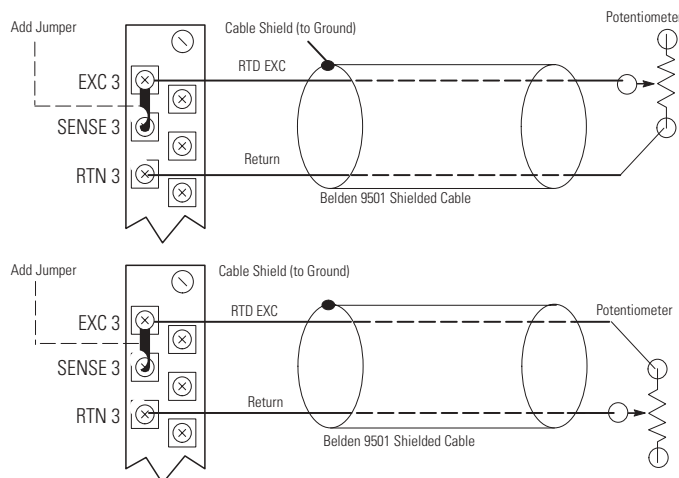


**1769-IF4XOF2 – Differential Input applications****1769-IF4XOF2 – Mixed Transmitter Type applications****1769-IF4XOF2 – Single-Ended Sensor/Transmitter applications****1769-IM12****1769-IQ16****1769-IQ16F**

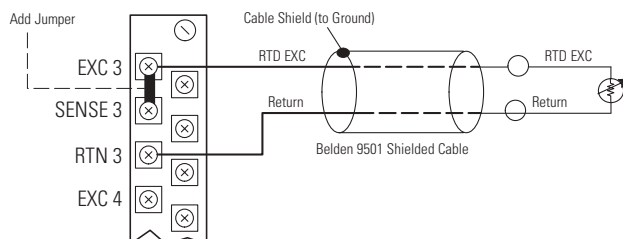
**1769-IQ32****1769-IQ6XOW4**

- (1) Surge Suppression - Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.
- (2) Sinking/Sourcing Inputs - Sourcing/sinking describes the current flow between the I/O module and the field device. Sourcing input circuits supply (source) current to sinking field devices. Sinking input circuits are driven by a current sourcing field device. Europe: DC sinking input and sourcing output module circuits are the commonly used options.

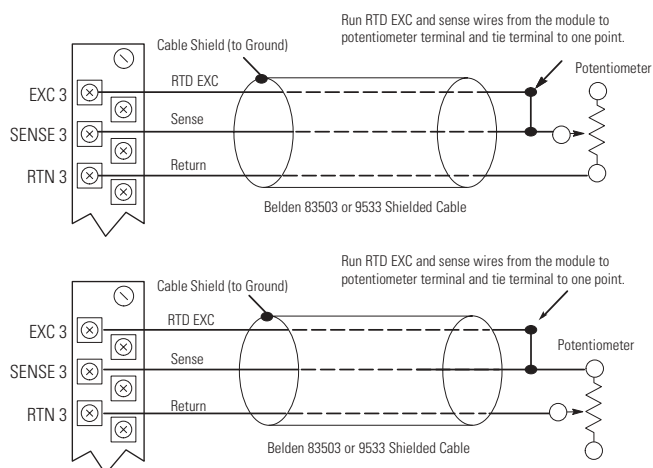
### 1769-IR6 – 2-Wire Potentiometer Interconnection applications



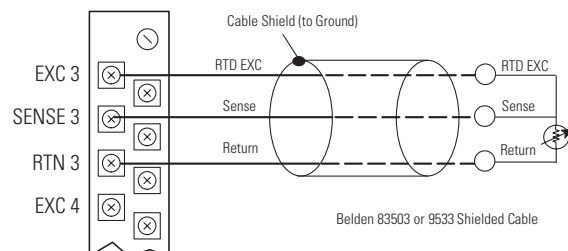
### 1769-IR6 – 2-Wire RTD applications



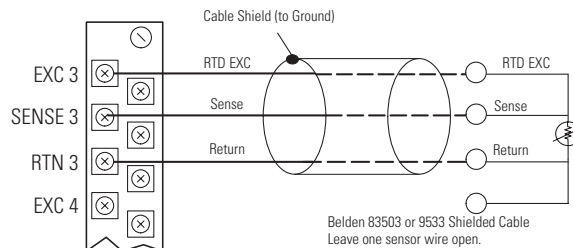
### 1769-IR6 – 3-Wire Potentiometer Interconnection applications

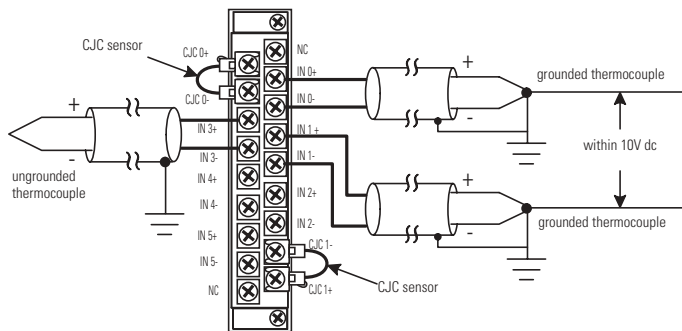
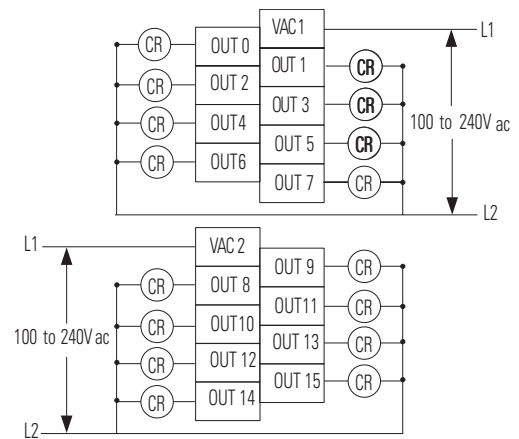


### 1769-IR6 – 3-Wire RTD applications

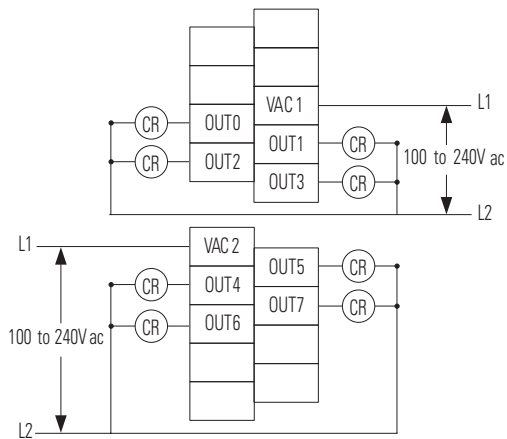
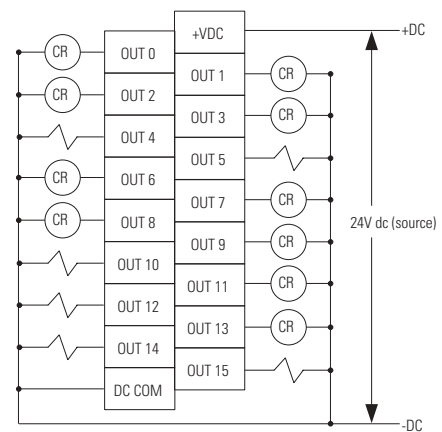
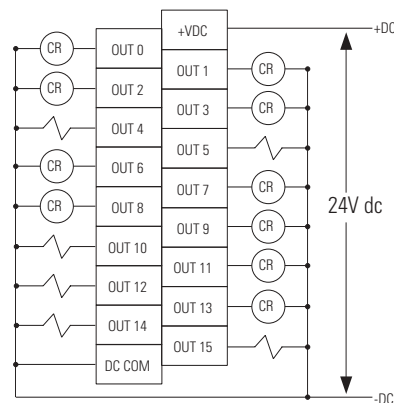


### 1769-IR6 – 4-Wire RTD applications

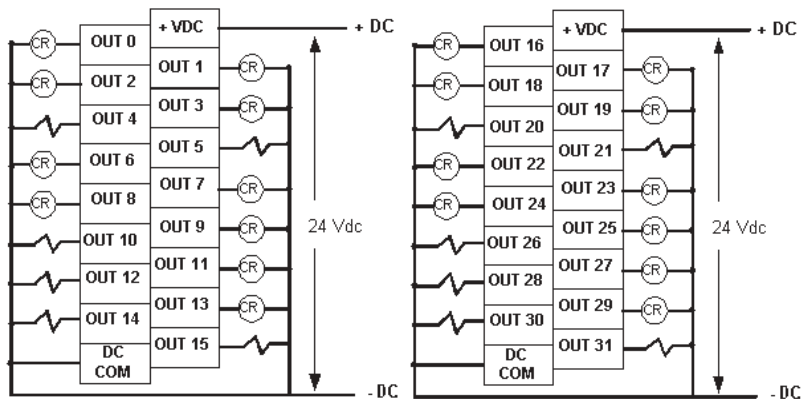


**1769-IT6****1769-OA16**

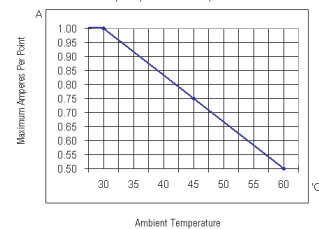
- (1) Surge Suppression - Connecting surge suppressors across your external load will extend the life of the triac outputs. For additional details, refer to Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.

**1769-OA8****1769-OB16****1769-OB16P**

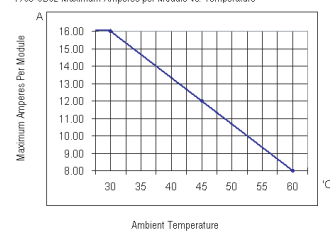
### 1769-OB32



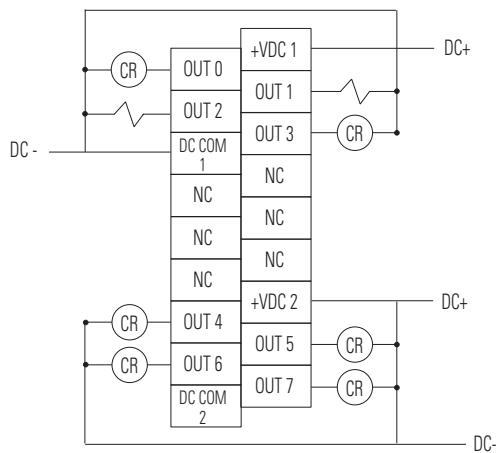
1769-OB32 Maximum Amperes per Point vs. Temperature



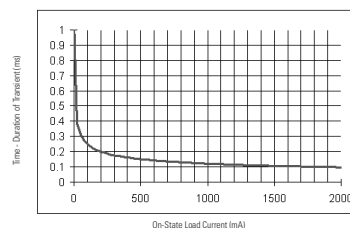
1769-OB32 Maximum Amperes per Module vs. Temperature



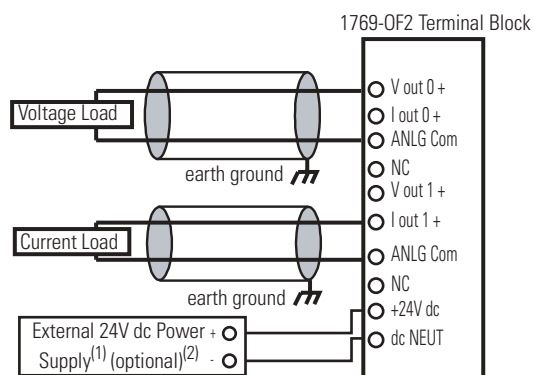
### 1769-OB8



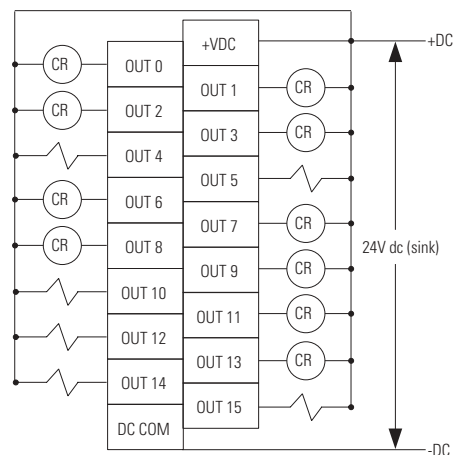
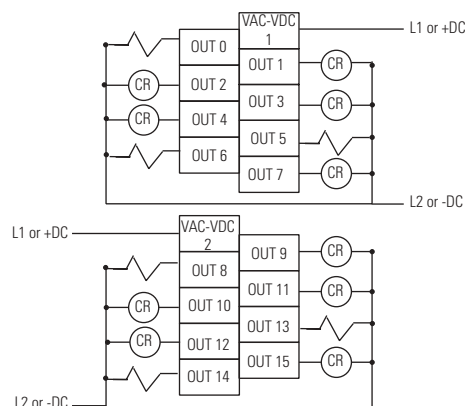
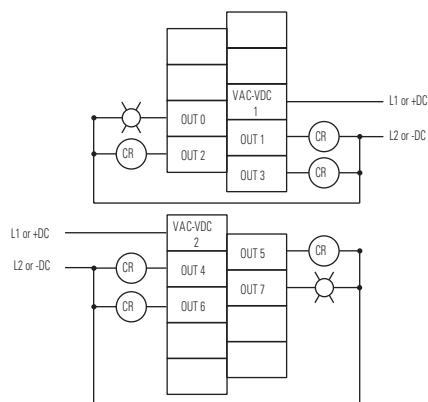
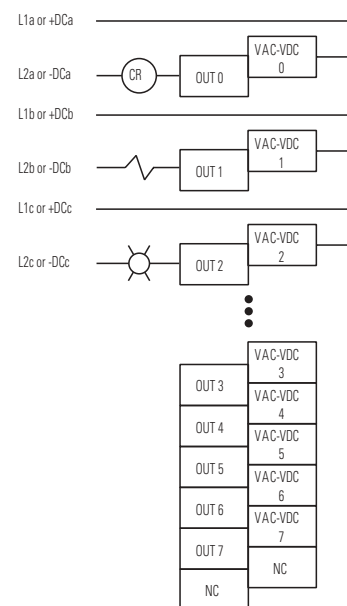
Transient Pulse Duration as a Function of Load Current





**1769-OF2**

1. The external power supply must be rated Class 2, with a 24V dc range of 20.4 to 26.4V dc and 60 mA minimum.
2. Series B and later modules provide this option.

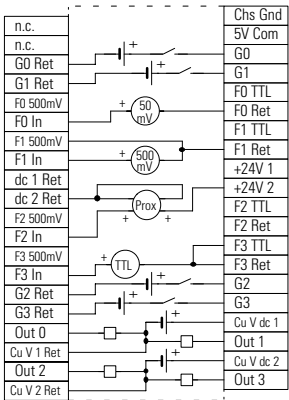
**1769-OV16****1769-OW16****1769-OW8****1769-OW8I**

- (1) Surge Suppression - Connecting surge suppressors across your external inductive load will extend the life of the relay contacts. For additional details, refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

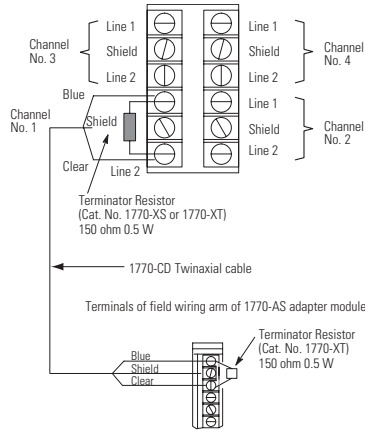
## **Notes:**

1771 I/O Modules

1771-CFM



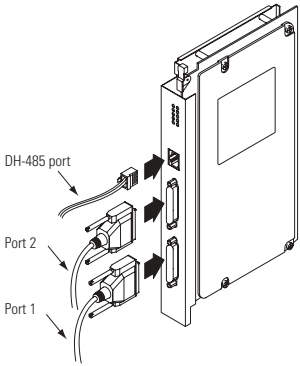
1771-DA



NOTE: Absence of a terminator resistor can cause block transfer errors

1771-DB

Ports 1 and 2 can be configured for RS-232, RS-422 and RS-485 communications. pin configurations for these modes are listed in the table below.

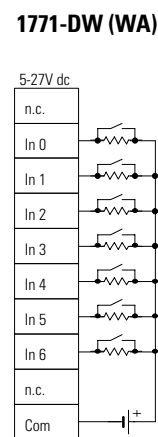
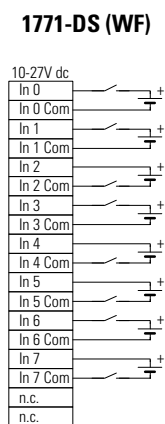
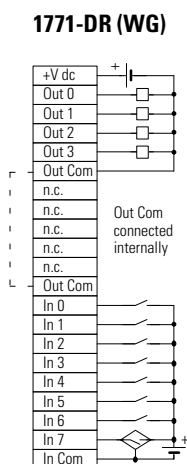
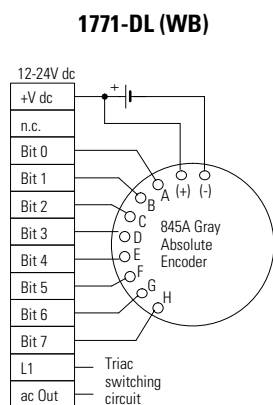
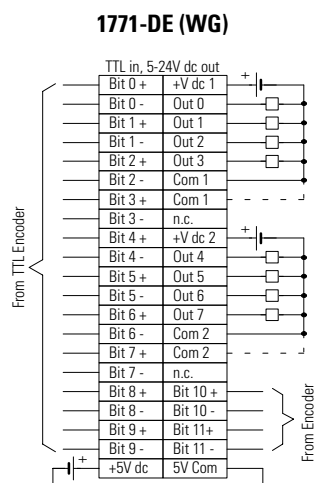
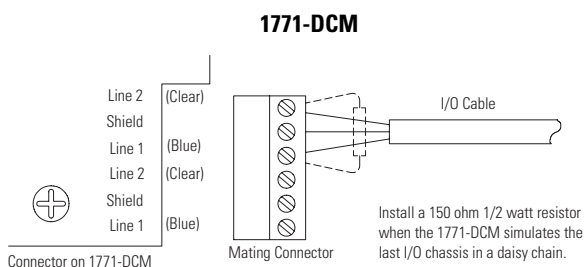
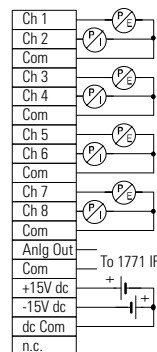


Pin	RS-232	RS-422	RS-485
1	chassis/shield	chassis/shield	chassis/shield
2	TXD	N/A <sup>2</sup>	N/A <sup>2</sup>
3	RXD	N/A <sup>2</sup>	N/A <sup>2</sup>
4	RT S	N/A <sup>2</sup>	N/A <sup>2</sup>
5	CTS	N/A <sup>2</sup>	N/A <sup>2</sup>
6	DSR	N/A <sup>2</sup>	N/A <sup>2</sup>
7	common	common	common
8	DCD	N/A <sup>2</sup>	N/A <sup>2</sup>
9	common	common	common
10	common	common	common
14	N/A <sup>1</sup>	TXD	TXD/RXD
16	N/A <sup>1</sup>	RXD	N/A <sup>2</sup>
18	N/A <sup>1</sup>	RXD'	N/A <sup>2</sup>
20	DTR	N/A <sup>2</sup>	N/A <sup>2</sup>
25	N/A <sup>1</sup>	TXD'	TXD'/RXD'

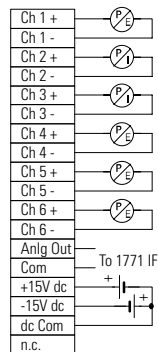
1- These pins are not a No Connection (N/C). In RS-232 mode, the RS-422 and RS-485 load is still present and should not be connected to any device in this mode.

2- In RS-422 and RS-485 modes, these pins are still connected to their RS-232 drivers and receivers. Do not use these pins in either RS-422 or RS-485 mode.

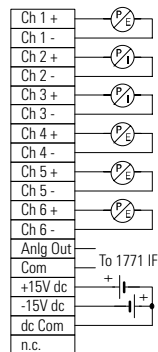
Important: Pins 1, 12, 13, 15, 17, 19, 21, 22, 23 and 24 are a No Connection (N/C)

**1771-E1 (WF)**

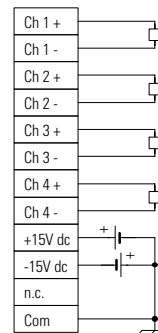
External loop power needed.

**1771-E2 (WF)**

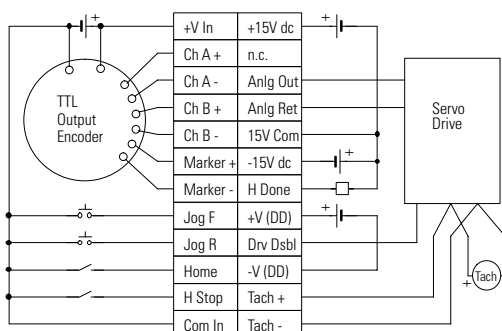
External loop power needed.

**1771-E3 (WF)**

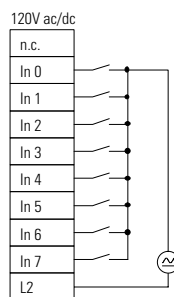
External loop power needed.

**1771-E4 (WF)**

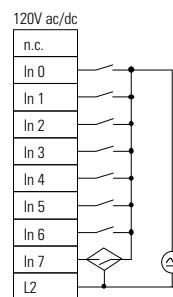
1771-ES (WB)



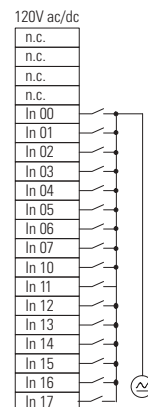
1771-IA (WA)



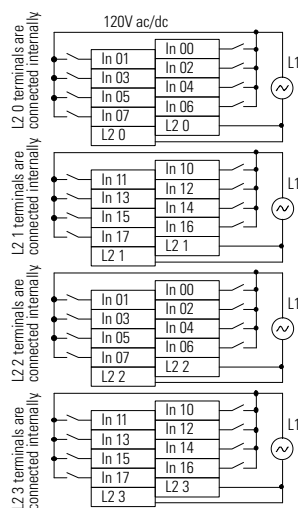
1771-IA2 (IA)



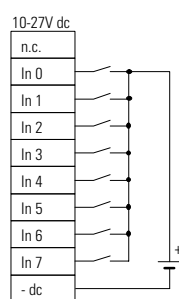
1771-IAD/C (WH)



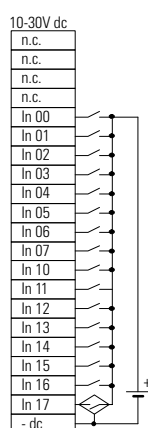
1771-IAN (WN)



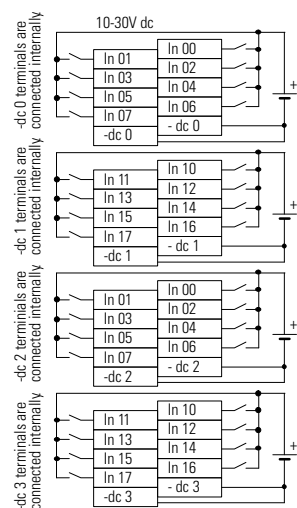
1771-IB (WA)



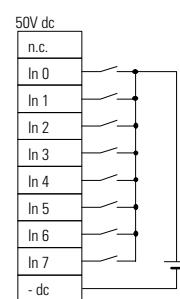
1771-IBD (WH)



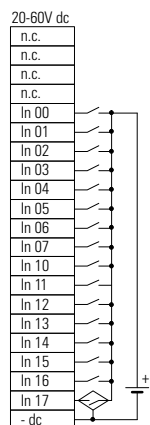
1771-IBN (WN)



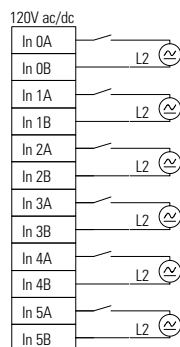
1771-IC (WA)



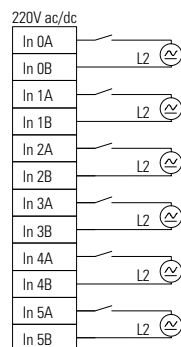
1771-ICD (WH)



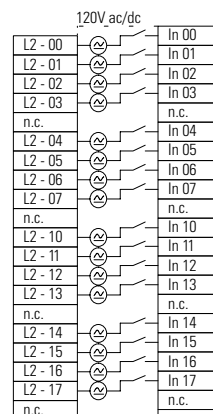
1771-IDI (WD)

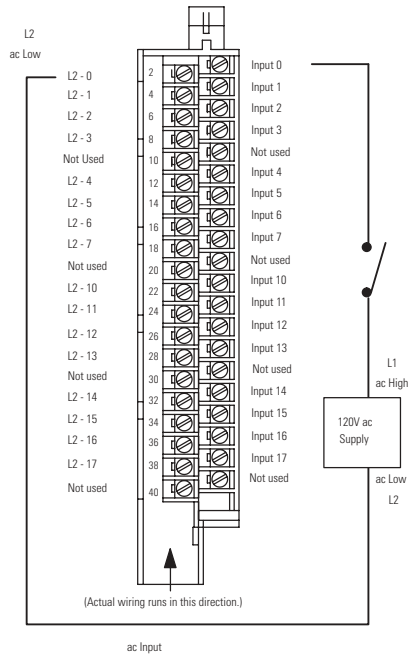


1771-ID01 (WD)



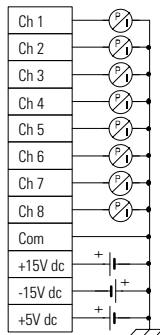
1771-ID16 (WN)



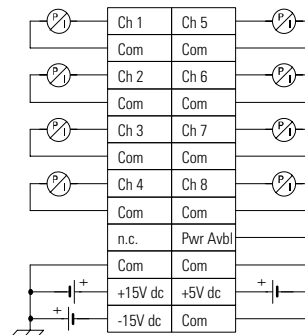
**1771-ID16GM**

NOTES: Maintain isolation between phases to prevent module damage.

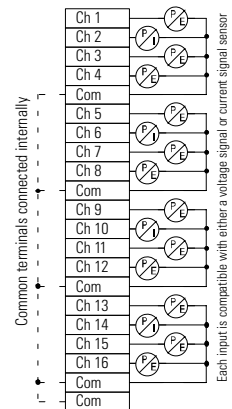
Do not use any 1771 ac output modules to drive the 1771-ID16GM input module.

**1771-IE (WB)**

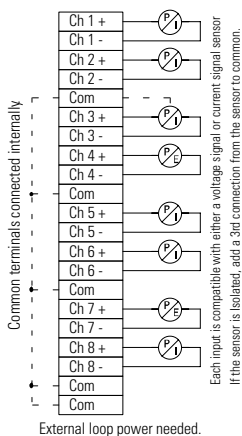
External loop power needed.  
Factory configured for either  
voltage or current.

**1771-IF (WB)**

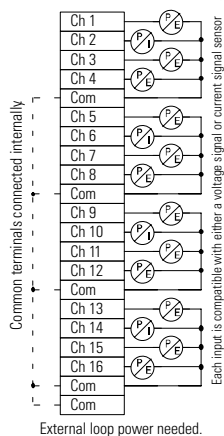
Common terminals connected internally.  
External loop power needed.  
Power available must connect to  
common to enable operation.

**1771-IFE (WG) Single Ended**

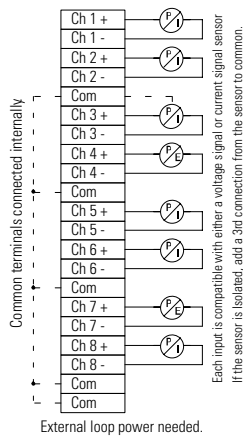
External loop power needed.

**1771-IFE (WG) Differential**

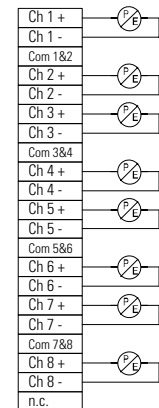
External loop power needed.

**1771-IFF (WG) Single Ended**

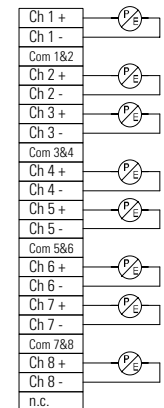
External loop power needed.

**1771-IFF (WG) Differential**

External loop power needed.

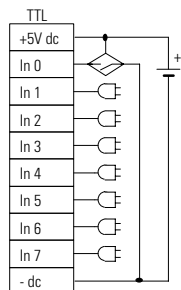
**1771-IFM (WG)**

External loop power needed.

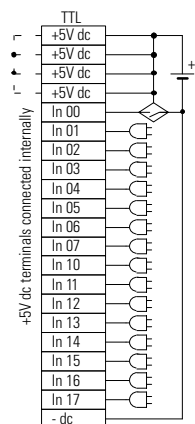
**1771-IFMS (WG)**

External loop power needed.

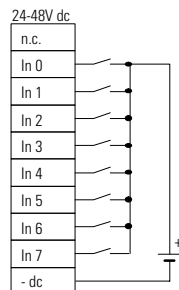
1771-IG (WC)



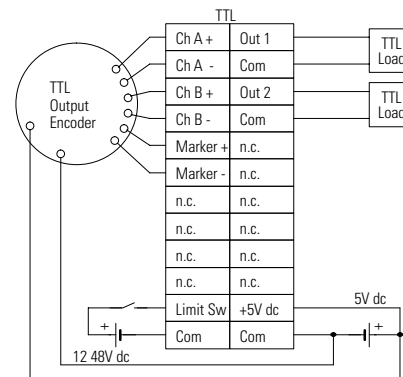
1771-IGD (WH)



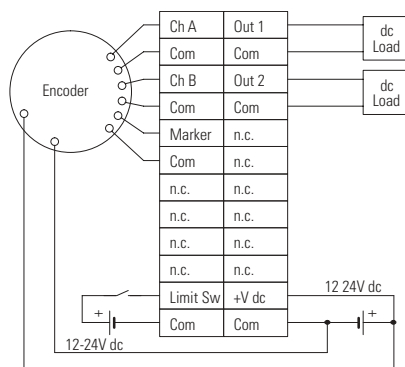
1771-IH (WA)



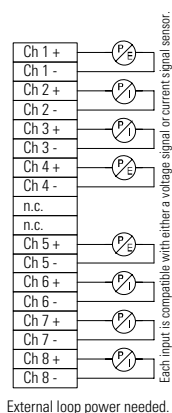
1771-IJ (WB)



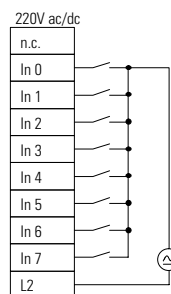
1771-IK (WB)



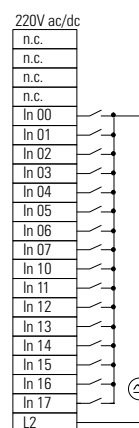
1771-IL/B (WF)



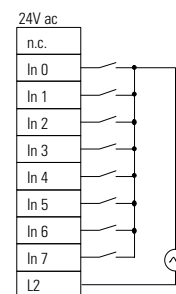
1771-IM (WA)



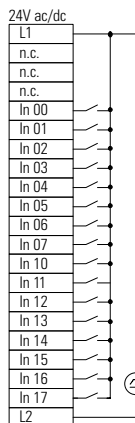
1771-IMD (WH)



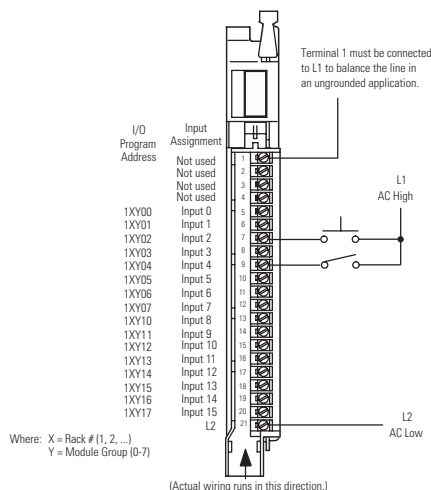
1771-IN (WA)



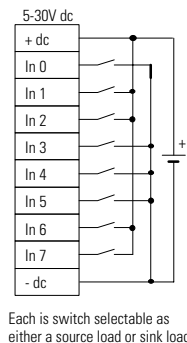
1771-IND (WH)



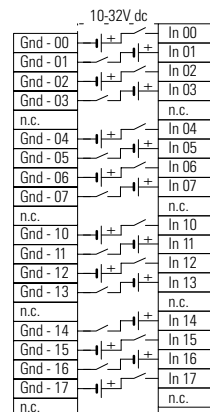
1771-IND1



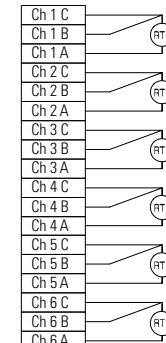
1771-IQ (WC)

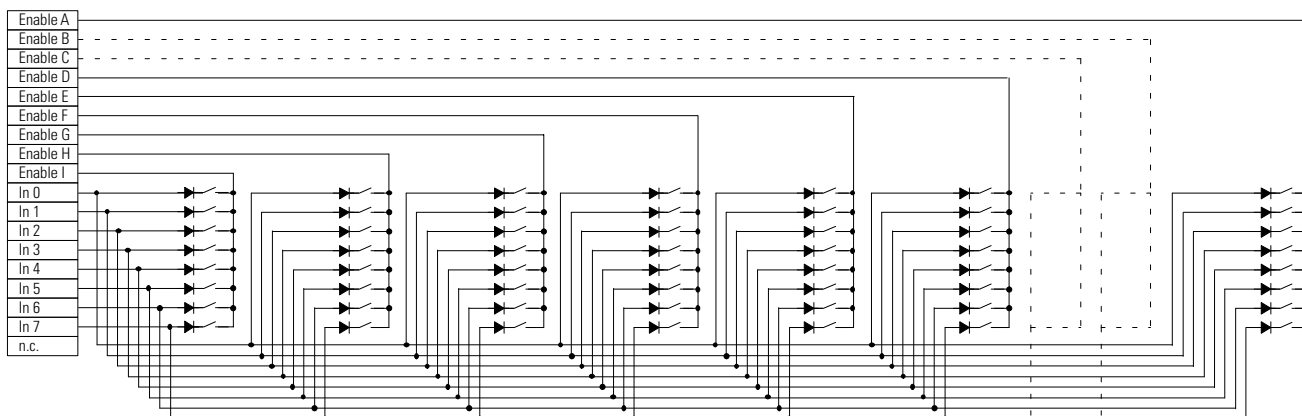
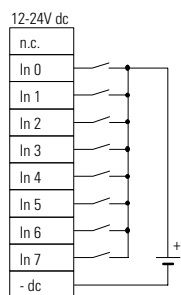
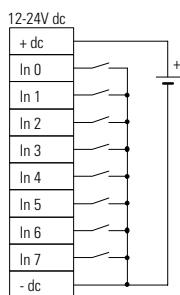
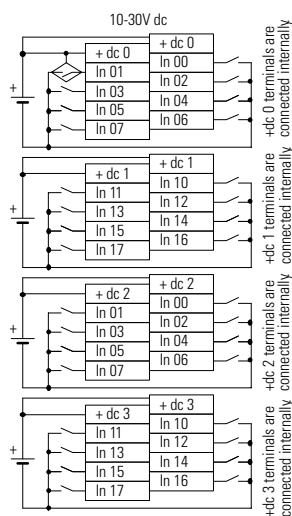
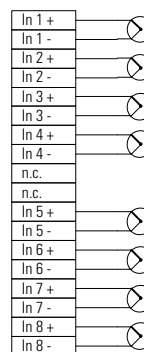
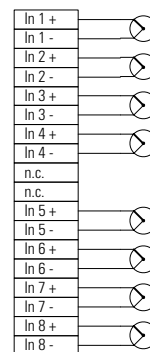
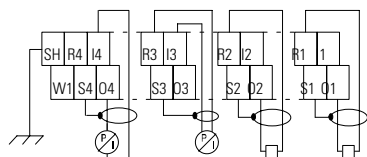


1771-IQ16 (WN)

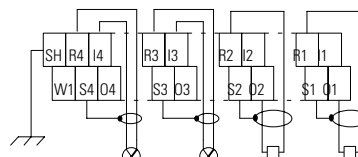


1771-IR/B (WF)



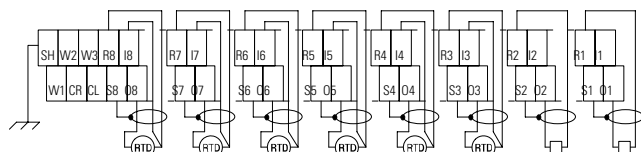
**1771-IS (WF)****1771-IT (WA)****1771-IV (WA)****1771-IVN (WN)****1771-IXE/B (WI)****1771-IXHR (WI)****1771-NB4S (RT44)**

S1 thru S4 are connected internally to SH.  
Input loop power provided internally if connected as shown for 4.

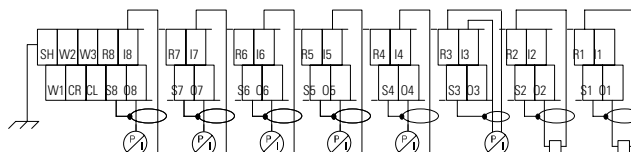
**1771-NB4T (RT41)**

S1 thru S4 are connected internally to SH.

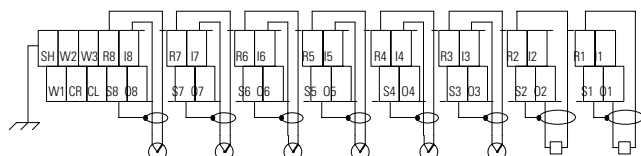


**1771-NBRC (RTP4)**

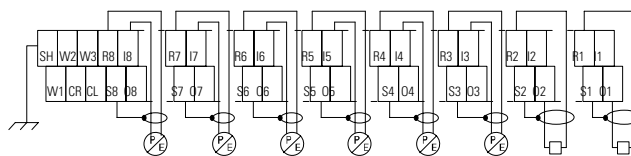
S1 thru S8 are connected internally to SH. Input loop power provided internally.

**1771-NBSC (RTP4)**

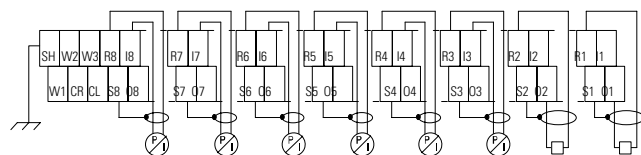
S1 thru S8 are connected internally to SH. Input loop power provided internally if connected as shown for 4 thru 8.

**1771-NBTC (RTP1)**

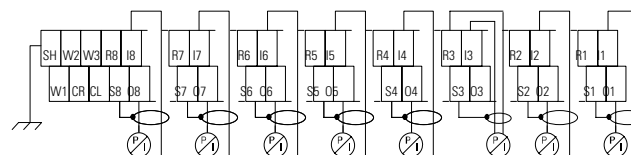
S1 thru S8 are connected internally to SH.

**1771-NBV1 (RTP4 Voltage, RTP3 Current)**

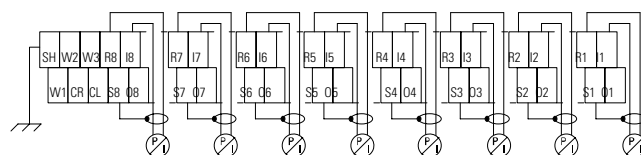
S1 thru S8 are connected internally to SH. External loop power needed.

**1771-NBVC (RTP4 Voltage, RTP3 Current)**

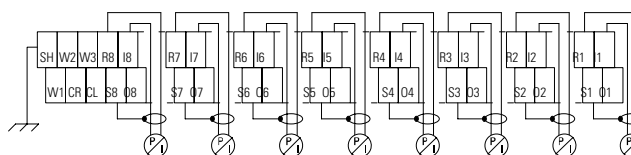
S1 thru S8 are connected internally to SH. External loop power needed.

**1771-NIS (RTP4)**

S1 thru S8 are connected internally to SH. Input loop power provided internally if connected as shown for 4 thru 8.

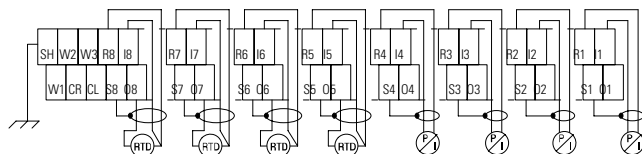
**1771-NIV (RTP4 Voltage, RTP3 Current)**

S1 thru S8 are connected internally to SH. External loop power needed.

**1771-NIV1 (RTP4 Voltage, RTP3 Current)**

S1 thru S8 are connected internally to SH. External loop power needed.

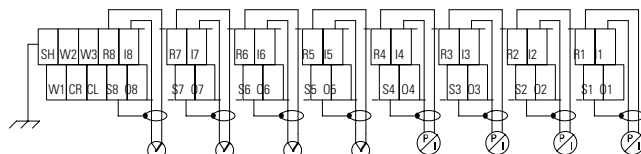
### 1771-NIVR (RTP4)



S1 thru S8 are connected internally to SH.

External loop power needed.

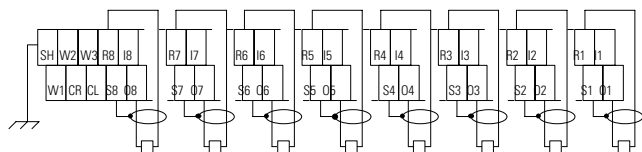
### 1771-NIVT (RTP1 )



S1 thru S8 are connected internally to SH.

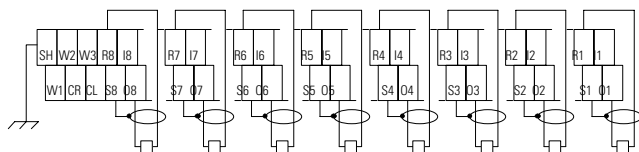
External loop power needed.

### 1771-NOC (RTP4 or RTP3)



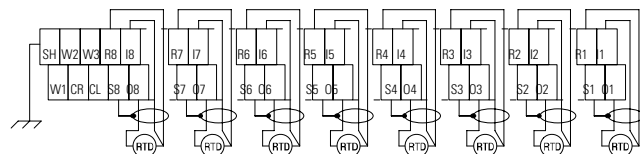
S1 thru S8 are connected internally to SH.

### 1771-NOV (RTP4 or RTP3)



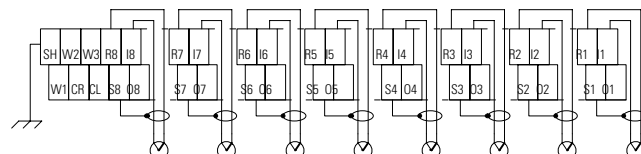
S1 thru S8 are connected internally to SH.

### 1771-NR (RTP4)



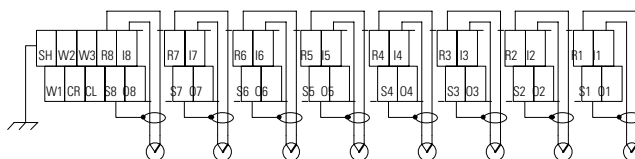
S1 thru S8 are connected internally to SH. Input loop power provided internally .

### 1771-NT1 (RTP1 )

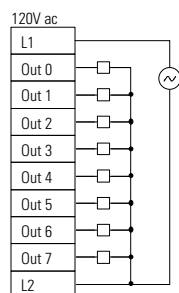
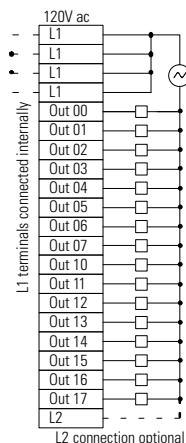
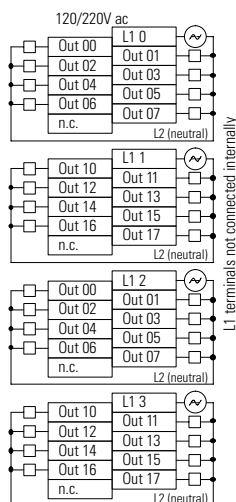
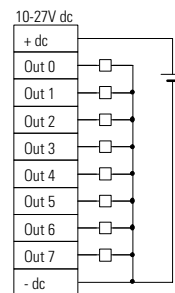
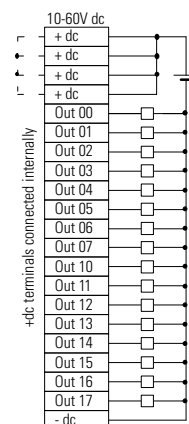
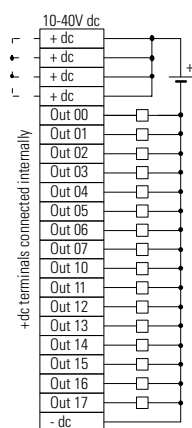
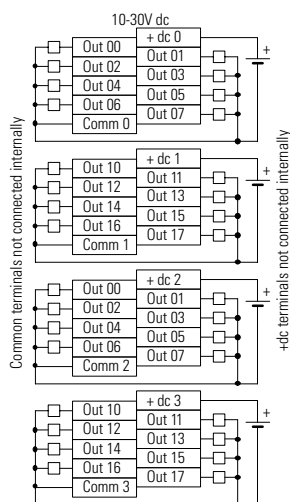
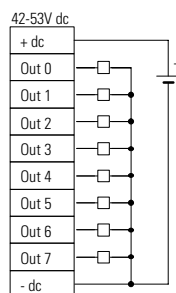
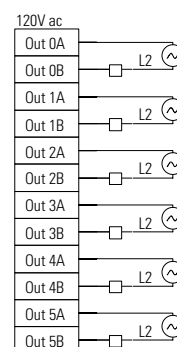
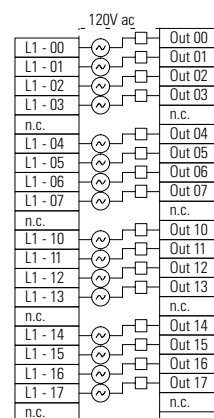


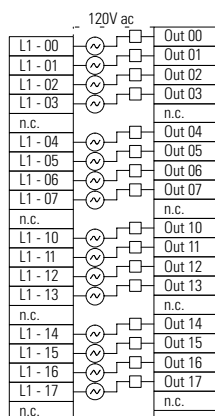
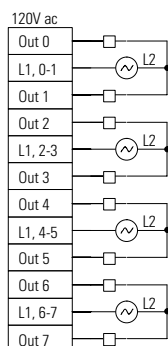
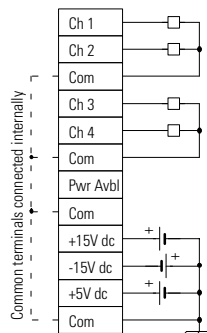
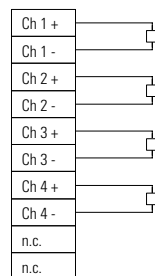
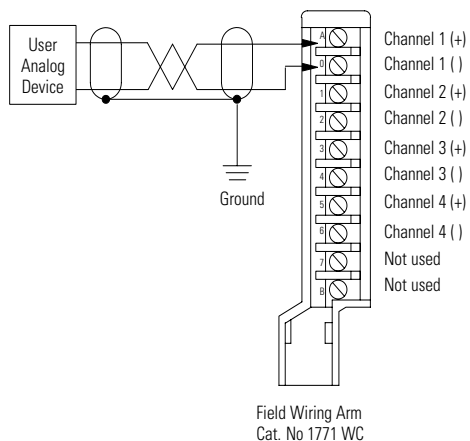
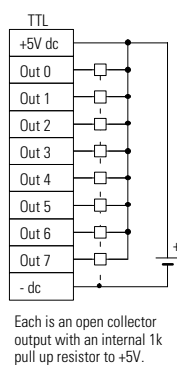
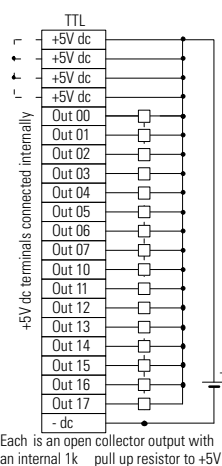
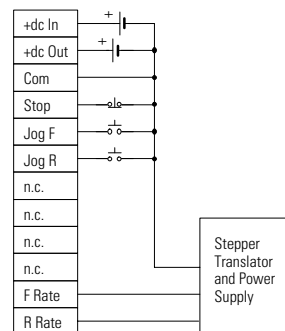
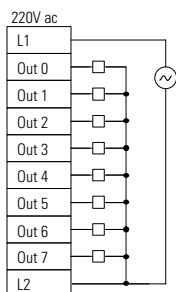
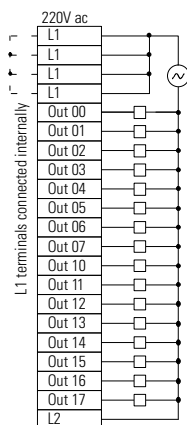
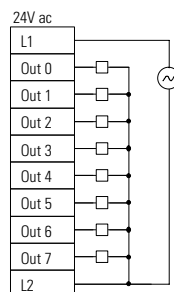
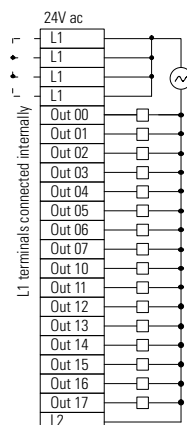
S1 thru S8 are connected internally to SH.

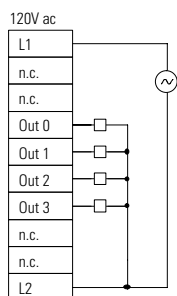
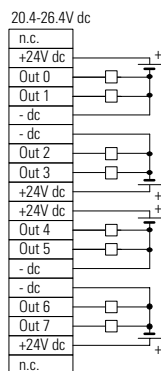
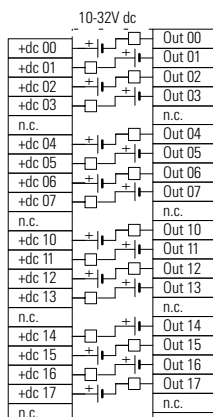
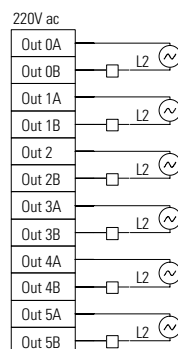
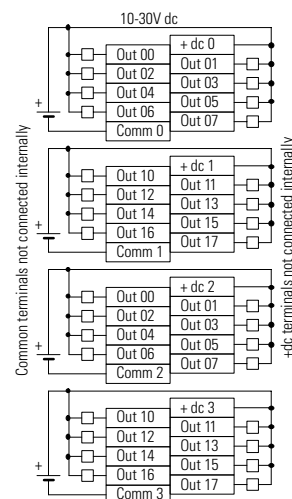
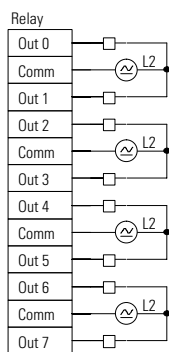
### 1771-NT2 (RTP1)



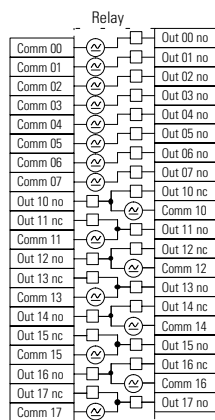
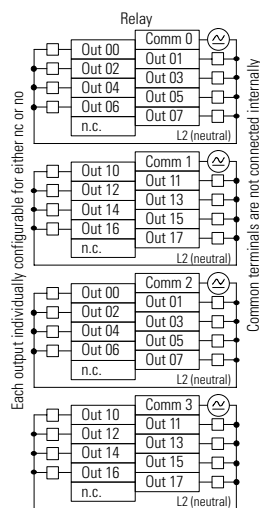
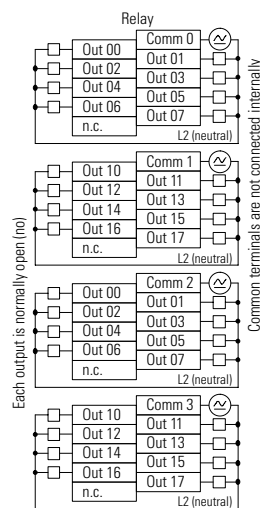
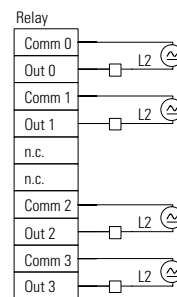
S1 thru S8 are connected internally to SH.

**1771-0A (WA)****1771-0AD (WH)****1771-0AN (WN)****1771-0B (WA)****1771-0BD (WH)****1771-0BDS (WH)****1771-0BN (WN)****1771-0C (WA)****1771-0D (WD)****1771-0D16 (WN)**

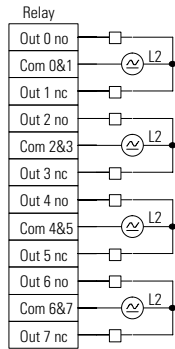
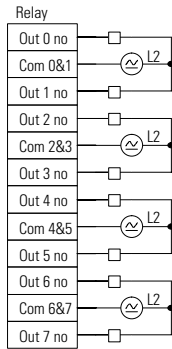
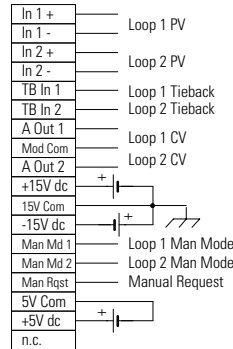
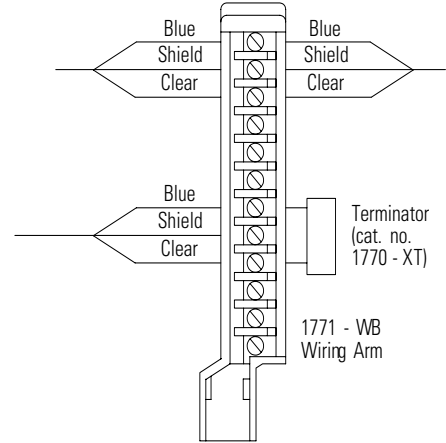
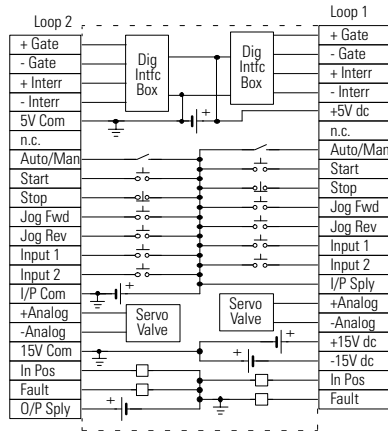
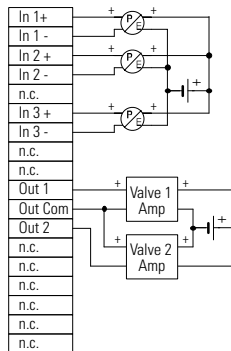
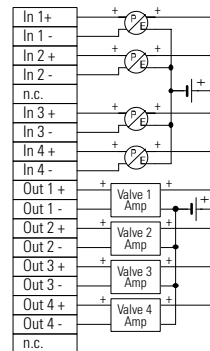
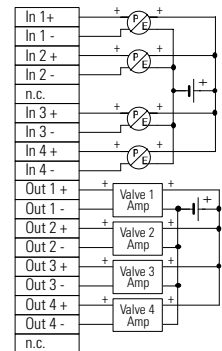
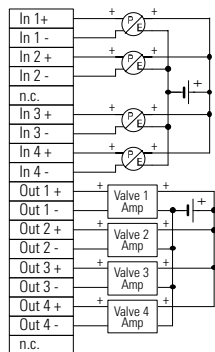
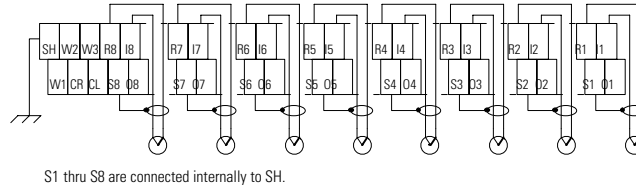
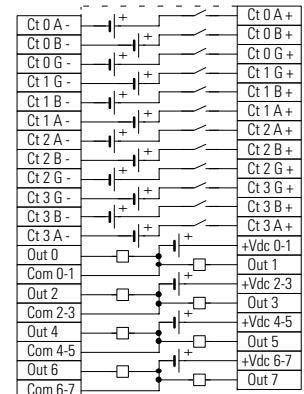
**1771-ODD (WN)****1771-ODZ (WD)****1771-OF/B (WB)****1771-OFE (WC)****1771-OFE1, -OFE2, -OFE3****1771-OG (WC)****1771-OGD (WH)****1771-OJ (WB)****1771-OM (WA)****1771-OMD (WH)****1771-ON (WA)****1771-OND (WH)**

**1771-0P (WA)****1771-0Q (WF)****1771-0Q16 (WN)****1771-0R (WD)****1771-0VN (WN)****1771-0W (WD)**

Each output individually configurable for either normally open or normally closed.

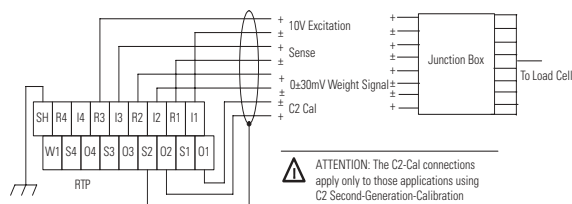
**1771-0W16/B (WN)****1771-0WN (WN)****1771-0WNA (WN)****1771-0X (WC)**

Each output individually configurable for either normally open or normally closed.

**1771-0YL (WD)**

**1771-0ZL (WD)**

**1771-PD (WF)**

**1771-PM**

**1771-QB (WN)**

**1771-QD (WF)**

**1771-QDC (WF)**

**1771-QH (WF)**

**1771-QI (WF)**

**1771-TCM (RTP1)**

**1771-VHSC (WN)**


## 1771-WS

## Connecting Wires from the Junction Box to the Remote Termination Panel - Using the



⚠ ATTENTION: The C2-Cal connections apply only to those applications using C2 Second-Generation-Calibration load points

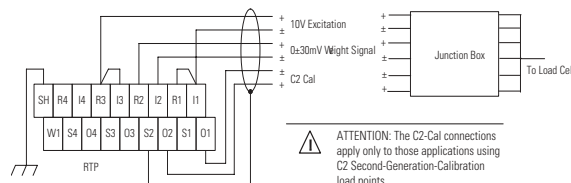
I1	± Excitation to junction box
R1	± Sense from junction box
S1	Shield
O1	± C2-Cal from junction box
I2	± Signal from junction box
R2	± Signal from junction box
S2	Shield
O2	± C2-Cal from junction box
I3	± Sense from junction box

R3	± Excitation to junction box
S3	Shield
O3	Not Used
I4	Not Used
R4	Not Used
S4	Shield
O4	Not Used
SH	Ground
W1	Not Used

<sup>1</sup> These connections apply only to those applications using C2 Second-Generation-Calibration load points. A sense loop is required when using C2 Second-Generation-Calibration.

## 1771-WS

## Connecting Wires from the Junction Box to the Remote Termination Panel - With the Module-Generated



⚠ ATTENTION: The C2-Cal connections apply only to those applications using C2 Second-Generation-Calibration load points

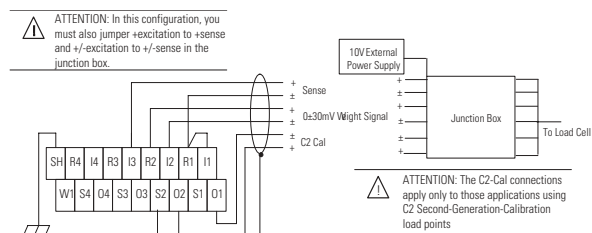
I1	± Excitation to junction box
R1	I1 on RTP
S1	Shield
O1	± C2-Cal from junction box <sup>1</sup>
I2	± Signal from junction box
R2	± Signal from junction box
S2	Shield
O2	± C2-Cal from junction box <sup>1</sup>
I3	R3 on RTP

R3	± Excitation to junction box
S3	Shield
O3	Not Used
I4	Not Used
R4	Not Used
S4	Shield
O4	Not Used
SH	Ground
W1	Not Used

<sup>1</sup> These connections apply only to those applications using C2 Second-Generation-Calibration load points. A sense loop is required when using C2 Second-Generation-Calibration.

## 1771-WS

## Connecting Wires from the Junction Box to the Remote Termination Panel - With the Voltage



⚠ ATTENTION: In this configuration, you must also jumper +excitation to +sense and +/-excitation to +/-sense in the junction box.

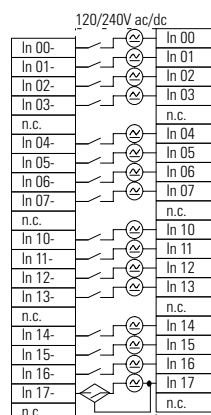
⚠ ATTENTION: The C2-Cal connections apply only to those applications using C2 Second-Generation-Calibration load points

I1	I1 on RTP
R1	± Sense from junction box
S1	Shield
O1	± C2-Cal from junction box <sup>1</sup>
I2	± Signal from junction box
R2	± Signal from junction box
S2	Shield
O2	± C2-Cal from junction box <sup>1</sup>
I3	± Sense from junction box

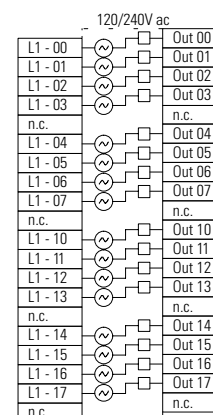
R3	Not Used
S3	Shield
O3	Not Used
I4	Not Used
R4	Not Used
S4	Shield
O4	Not Used
SH	Ground
W1	Not Used

<sup>1</sup> These connections apply only to those applications using C2 Second-Generation-Calibration load points. A sense loop is required when using C2 Second-Generation-Calibration.

## 1771-sc IM16



## 1771-sc OMI16 (WN)

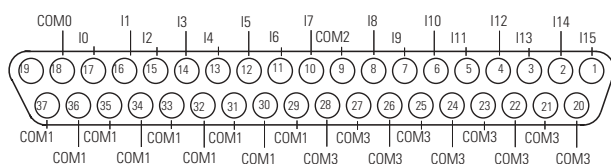


## **Notes:**

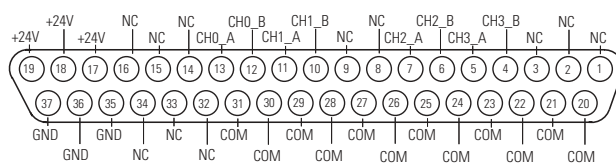


## 1790 CompactBlock LDX I/O Modules

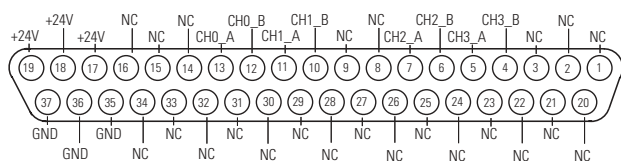
**1790D-16BV0, -16BV0X**



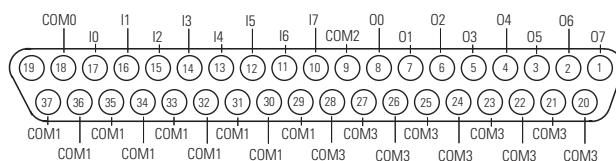
**1790D-4R0**



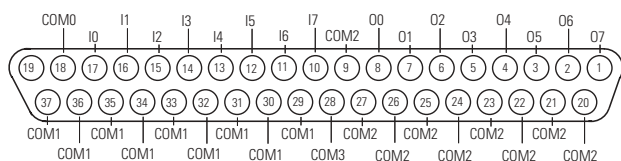
**1790D-4T0**



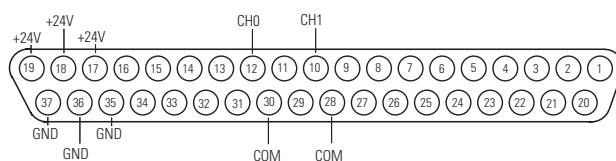
**1790D-8BV8B, -8BV8BX**



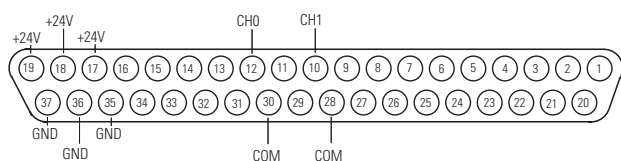
**1790D-8BV8V, -8BV8VX**



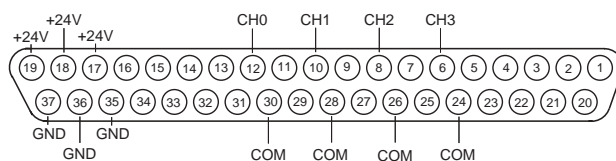
**1790D-NOC2**



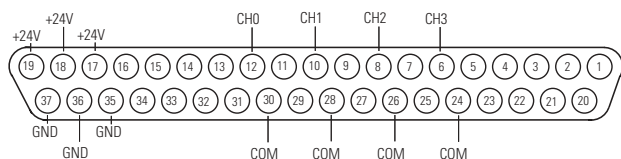
**1790D-NOV2**



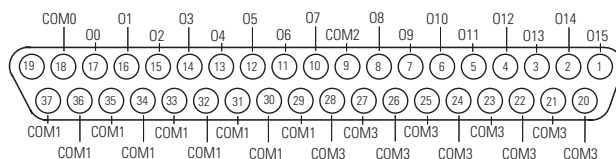
**1790D-N4C0**



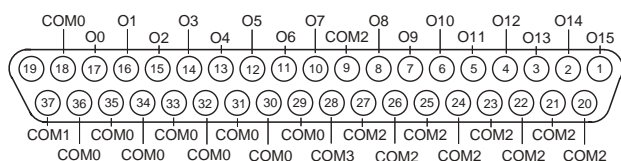
**1790D-N4V0**



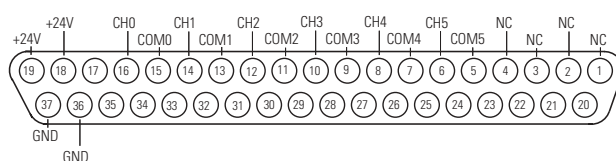
**1790D-OB16, -OB16X**



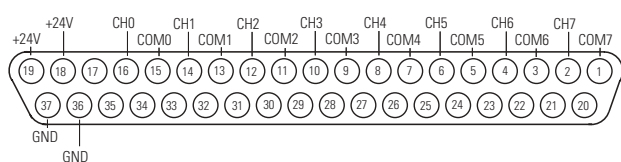
**1790D-OV16, -OV16X**



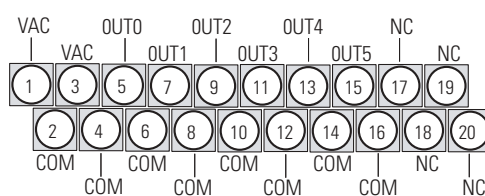
**1790D-OW6**



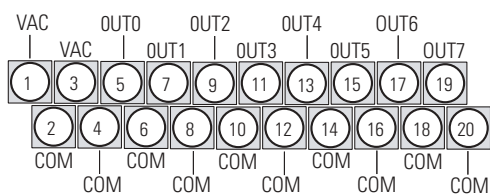
**1790D-OW8X**



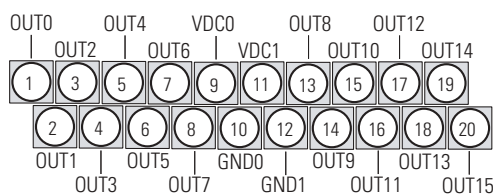
**1790D-TOA6**

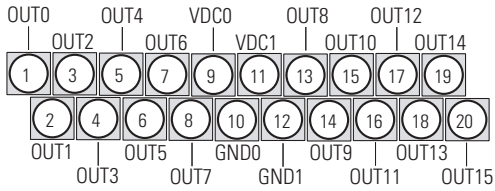
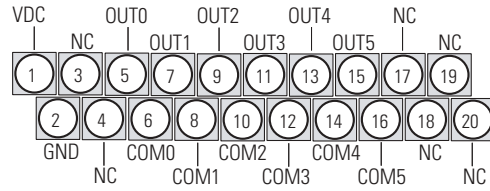
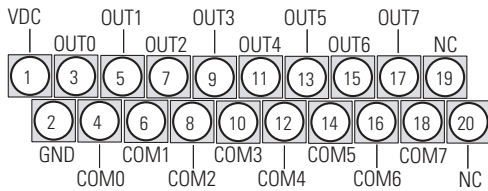
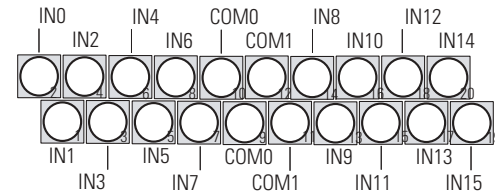


**1790D-TOA8X**

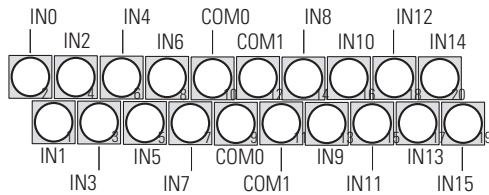


**1790D-TOB16, -TOB16X**

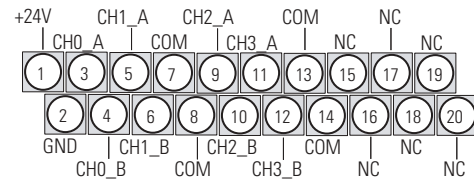
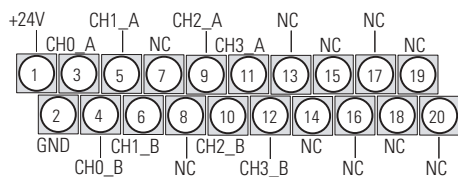
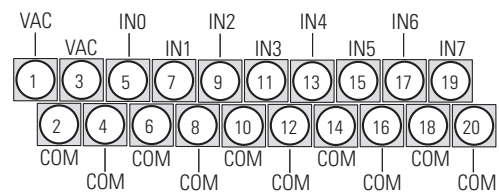


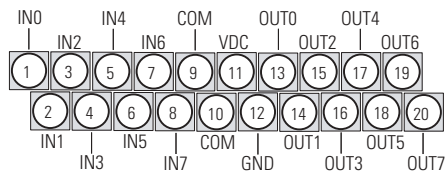
**1790D-TOV16, -TOV16X****1790D-TOW6****1790D-TOW8X****1790D-T16BV0**

For inputs 0-7 - Sinking inputs - wire Com 0 and Com 1 to Field Power (-) GND  
 Sourcing inputs - wire Com 0 and Com 1 to Field Power (+) 24V dc  
 For inputs 8-15 - Sinking inputs - wire Com 2 and Com 3 to Field Power (-) GND  
 Sourcing inputs - wire Com 2 and Com 3 to Field Power (+) 24V dc

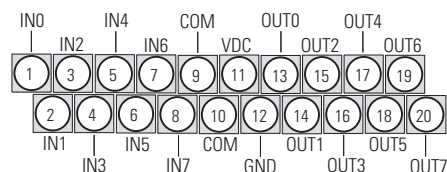
**1790D-T16BV0X**

For inputs 0-7 - Sinking inputs - wire Com 0 and Com 1 to Field Power (-) GND  
 Sourcing inputs - wire Com 0 and Com 1 to Field Power (+) 24V dc  
 For inputs 8-15 - Sinking inputs - wire Com 2 and Com 3 to Field Power (-) GND  
 Sourcing inputs - wire Com 2 and Com 3 to Field Power (+) 24V dc

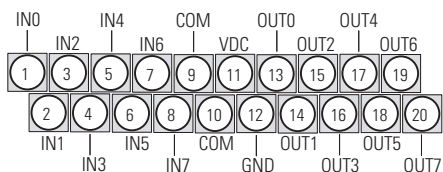
**1790D-T4RO****1790D-T4TO****1790D-T8AO, T8AOX**

**1790D-T8BV8B**

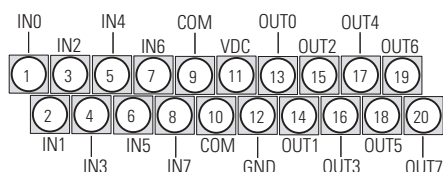
Sinking inputs - wire Com 0 and Com 1 to Field Power (-) GND  
 Sourcing inputs - wire Com 0 and Com 1 to Field Power (+) 24V dc  
 Sourcing outputs -wire Com 2 to Field Power (+) 24Vdc, wire Com 3 to Field Power (-) GND

**1790D-T8BV8BX**

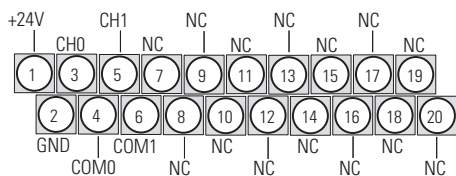
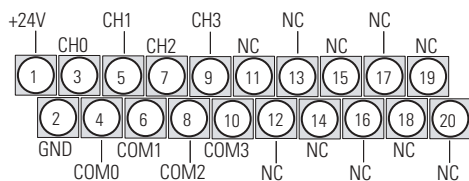
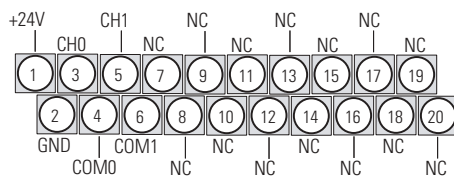
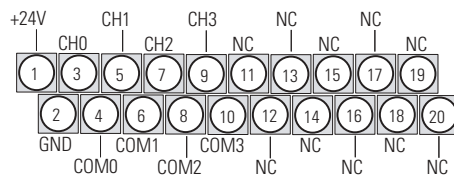
Sinking inputs - wire COM (pin 9) to Field Power (-) GND  
 Sourcing inputs - wire COM (pin 9) to Field Power (+) 24Vdc  
 Note: both COM (pins 9 and 10) are internally connected.  
 Sourcing outputs -wire VDC (pin 11) to Field Power (+) 24Vdc,  
 wire GND (pin 12) to Field Power (-) GND

**1790D-T8BV8V**

Sinking inputs - wire Com 0 and Com 1 to Field Power (-) GND  
 Sourcing inputs - wire Com 0 and Com 1 to Field Power (+) 24V dc  
 Sinking outputs -wire Com 2 to Field Power (+) 24Vdc, wire Com 3 to Field Power (-) GND

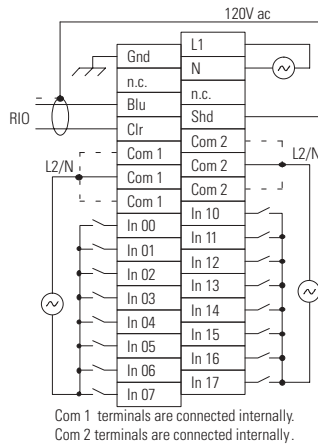
**1790D-T8BV8VX**

Sinking inputs - wire COM (pin 9) to Field Power (-) GND  
 Sourcing inputs - wire COM (pin 9) to Field Power (+) 24V dc  
 Note: both COM (pins 9 and 10) are internally connected.  
 Sinking outputs -wire VDC (pin 11) to Field Power (+) 24Vdc,  
 wire GND (pin 12) to Field Power (-) GND

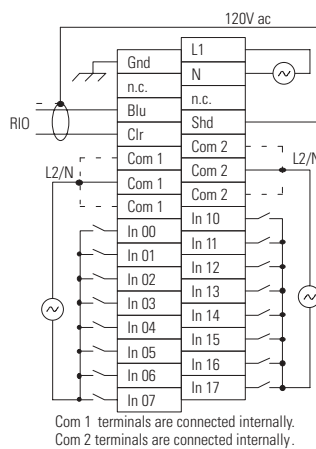
**1790D-TNOC2****1790D-TN4C0****1790D-TNOV2****1790D-TN4V0**

## 1791 I/O Blocks

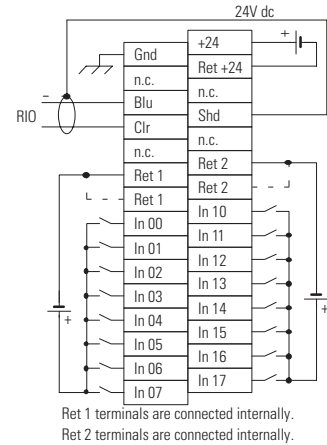
**1791-16A0B**



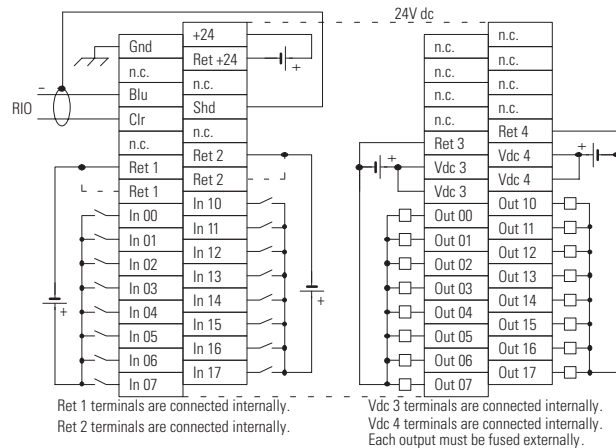
**1791-16ACB**



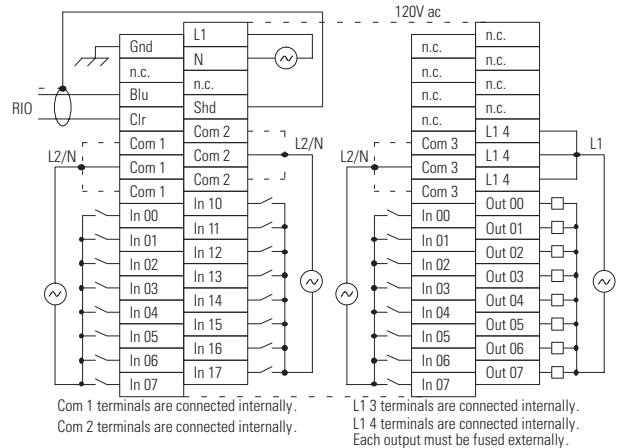
**1791-16A0B**

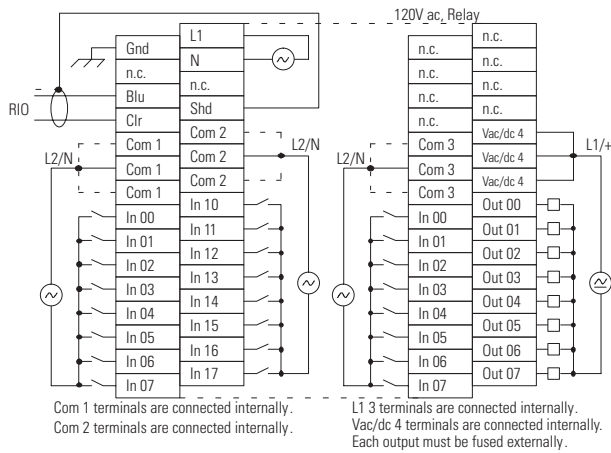
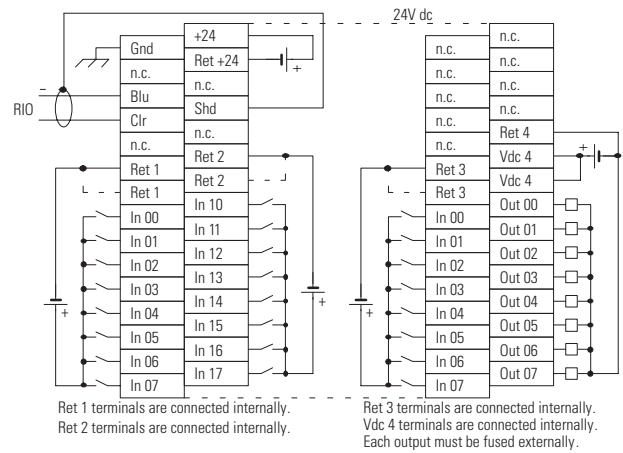
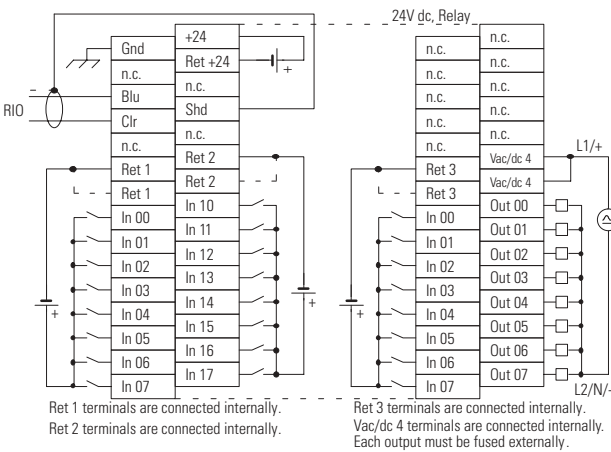
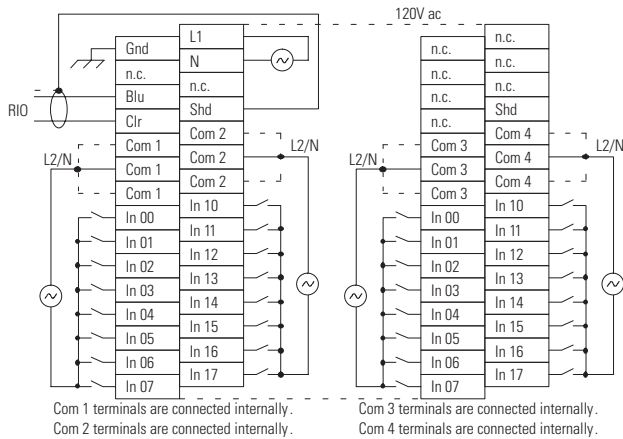
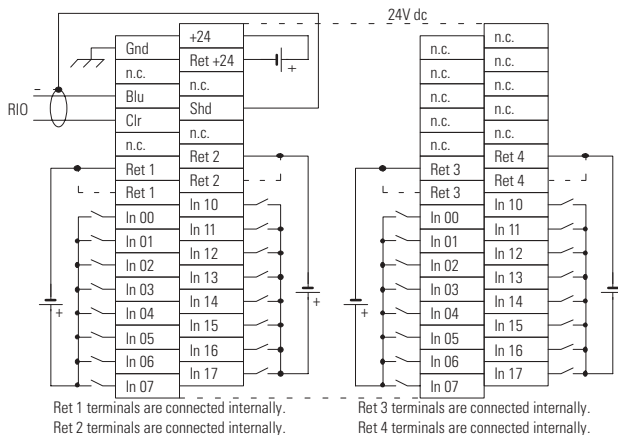
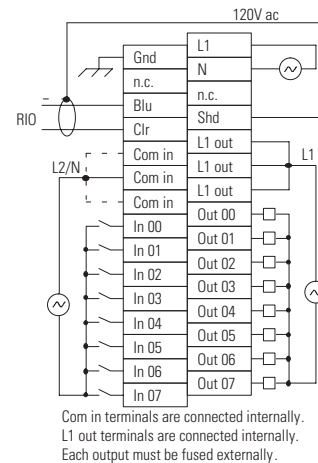


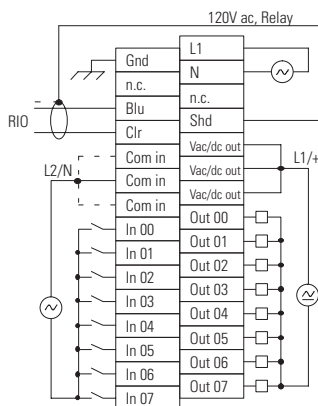
**1791-16BCB**



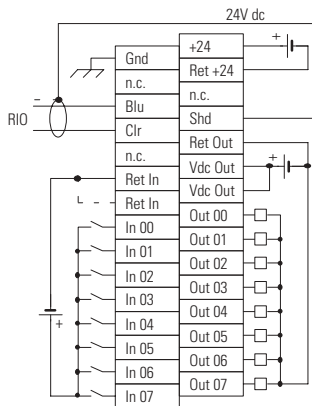
**1791-24A8B**



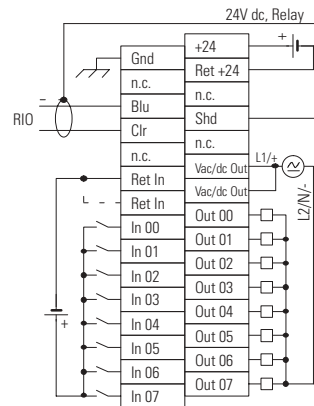
**1791-24ARB****1791-24B8B****1791-24BRB****1791-32A0B****1791-32B0B****1791-8ACB**

**1791-8ARB**

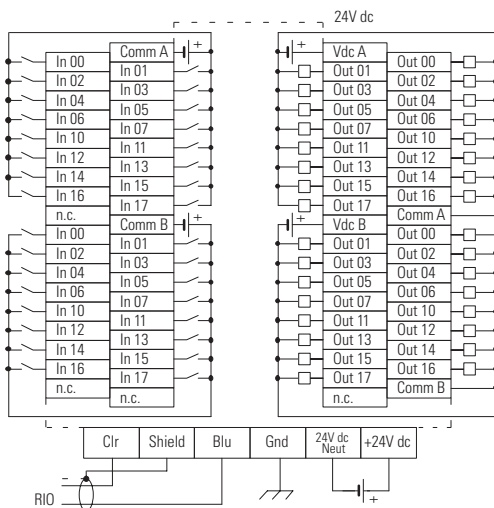
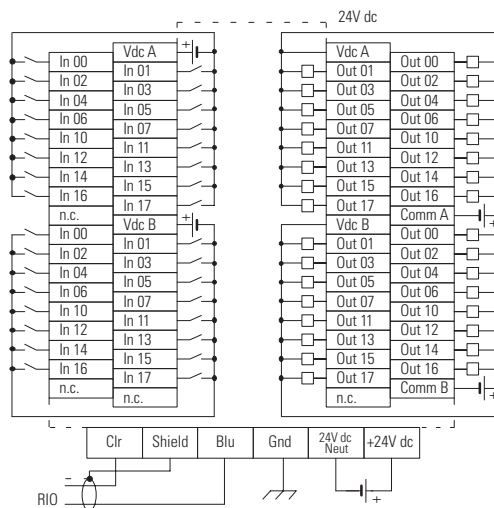
Com in terminals are connected internally.  
L1 out terminals are connected internally.  
Each output must be fused externally.

**1791-8BCB**

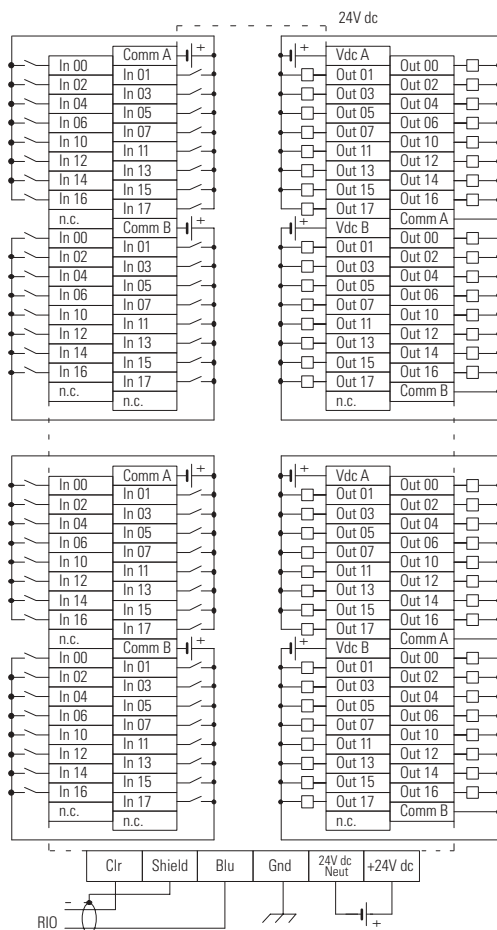
Ret In terminals are connected internally.  
Vdc Out terminals are connected internally.  
Each output must be fused externally.

**1791-8BRB**

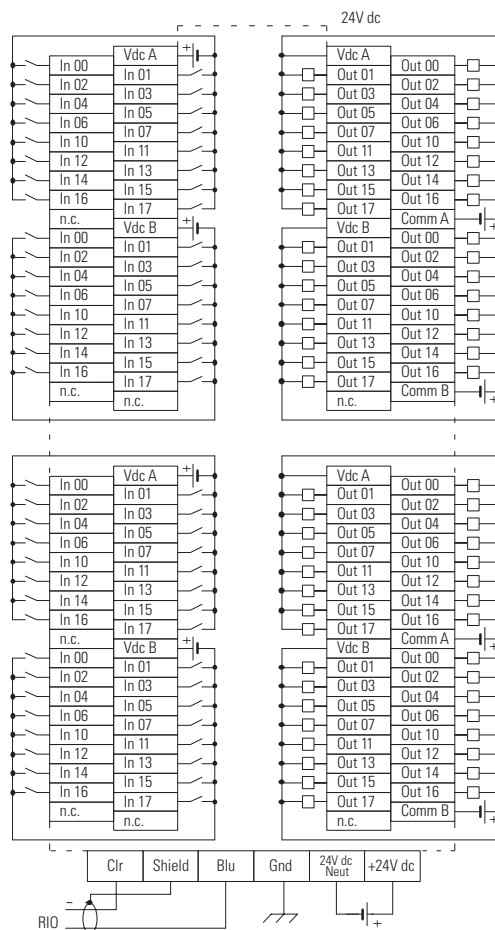
Ret In terminals are connected internally.  
Vac/dc Out terminals are connected internally.  
Each output must be fused externally.

**1791-10BW****1791-10VW**

## 1791-IOBX

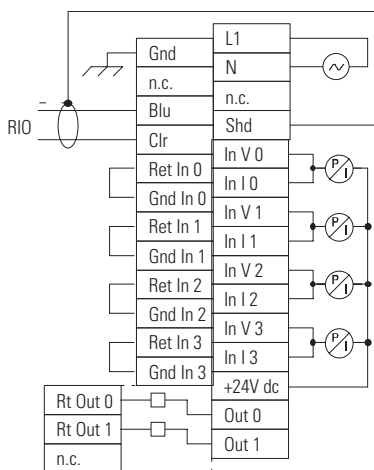


## 1791-IOVX





## 1791-N4C2 – Current applications

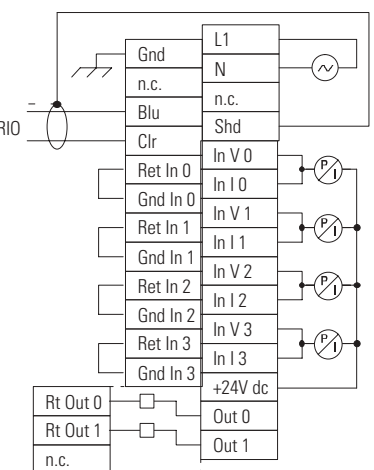


Input loop power provided internally.

### 1791-N4C2 – Voltage applications



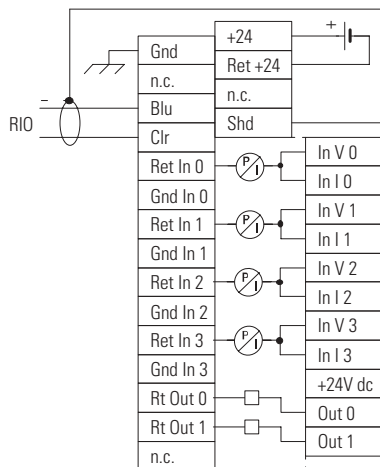
## 1791-N4V2 – Current applications



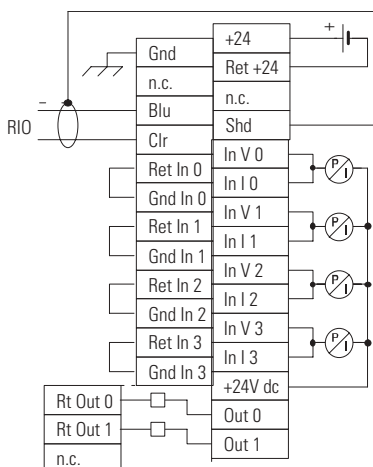
Input loop power provided internally.

## 1791-N4V2 – Voltage applications

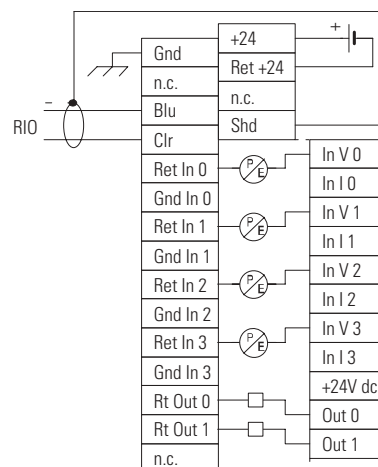


**1791-NDC – Current applications**

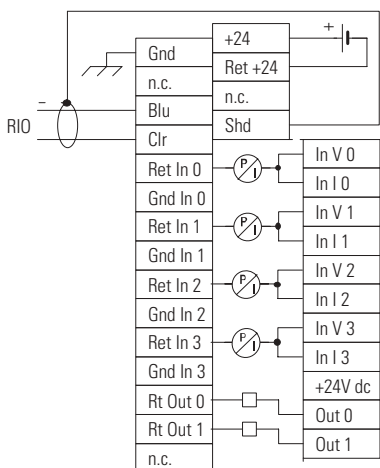
Connected this way, external input loop power is needed.



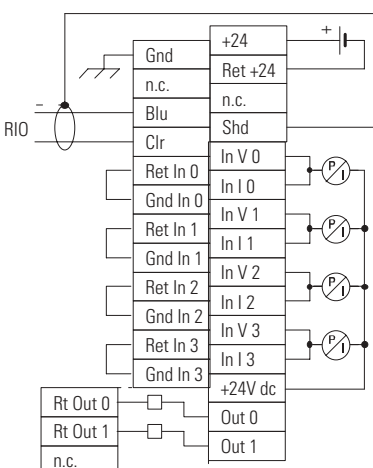
Input loop power provided internally.

**1791-NDC – Voltage applications**

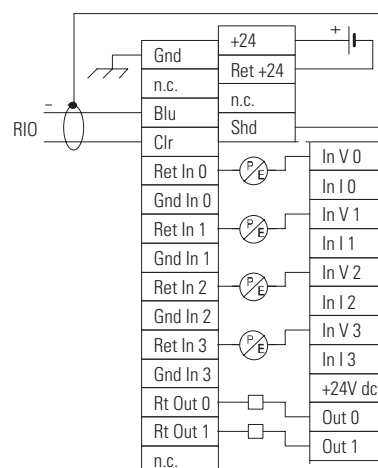
External input loop power needed.

**1791-NDV – Current applications**

Connected this way, external input loop power is needed.

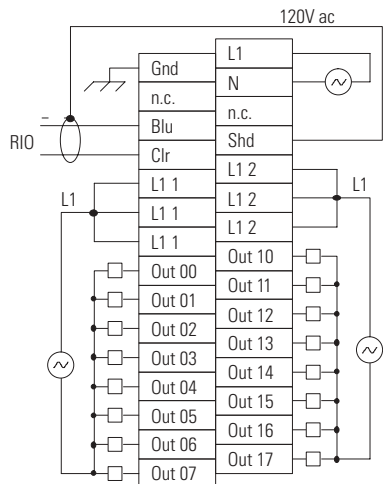


Input loop power provided internally.

**1791-NDV – Voltage applications**

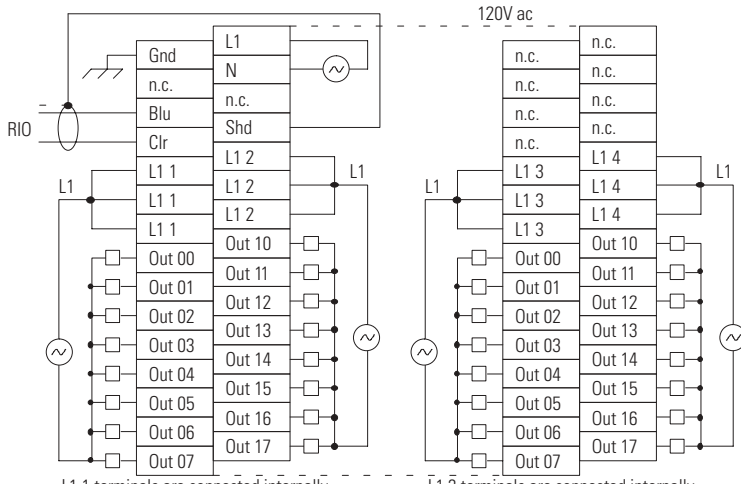
External input loop power needed.

**1791-0A16B**



L1 1 terminals are connected internally.  
L1 2 terminals are connected internally.  
Each output must be fused externally.

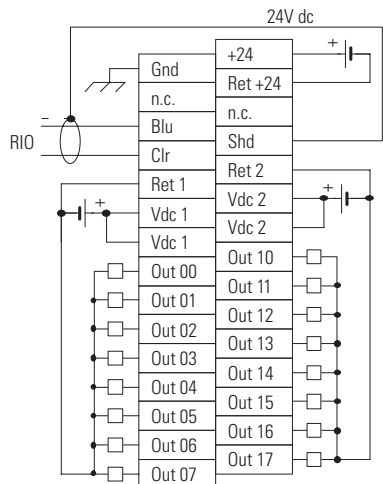
## 1791-0A32B



L1 1 terminals are connected internally.  
L1 2 terminals are connected internally.

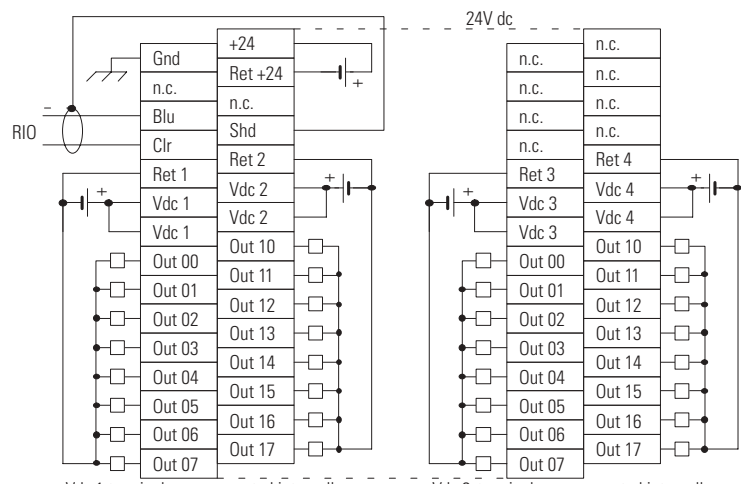
L1 3 terminals are connected internally.  
L1 4 terminals are connected internally.  
Each output must be fused externally.

**1791-0B16B**



Vdc 1 terminals are connected internally.  
Vdc 2 terminals are connected internally.  
Each output must be fused externally.

**1791-0B32B**



Vdc 1 terminals are connected internally.

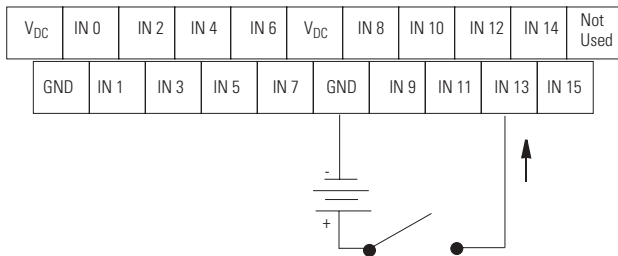
Vdc 2 terminals are connected internally.

Vdc 3 terminals are connected internally.  
Vdc 4 terminals are connected internally.  
Each output must be fused externally.

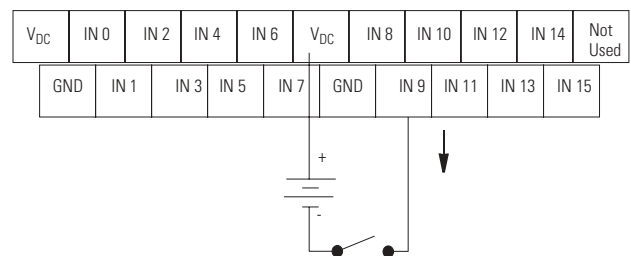
## Notes:

## 1791D CompactBlock I/O Blocks

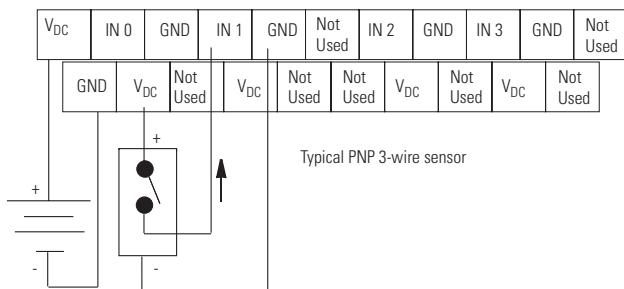
**1791D-16B0, -16BOX**



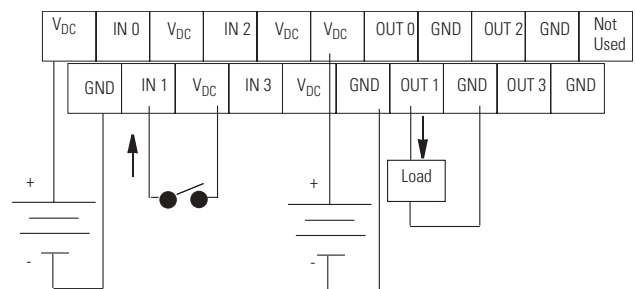
**1791D-16V0, -16VOX**



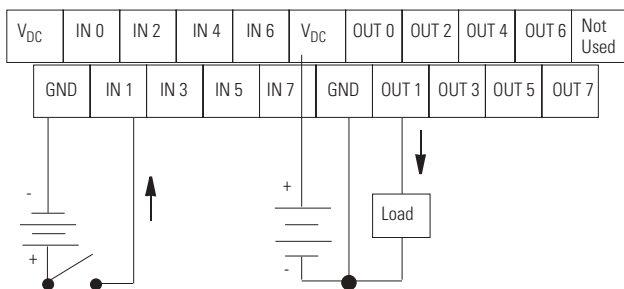
**1791D-4B0**



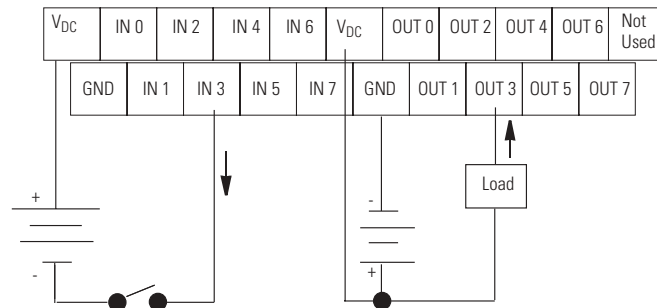
**1791D-4B4P**



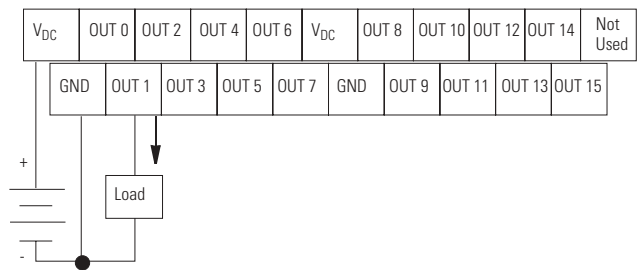
**1791D-8B8P**



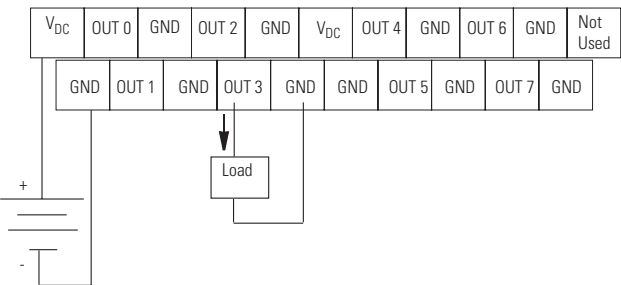
**1791D-8V8P**



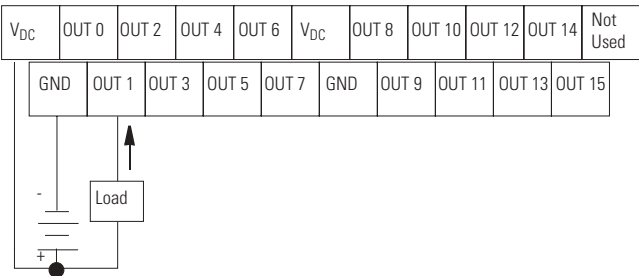
1791D-OB16P, -OB16PX



1791D-OB8P

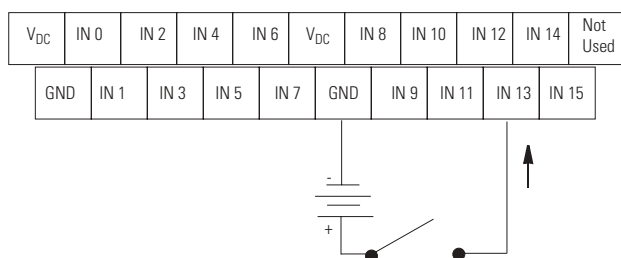


1791D-OV16P, -OV16PX

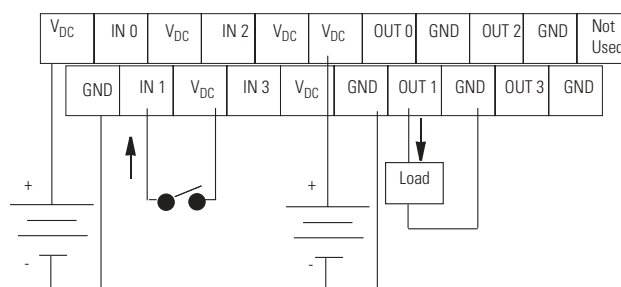


## 1791P CompactBlock I/O Blocks

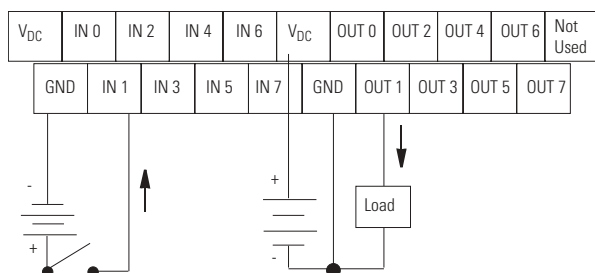
**1791P-16B0**



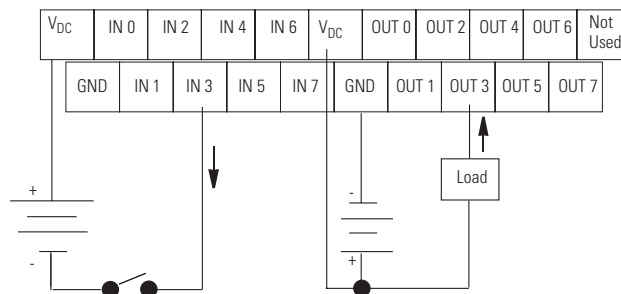
**1791P-4B4P**



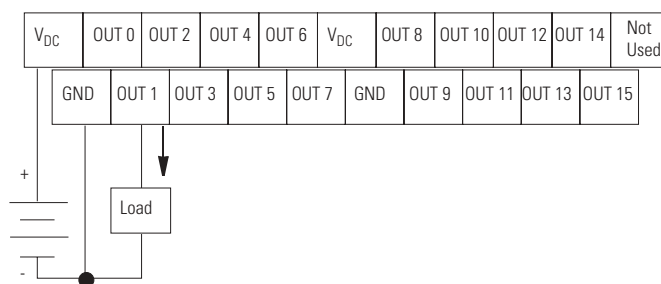
**1791P-8B8P**



**1791P-8V8P**



**1791P-0B16P**

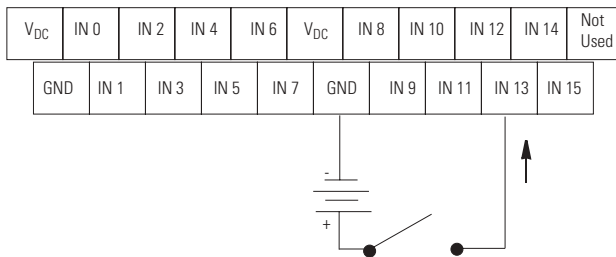


## **Notes:**

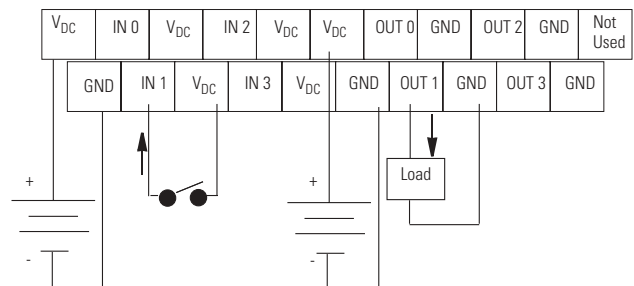


## 1791R CompactBlock I/O Blocks

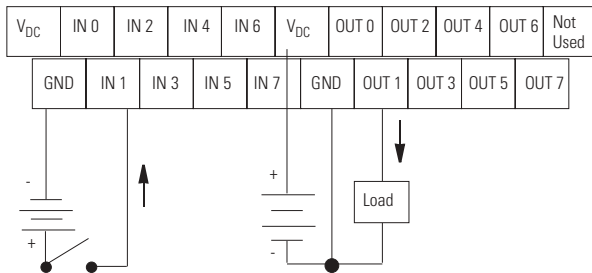
**1791R-16B0**



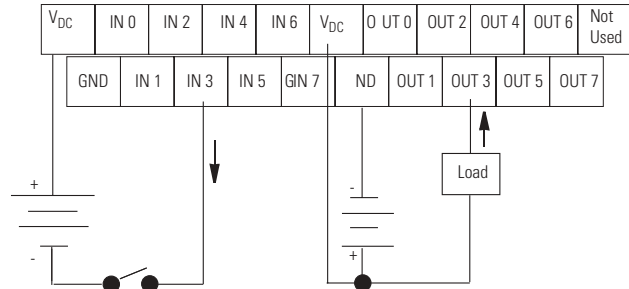
**1791R-4B4P**



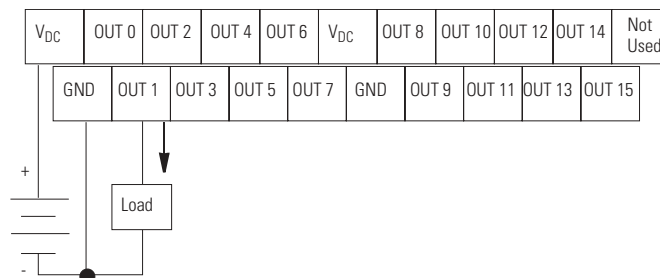
**1791R-8B8P**



**1791R-8V8P**



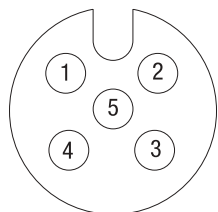
**1791P-0B16P**



## **Notes:**

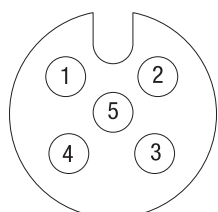
## 1792D ArmorBlock MaXum I/O Blocks

### 1792D-12BVT4D



Input Micro Connector  
(View into Socket)

Pin 1 Sensor Source voltage  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used

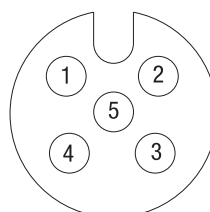


Output Micro Connector  
(View into Socket)

Pin 1 Not Used  
Pin 2 Output B  
Pin 3 Auxiliary Power Ground  
Pin 4 Output A  
Pin 5 Not Used

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V- measured at the module.

### 1792D-16BVT0CD

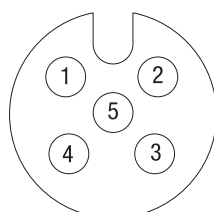


Input Micro Connector  
(View into Socket)

Pin 1 Sensor Source Voltage A  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Sensor Source Voltage B

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V-measured at the module.

### 1792D-16BVT0D

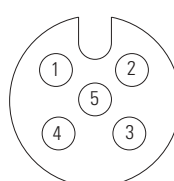


Input Micro Connector  
(View into Socket)

Pin 1 Sensor Source Voltage  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V-measured at the module.

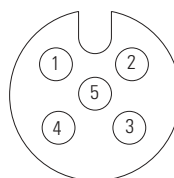
### 1792D-2BVA2D



Input Micro Connector  
(View into Socket)

Pin 1 Sensor Source Voltage  
Pin 2 Alarm  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input  
Pin 5 Not Used

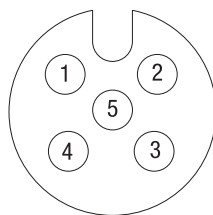
<sup>1</sup>(Logic Ground is approximately 0.4V above DeviceNet V-measured at the module).



Output Micro Connector  
(View into Socket)

Pin 1 Not used  
Pin 2 Not used  
Pin 3 Auxiliary Power Ground  
Pin 4 Output  
Pin 5 Not Used

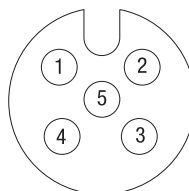
### 1792D-2BV0D



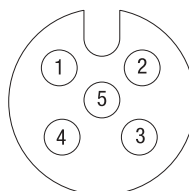
**Input Micro Connector**  
(View into Sockets)  
Pin 1 Sensor Source Voltage  
Pin 2 Not Used  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input  
Pin 5 Not Used

<sup>1</sup>. Logic Ground is approximately 0.4V above DeviceNet V-measured at the module.

### 1792D-4BV4D



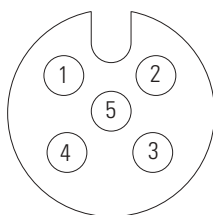
**Input Micro-Connector**  
(View into Socket)  
Pin 1 Sensor Source voltage  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used



**Output Micro-Connector**  
(View into Socket)  
Pin 1 Not Used  
Pin 3 Auxiliary Power Ground  
Pin 4 Output A  
Pin 5 Not Used

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V- measured at the module.

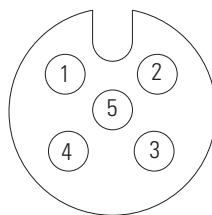
### 1792D-4BV0D



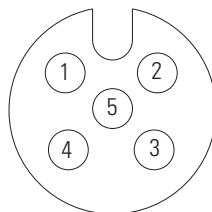
**Input Micro-Connector**  
(View into Socket)  
Pin 1 Sensor Source Voltage  
Pin 2 Not Used  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input  
Pin 5 Not Used

<sup>1</sup>. Logic Ground is approximately 0.4V above DeviceNet V-measured at the module.

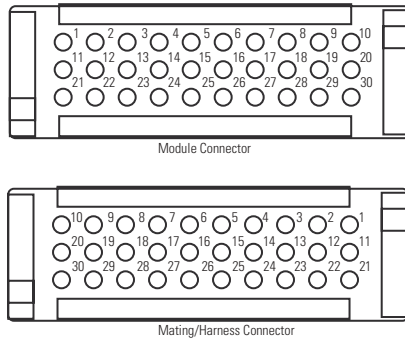
### 1792D-4BVT4D



**Input Micro-Connector**  
(View into Sockets)  
Pin 1 Sensor Source Voltage  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used



**Output Micro-Connector**  
(View into Sockets)  
Pin 1 Not Used  
Pin 2 Output B  
Pin 3 Auxiliary Power Ground  
Pin 4 Output A  
Pin 5 Not Used

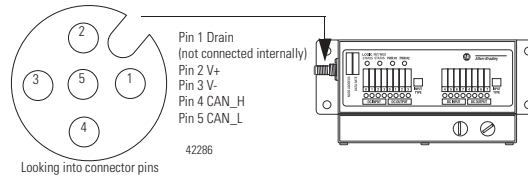
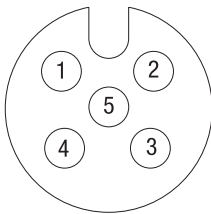
**1792D-88HC**

Pin Number	Signal
1	PWR1+
2	IN_0 (GR P 1)
3	IN_1 (GR P 1)
4	IN_2 (GR P 1)
5	IN_3 (GR P 1)
6	IN_0 (GR P 2)
7	IN_1 (GR P 2)
8	IN_2 (GR P 2)
9	IN_3 (GR P 2)
10	PWR 2+
11	PWR 1+
12	PWR 1-
13	PWR 1-
14	PWR 1-
15	PWR 1-

Pin Number	Signal
16	PWR 2-
17	PWR 2-
18	PWR 2-
19	PWR 2-
20	PWR 2+
21	PWR 1+
22	OU T_0 (GRP 1)
23	OU T_1 (GRP 1)
24	OU T_2 (GRP 1)
25	OU T_3 (GRP 1)
26	OU T_0 (GRP 2)
27	OU T_1 (GRP 2)
28	OU T_2 (GRP 2)
29	OU T_3 (GRP 2)
30	PWR 2+

Connect the DeviceNet Cable to the Module

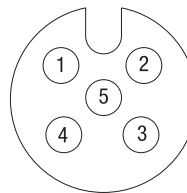
Connect the DeviceNet wiring to the 5-pin micro-connector on the module. The micro-connector pinout is shown below.

**1792D-8BI08E**

**Input/ Output Micro-Connector**  
(View into Socket)

Pin 1 Sensor Source Voltage  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V-measured at the module.

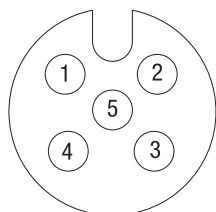
**1792D-8BV0D**

**Input Micro-Connector**  
(View into Socket)

Pin 1 Sensor Source voltage  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V- measured at the module.

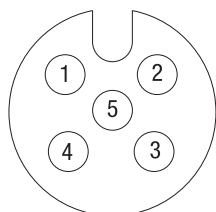
### 1792D-8BVT8CD



#### Input Micro-Connector

(View into Socket)

Pin 1 Sensor Source voltage A  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Sensor Source voltage B



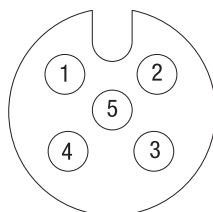
#### Output Micro-Connector

(View into Socket)

Pin 1 Not Used  
Pin 2 Output B  
Pin 3 Auxiliary Power Ground  
Pin 4 Output A  
Pin 5 Not Used

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V- measured at the module.

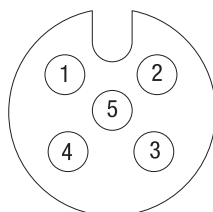
### 1792D-8BVT8D



#### Input Micro-Connector

(View into Socket)

Pin 1 Sensor Source voltage  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used



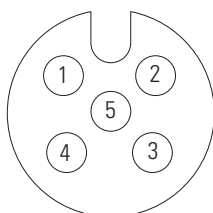
#### Output Micro-Connector

(View into Socket)

Pin 1 Not Used  
Pin 2 Output B  
Pin 3 Auxiliary Power Ground  
Pin 4 Output A  
Pin 5 Not Used

<sup>1</sup>Logic Ground is approximately 0.4V above DeviceNet V- measured at the module.

### 1792D-8BVT0D



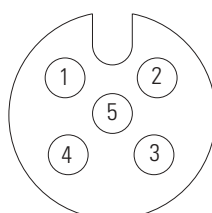
#### Input Micro-Connector

(View into Sockets)

Pin 1 Sensor Source Voltage  
Pin 2 Input B  
Pin 3 Return Logic Ground<sup>1</sup>  
Pin 4 Input A  
Pin 5 Not Used

<sup>1</sup> Logic Ground is approximately 0.4V above DeviceNet V-measured at the module.

### 1792D-0B4D

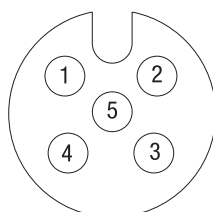


#### Micro-Connector

(View into Sockets)

Pin 1 Not Used  
Pin 2 Not Used  
Pin 3 Auxiliary Power Ground  
Pin 4 Output  
Pin 5 Not Used

### 1792D-0B8D

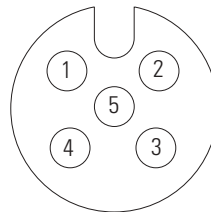


#### Output Micro-Connector

(View into Sockets)

Pin 1 Not Used  
Pin 2 Not Used  
Pin 3 Auxiliary Power Ground  
Pin 4 Output A  
Pin 5 Not Used

### 1792D-0VT16E



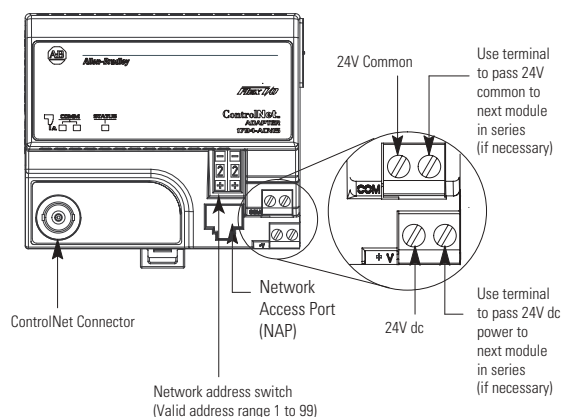
#### Micro-Connector

(View into Sockets)

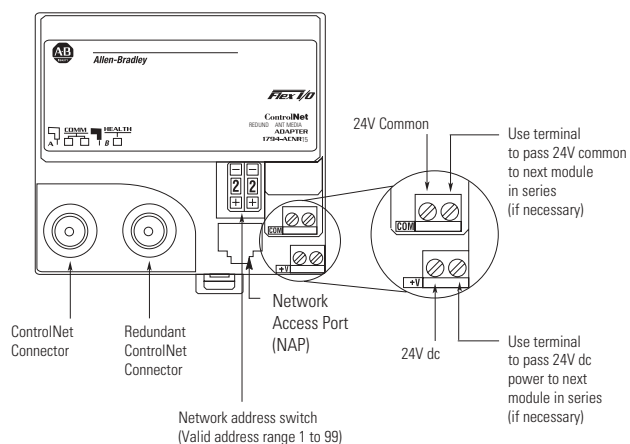
Pin 1 Auxiliary +24V dc  
Pin 2 Output B  
Pin 3 Not used  
Pin 4 Output A  
Pin 5 Not Used

## 1794 FLEX I/O Modules

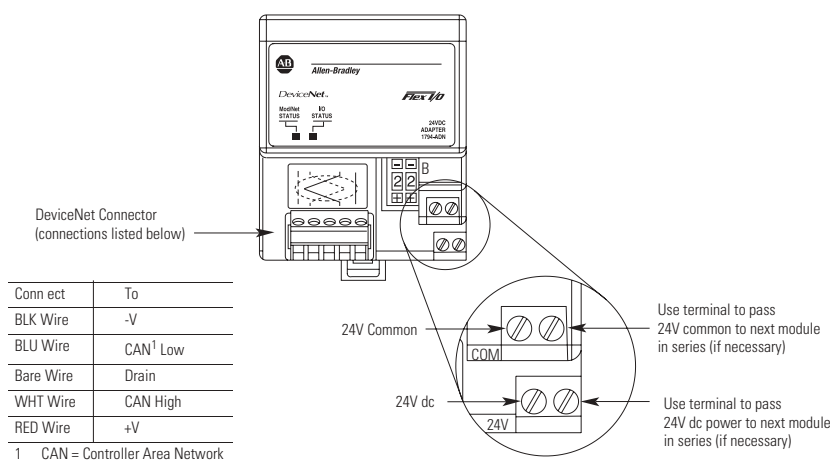
**1794-ACN15**



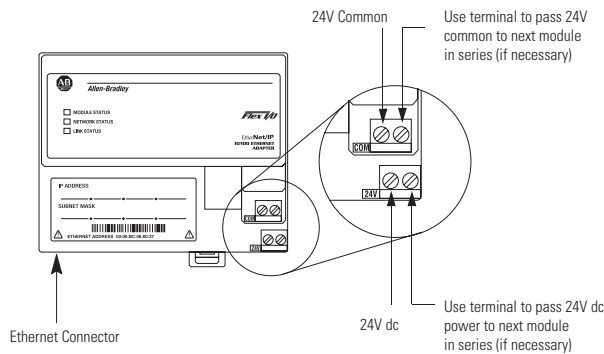
**1794-ACNR15**



**1794-ADN**



### 1794-AENT

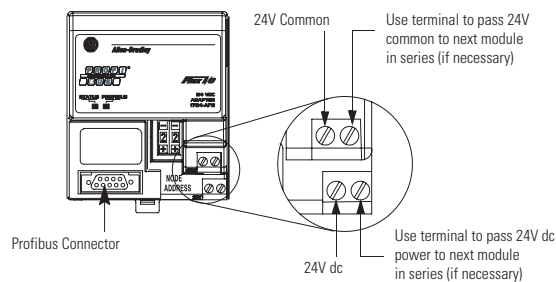


#### WARNING



If you connect or disconnect the Ethernet cable with power applied to the adapter or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

### 1794-APB



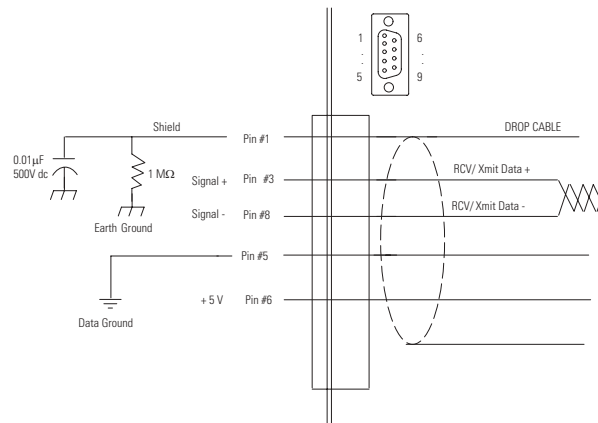
#### WARNING



When you connect or disconnect the PROFIBUS cable while power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

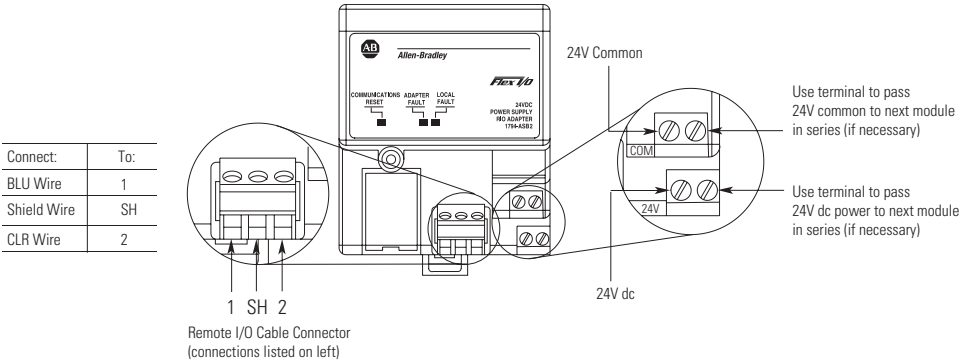
Connect the PROFIBUS drop cable to the 9-pin D-shell connector according to the following pin assignments and graphic:

Pin #	RS-485 Reference	Signal	Description
1		Shield	Shield, RC to earth ground
2		RP	not used
3	B/B'	RXD/TXD-P	Receive/transmit data - P
4		CTNR-P	not used
5	C/C'	DGND	Data ground
6		VP	Voltage plus (+5V)
7		RP	not used
8	A/A'	RXD/TXD-N	Receive/transmit data - N
9		CTNR-N	not used
Metal Shell			Earth Ground

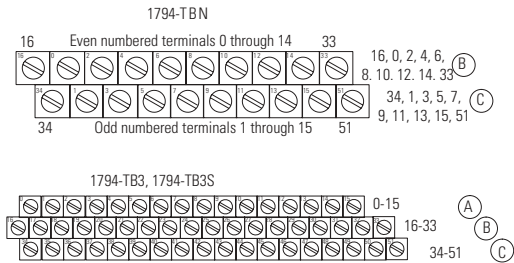




1794-ASB and 1794-ASB2



1794-IA16

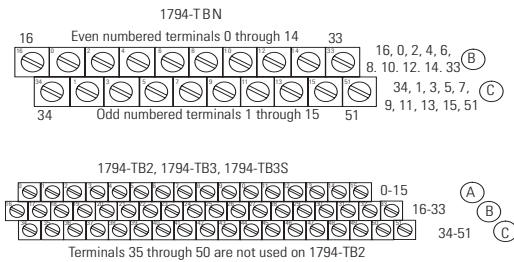


Input Terminals		120V ac Supply <sup>1</sup>	Input Terminals		120V ac Supply <sup>1</sup>
Channel	TB3, TB3S	TBN	Channel	TB3, TB3S	TBN
0	A-0	B-0	8	A-8	B-8
1	A-1	C-1	9	A-9	C-9
2	A-2	B-2	10	A-10	B-10
3	A-3	C-3	11	A-11	C-11
4	A-4	B-4	12	A-12	B-12
5	A-5	C-5	13	A-13	C-13
6	A-6	B-6	14	A-14	B-14
7	A-7	C-7	15	A-15	C-15

A = Input terminals on the 1794-TB3 and TB3S. B0 - B14 and C1 - C15 are input terminals on the 1794-TBN.  
B = B-16 through B-33 are internally connected on the 1794-TB3 and -TB3S. B-16 and B-33 are internally connected on the 1794-TBN. Connect 120V ac L2 to B-16.  
C = C-34 through C-51 are internally connected on the 1794-TB3 and -TB3S. C-34 and C-51 are internally connected on the 1794-TBN. Connect 120V ac L1 to C-34.

<sup>1</sup> - Auxiliary terminal strips are required when using the 1794-TBN

1794-IA8



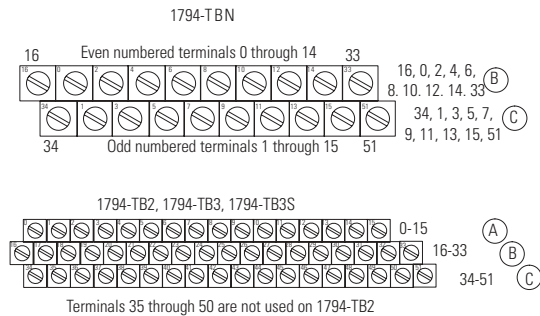
Terminals 35 through 50 are not used on 1794-TB2

Input Channel	1794-TB 3, -TB3S, and -TB 2		1794-TBN	
	Input Terminals	120V ac Supply	Input Terminals	120V ac Supply
0	A-0	A-1 <sup>1</sup> /C-35	B-0	C-1 <sup>2</sup>
1	A-2	A-3 <sup>1</sup> /C-37	B-2	C-3 <sup>2</sup>
2	A-4	A-5 <sup>1</sup> /C-39	B-4	C-5 <sup>2</sup>
3	A-6	A-7 <sup>1</sup> /C-41	B-6	C-7 <sup>2</sup>
4	A-8	A-9 <sup>1</sup> /C-43	B-8	C-9 <sup>2</sup>
5	A-10	A-11 <sup>1</sup> /C-45	B-10	C-11 <sup>2</sup>
6	A-12	A-13 <sup>1</sup> /C-47	B-12	C-13 <sup>2</sup>
7	A-14	A-15 <sup>1</sup> /C-49	B-14	C-15 <sup>2</sup>

A = input terminals  
B = common terminals  
C = power terminals (C-34 through C-51 for TB3 and TB3S; C-34 and C-51 for TB2)  
B = even numbered terminals B-0 through B-14, ac common terminals B-16 and B-33  
C = Power Terminals C-34 and C-51, and odd numbered terminals 1 through 15

Connect 120V ac L2 (common) to B-16  
Connect 120V ac L1 to C-34

<sup>1</sup> A-1, 3, 5, 7, 9, 11, 13 and 15 on 1794-TB3, -TB3S, and -TB2 are internally connected in the module to 120V ac L1.  
<sup>2</sup> C-1, 3, 5, 7, 9, 11, 13 and 15 on 1794-TBN are internally connected in the module to 120V ac L1.



1794-IA8I

Input Channel	1794-TB 3, -TB3S, and -TB 2		1794-TBN	
	Input Terminals	120V ac Common L2	Input Terminals	120V ac Common L2
0	A-0	A-1	B-0	C-1
1	A-2	A-3	B-2	C-3
2	A-4	A-5	B-4	C-5
3	A-6	A-7	B-6	C-7
4	A-8	A-9	B-8	C-9
5	A-10	A-11	B-10	C-11
6	A-12	A-13	B-12	C-13
7	A-14	A-15	B-14	C-15

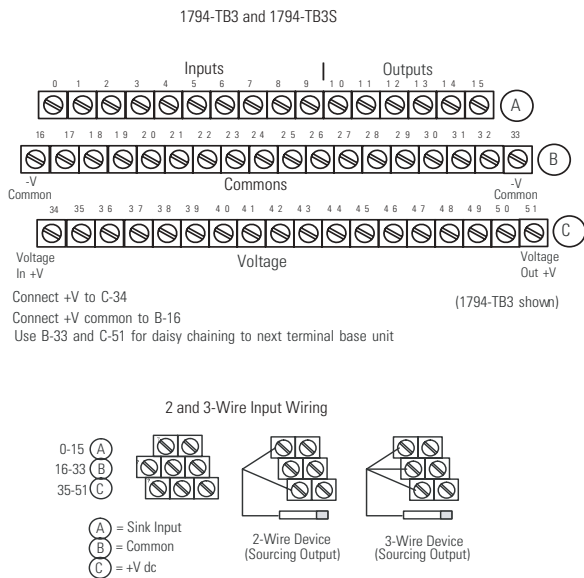
A = even numbered input terminals 0 thru 14 for customer input connections; corresponding odd numbered 120V ac common L2 terminals 1 through 15 for customer connections from isolated power supply

B = even numbered input terminals 0 through 14 for customer input connections

C = odd numbered terminals 1 through 15 for 120V ac L2 common connections from isolated power supply

Auxiliary terminal strips are required to connect 120V ac L1 of each isolated power supply to the input device that it is driving.

1794-IB10X0B6



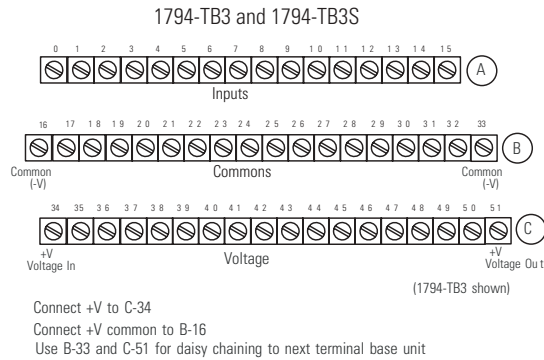
	Input <sup>1</sup>	Common	Supply
Sink Input Channel			
0	A-0	B-17	C-35
1	A-1	B-18	C-36
2	A-2	B-19	C-37
3	A-3	B-20	C-38
4	A-4	B-21	C-39
5	A-5	B-22	C-40
6	A-6	B-23	C-41
7	A-7	B-24	C-42
8	A-8	B-25	C-43
9	A-9	B-26	C-44
Source Output Channel			
0	A-10	B-27	C-45
1	A-11	B-28	C-46
2	A-12	B-29	C-47
3	A-13	B-30	C-48
4	A-14	B-31	C-49
5	A-15	B-32	C-50
+V dc	C-34 through C-51		
Common	B-16 through B-33		

1. Two-wire input devices use input and supply terminals. Three-wire devices use input, common and supply terminals.

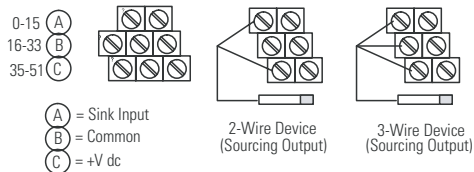
+V common internally connected to terminal 16 through 33.

+V dc power internally connected to terminal 34 through 51.

## 1794-IB16 and 1794-IB8



## 2 and 3-Wire Input Wiring



Input Channel <sup>1</sup>	Input Terminal	Supply Terminal	Common <sup>2</sup> Terminal
0	A-0	C-35	B-17
1	A-1	C-36	B-18
2	A-2	C-37	B-19
3	A-3	C-38	B-20
4	A-4	C-39	B-21
5	A-5	C-40	B-22
6	A-6	C-41	B-23
7	A-7	C-42	B-24
8	A-8	C-43	B-25
9	A-9	C-44	B-26
10	A-10	C-45	B-27
11	A-11	C-46	B-28
12	A-12	C-47	B-29
13	A-13	C-48	B-30
14	A-14	C-49	B-31
15	A-15	C-50	B-32
+V dc	C-34 through C-51		
Common	B-16 through B-33		

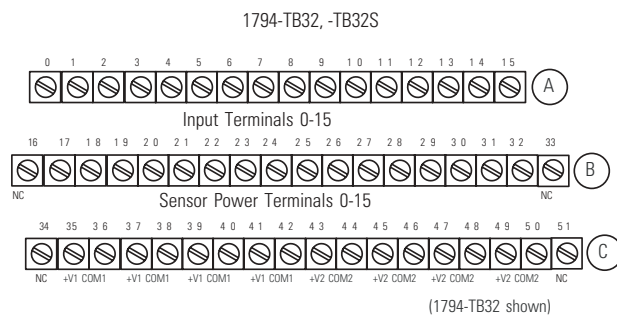
1. 1794-IB8 - Inputs 0 through 7; 1794-IB16 - Inputs 0 through 15

2. Two-wire input devices use input and supply terminals. Three-wire devices use input, common and supply terminals.

+V common internally connected to terminal 16 through 33.

+V dc power internally connected to terminal 34 through 51.

## 1794-IB16D



+V2 = Terminals 43, 45, 47 and 49

Voltage applied to Inputs 0-15 and Sensor power 0-15

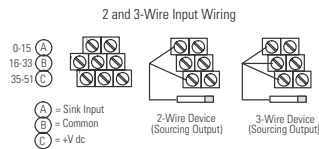
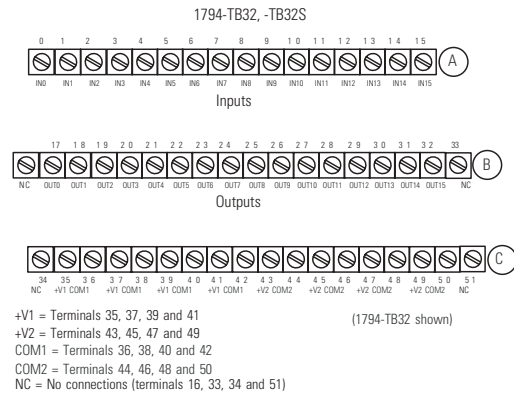
COM1, COM2 = Terminals 36, 38, 40, 42, 44, 46, 48 and 50

Common for inputs 0 thru 15 and sensor power 0 thru 15

NC = No connections (terminals 16, 33, 34 and 51)

+V1 = Terminals 35, 37, 39 and 41 (not used)

Input Channel	Input Terminal	Sensor Power Terminal	Common	Supply
00	A-0	B-17	-V common connected to terminals 36, 38, 40, 42, 44, 46, 48 and 50	+V2 connected to terminals 43, 45, 47 and 49
01	A-1	B-18		
02	A-2	B-19		
03	A-3	B-20		
04	A-4	B-21		
05	A-5	B-22		
06	A-6	B-23		
07	A-7	B-24		
08	A-8	B-25		
09	A-9	B-26		
10	A-10	B-27		
11	A-11	B-28		
12	A-12	B-29		
13	A-13	B-30		
14	A-14	B-31		
15	A-15	B-32		
+V2 dc power	Power terminals 43, 45, 47 and 49 (power terminals are internally connected together in the module)			
COM dc	Common terminals 36, 38, 40, 42, 44, 46, 48 and 50 (common terminals are internally connected together in the module)			



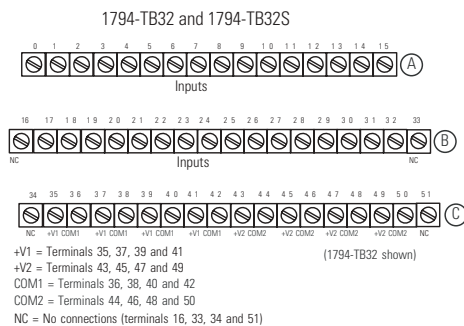
### 1794-IB16XOB16P

Input Channel	Input Terminal	Common	Supply <sup>1</sup>
0	A-0	V1 common connected to terminals 36, 38, 40 and 42	+V1 connected to terminals 35, 37, 39 and 41
1	A-1		
2	A-2		
3	A-3		
4	A-4		
5	A-5		
6	A-6		
7	A-7		
8	A-8		
9	A-9		
10	A-10		
11	A-11		
12	A-12		
13	A-13		
14	A-14		
15	A-15		
+V1 dc power		Power terminals 35, 37, 39 and 41	
Com1 dc Return		Common terminals 36, 38, 40 and 42	

Output Channel	Output Terminal	Common
0	B-17	V2 Return connected to terminals 44, 46, 48 and 50
1	B-18	
2	B-19	
3	B-20	
4	B-21	
5	B-22	
6	B-23	
7	B-24	
8	B-25	
9	B-26	
10	B-27	
11	B-28	
12	B-29	
13	B-30	
14	B-31	
15	B-32	
+V2 dc power		Power terminals 43, 45, 47 and 49
Com2 dc Return		Common terminals 44, 46, 48 and 50

1. 2-wire input devices use input and supply terminals; 3-wire devices use input, common and supply terminals.

### 1794-IB32

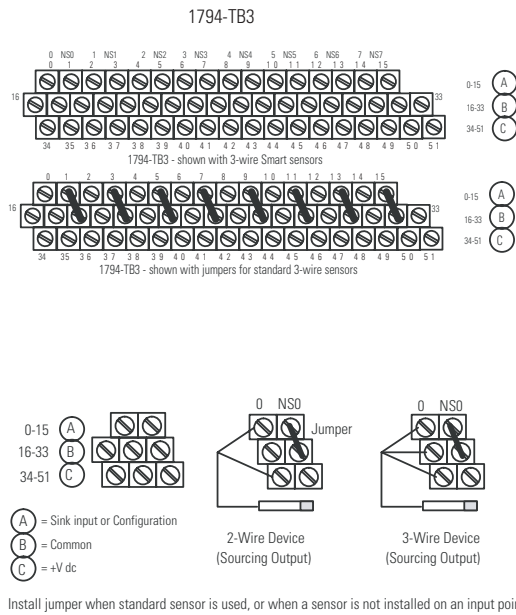


Input Channel	Input Terminal	Common	Supply <sup>1</sup>
0	A-0	V1 common connected to terminals 36, 38, 40 and 42	+V1 connected to terminals 35, 37, 39 and 41
1	A-1		
2	A-2		
3	A-3		
4	A-4		
5	A-5		
6	A-6		
7	A-7		
8	A-8		
9	A-9		
10	A-10		
11	A-11		
12	A-12		
13	A-13		
14	A-14		
15	A-15		
+V1 dc power		Power terminals 35, 37, 39 and 41	
Com1 dc Return		Common terminals 36, 38, 40 and 42	

Input Channel	Input Terminal	Common	Supply <sup>1</sup>
16	B-17	V2 common connected to terminals 44, 46, 48 and 50	+V2 connected to terminals 43, 45, 47 and 49
17	B-18		
18	B-19		
19	B-20		
20	B-21		
21	B-22		
22	B-23		
23	B-24		
24	B-25		
25	B-26		
26	B-27		
27	B-28		
28	B-29		
29	B-30		
30	B-31		
31	B-32		
+V2 dc power		Power terminals 43, 45, 47 and 49	
Com2 dc Return		Common terminals 44, 46, 48 and 50	

1. 2-wire input devices use input and supply terminals; 3-wire devices use input, common and supply terminals.

## 1794-IB8S

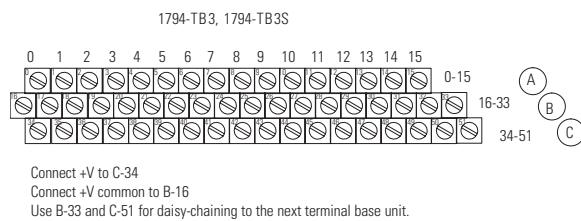


Input Channel	Signal Type	2-Wire Sensors	3-Wire Sensors	Jumper Positions <sup>1</sup>
0	Sink Input	A-0	A-0	A-1
	dc return		B-17	B-18
	24V dc supply	C-35	C-35	
1	Sink Input	A-2	A-2	A-3
	dc return		B-19	B-20
	24V dc supply	C-37	C-37	
2	Sink Input	A-4	A-4	A-5
	dc return		B-21	B-22
	24V dc supply	C-39	C-39	
3	Sink Input	A-6	A-6	A-7
	dc return		B-23	B-24
	24V dc supply	C-41	C-41	
4	Sink Input	A-8	A-8	A-9
	dc return		B-25	B-26
	24V dc supply	C-43	C-43	
5	Sink Input	A-10	A-10	A-11
	dc return		B-27	B-28
	24V dc supply	C-45	C-45	
6	Sink Input	A-12	A-12	A-13
	dc return		B-29	B-30
	24V dc supply	C-47	C-47	
7	Sink Input	A-14	A-14	A-15
	dc return		B-31	B-32
	24V dc supply	C-49	C-49	
+V dc	C-34 through C-51			
dc Return	B-16 through B-33			

Note: 2-wire devices use 2 terminals; 3-wire devices use 3 terminals.

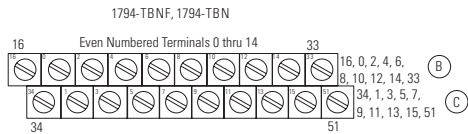
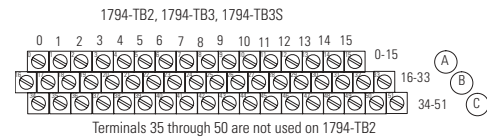
1. Jumper connections for standard (non-Smart) sensors or unused inputs.

## 1794-IC16



1794-TB3 and -TB3S							
Input Channel	Input Terminal	Supply Terminal	Common <sup>1</sup>	Input Channel	Input Terminal	Supply Terminal	Common <sup>1</sup>
0	A-0	C-35	B-17	8	A-8	C-43	B-25
1	A-1	C-36	B-18	9	A-9	C-44	B-26
2	A-2	C-37	B-19	10	A-10	C-45	B-27
3	A-3	C-38	B-20	11	A-11	C-46	B-28
4	A-4	C-39	B-21	12	A-12	C-47	B-29
5	A-5	C-40	B-22	13	A-13	C-48	B-30
6	A-6	C-41	B-23	14	A-14	C-49	B-31
7	A-7	C-42	B-24	15	A-15	C-50	B-32
Common	B-16 through B-33			+V dc	C-34 through C-51		

1. 2-wire devices use input and supply terminals; 3-wire input devices use input, common and supply terminals.



Connect +V to C-34  
Connect +V common to B-16  
Use B-33 and C-51 for daisy-chaining to the next terminal base unit.

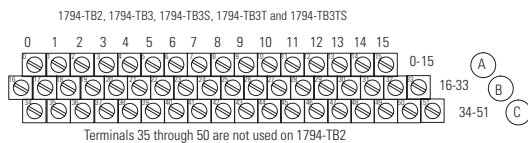
## 1794-ID2

Terminal Base Units 1794-TB2, -TB3 and -TB3S				Terminal Base Units <sup>1</sup> 1794-TBN and -TBNF
Input	OV dc (common)	12/24V dc	Input	
Pulse Counter Channel 0				
A+	A-0	B-17	C-35	B-0
A-	A-1	B-18	C-36	C-1
B+	A-2	B-19	C-37	B-2
B-	A-3	B-20	C-38	C-3
Z+	A-4	B-21	C-39	B-4
Z-	A-5	B-22	C-40	C-5
G+	A-6	B-23	C-41	B-6
G-	A-7	B-24	C-42	C-7
Common	Terminals 16 and 33 (1794-TB2, -TBN and -TBNF) Terminals 16 through 33 (1794-TB3, -TB3S)			
+V dc	Terminals 34 and 51 (1794-TB2, -TBN and -TBNF) Terminals 34 through 51 (1794-TB3, -TB3S)			

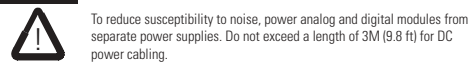
Terminal Base Units 1794-TB2, -TB3 and -TB3S				Terminal Base Units <sup>1</sup> 1794-TBN and -TBNF
Input	OV dc (common)	12/24V dc	Input	
Pulse Counter Channel 1				
A+	A-8	B-25	C-43	B-8
A-	A-9	B-26	C-44	C-9
B+	A-10	B-27	C-45	B-10
B-	A-11	B-28	C-46	C-11
Z+	A-12	B-29	C-47	B-12
Z-	A-13	B-30	C-48	C-13
G+	A-14	B-31	C-49	B-14
G-	A-15	B-32	C-50	C-15

1. Auxiliary terminal blocks are required when using these terminal base units.

## 1794-IE4XOE2



**ATTENTION** Only connect either a voltage input or a current input per channel, not both.



To reduce susceptibility to noise, power analog and digital modules from separate power supplies. Do not exceed a length of 3M (9.8 ft) for DC power cabling.

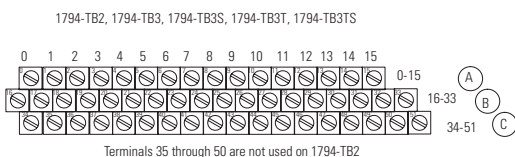
Connect +V to C-34  
Connect +V common to B-16  
Use B-33 and C-51 for daisy-chaining to the next terminal base unit.

		TB3, TB 3S, TB2, TB 3T, TB3 TS	TB3, TB 3S, TB 2	TB3T, TB 3TS				TB 3, TB 3S, TB 2, TB 3T, TB3 TS	TB3T, TB 3TS
Channel	Signal At Type	Input Terminal s	Common Terminal s		Shield	Chan nel	Signal Type	Output Terminal s	Shield
In 0	Current	A-0	B-17	B-17	C-39	Out 0	Current Signal	A-8	C-43
	Voltage	A-1	B-18	B-17	C-39		Current Common	A-9 <sup>1</sup>	C-43
In 1	Current	A-2	B-19	B-19	C-40	Out 1	Voltage Signal	A-10	C-44
	Voltage	A-3	B-20	B-19	C-40		Voltage Common	A-11 <sup>1</sup>	C-44
In 2	Current	A-4	B-21	B-21	C-41		Current Signal	A-12	C-45
	Voltage	A-5	B-22	B-21	C-41		Current Common	A-13 <sup>1</sup>	C-45
In 3	Current	A-6	B-23	B-23	C-42		Voltage Signal	A-14	C-46
	Voltage	A-7	B-24	B-23	C-42		Voltage Common	A-15 <sup>1</sup>	C-46
Common for TB2, TB3, TB3S: B-16 through B-33 Common for TB3T and TB3TS: B-16, 17, 19, 21, 23, 25, 27, 29, 31, and 33						+V dc Power for 1794-TB2: C-34 and C-51; +V dc Power for 1794-TB3 and TB3S: C-34 through C-51 +V dc Power for 1794-TB3T and -TB3TS: C-34, 35, 50 and 51			

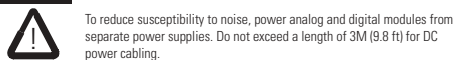
Connect any signal wiring shields to functional ground as near as possible to the module when using the 1794-TB2, -TB3, and -TB3S. With the 1794-TB3T and -TB3TS, use terminals C-39 through C-46.

1. A-9, A-11, A-13 and A-15 are internally connected in the module to +V dc common.

## 1794-IE8



**ATTENTION** Only connect either a voltage input or a current input per channel, not both.



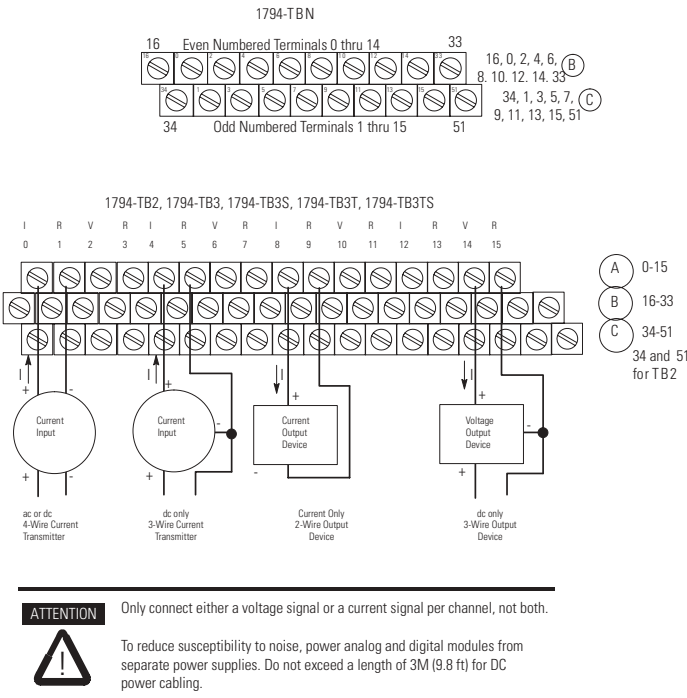
To reduce susceptibility to noise, power analog and digital modules from separate power supplies. Do not exceed a length of 3M (9.8 ft) for DC power cabling.

Connect +V to C-34  
Connect +V common to B-16  
Use B-33 and C-51 for daisy-chaining to the next terminal base unit.

		TB3, TB3S, TB2, TB3T, TB3TS	TB3, TB3S, TB2	TB3T, TB3TS				TB3, TB3S, TB2, TB3T, TB3TS	TB3, TB3S, TB2	TB3T, TB3TS	
Channel	Signal Type	Input Terminals	Common Terminals		Shield	Channel	Signal Type	Input Terminals	Common Terminals		Shield
0	Current	A-0	B-17	B-17	C-39	4	Current	A-8	B-25	B-25	C-43
	Voltage	A-1	B-18	B-17	C-39		Voltage	A-9	B-26	B-25	C-43
1	Current	A-2	B-19	B-19	C-40	5	Current	A-10	B-27	B-27	C-44
	Voltage	A-3	B-20	B-19	C-40		Voltage	A-11	B-28	B-27	C-44
2	Current	A-4	B-21	B-21	C-41	6	Current	A-12	B-29	B-29	C-45
	Voltage	A-5	B-22	B-21	C-41		Voltage	A-13	B-30	B-30	C-45
3	Current	A-6	B-23	B-23	C-42	7	Current	A-14	B-31	B-31	C-46
	Voltage	A-7	B-24	B-23	C-42		Voltage	A-15	B-32	B-31	C-46
Common for 1794-TB2, -TB3S: B-16 through B-33						+V dc Power for 1794-TB2: C-34 and C-51;					
Common for 1794-TB3T and -TB3TS: B-16, 17, 19, 21, 23, 25, 27, 29, 31 and 33						+V dc Power for 1794-TB3 and TB3S: C-34 through C-51					
						+V dc Power for 1794-TB3T and -TB3TS: C-34, 35, 50 and 51					

Connect any signal wiring shields to functional ground as near as possible to the module when using the 1794-TB2, -TB3, and -TB3S. With the 1794-TB3T and -TB3TS, use terminals C-39 through C-46.

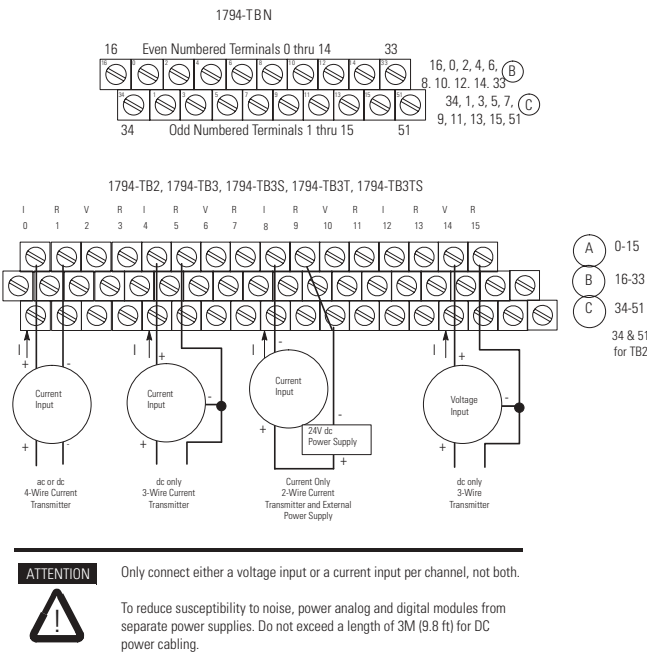
1794-IF2XOF2I



			1794-TB3, -TB3S, -TB 2, -TB3T, and -TB 3TS	1794-TBN	
Channel	Signal Type	Label Markings	Input Terminal	Shield (TB3T/TB 3TS)	Input Terminal
Input 0	Current Input	I0	A-0	C-39	B-0
	Current Return	I0 Ret	A-1		C-1
	Voltage Input	V0	A-2	C-40	B-2
	Voltage Return	V0 Ret	A-3		C-3
Input 1	Current Input	I1	A-4	C-41	B-4
	Current Return	I1 Ret	A-5		C-5
	Voltage Input	V1	A-6	C-42	B-6
	Voltage Return	V1 Ret	A-7		C-7
Output 0	Current Output	I0	A-8	C-43	B-8
	Current Return	I0 Ret	A-9		C-9
	Voltage Output	V0	A-10	C-44	B-10
	Voltage Return	V0 Ret	A-11		C-11
Output 1	Current I Output	I1	A-12	C-45	B-12
	Current Return	I1 Ret	A-13		C-13
	Voltage Output	V1	A-14	C-46	B-14
	Voltage Return	V1 Ret	A-15		C-15
Common	TB2, TB3, TB3S: Terminals 16 through 33 are internally connected in the terminal base unit TB3T, TB3TS: Terminals 16, 17, 19, 21, 23, 25, 27, 29, 31, and 33 are internally connected in the terminal base unit TBN: Terminals 16 and 33 are internally connected in the terminal base unit				
+V dc	TB2 and TBN: Terminals 34 and 51 are internally connected in the terminal base unit TB3, TB3S: Terminals 34 through 51 are internally connected in the terminal base unit TB3T, TB3TS: Terminals 34, 35, 50, and 51 are internally connected in the terminal base unit				
Chassis Gnd	TB3T, TB3TS: Terminals 39 through 46 are internally connected to chassis gnd				

Connect any signal wiring shields to functional ground as near as possible to the module when using the 1794-TB2, -TB3, and -TB3S.  
With the 1794-TB3T and -TB3TS, use terminals C-39 through C-46.  
Connect +V to C-34.  
Connect +V common to B-16.  
Use B-33 and C-51 for daisy chaining to the next terminal base unit.

1794-IF4I

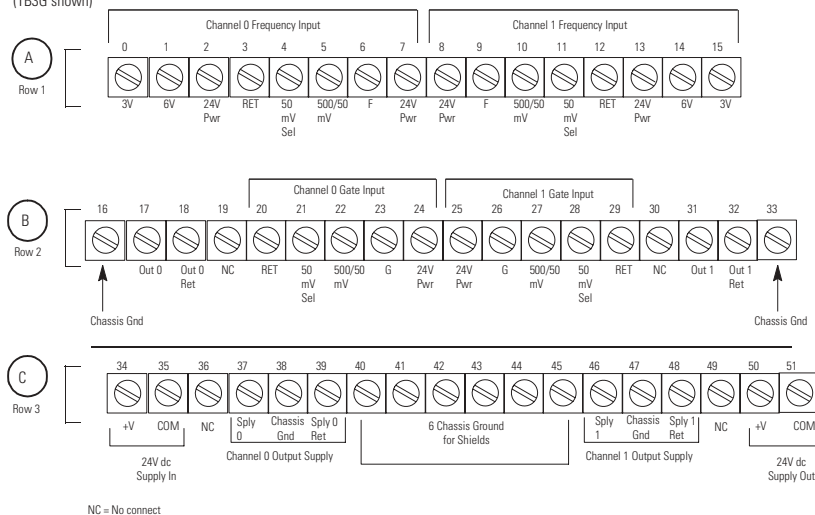


1794-TB3, -TB3S, -TB 2, -TB3T, and -TB 3TS					1794-TB N
Input Channel	Signal Type	Label Markings	Input Terminal	Shield d (TB3T/TB 3TS)	Input Terminal
0	Current Input	I0	A-0	C-39	B-0
	Current Return	I0 Ret	A-1		C-1
	Voltage Input	V0	A-2	C-40	B-2
	Voltage Return	V0 Ret	A-3		C-3
1	Current Input	I1	A-4	C-41	B-4
	Current Return	I1 Ret	A-5		C-5
	Voltage Input	V1	A-6	C-42	B-6
	Voltage Return	V1 Ret	A-7		C-7
2	Current Input	I2	A-8	C-43	B-8
	Current Return	I2 Ret	A-9		C-9
	Voltage Input	V2	A-10	C-44	B-10
	Voltage Return	V2 Ret	A-11		C-11
3	Current Input	I3	A-12	C-45	B-12
	Current Return	I3 Ret	A-13		C-13
	Voltage Input	V3	A-14	C-46	B-14
	Voltage Return	V3 Ret	A-15		C-15
Common	TB2, TB3, TB3S: Terminals 16 through 33 are internally connected in the terminal base unit TB3T, TB3TS: Terminals 16, 17, 19, 21, 23, 25, 27, 29, 31, and 33 are internally connected in the terminal base unit TBN: Terminals 16 and 33 are internally connected in the terminal base unit				
+V dc	TB2 and TBN: Terminals 34 and 51 are internally connected in the terminal base unit TB3, TB3S: Terminals 34 through 51 are internally connected in the terminal base unit TB3T, TB3TS: Terminals 34, 35, 50, and 51 are internally connected in the terminal base unit				
Chassis Gnd	TB3T, TB3TS: Terminals 39 through 46 are internally connected to chassis gnd				

Connect any signal wiring shields to functional ground as near as possible to the module when using the 1794-TB2, -TB3, -TB3S nad -TBN.  
With the 1794-TB3T and -TB3TS, use terminals C-39 through C-46.  
Connect +V to C-34.  
Connect +V common to B-16.  
Use B-33 and C-51 for daisy chaining to the next terminal base unit.

## 1794-IJ2

Connections are for 1794-TB3G and -TB3GS  
(TB3G shown)



All '24V Pwr' and 'RET' terminals are sourced power provided for the sensors. Do not connect external power to these terminals.

These outputs provide power for up to four 24Vdc devices at 15mA each—for a total of 60mA. Channel 0 '24V Pwr' and channel 1 '24V Pwr' are each current limited to 30mA maximum.

	Channel 0 Terminals <sup>5</sup>			Channel 1 Terminals <sup>5</sup>		
Type of Inputs	Power	Input	RET <sup>6</sup>	Power	Input	RET <sup>6</sup>
Frequency						
24V dc IEC1+ Proximity <sup>1,2</sup>	A-7	A-6	A-3	A-8	A-9	A-12
24V dc Contact Switch <sup>3</sup>	A-7	A-6	A-3	A-8	A-9	A-12
500mV ac Magnetic Pickup	A-7	A-5	A-3	A-8	A-10	A-12
50mV ac Magnetic Pickup <sup>4</sup>	A-7	A-5	A-3	A-8	A-10	A-12
6V ac Vortex	A-2	A-1	A-3	A-13	A-14	A-12
3V ac Vortex	A-2	A-0	A-3	A-13	A-15	A-12

<sup>1</sup> As defined by standard IEC 1131-2.

<sup>2</sup> RET not used on 2-wire devices.

<sup>3</sup> Add external resistor from 24V to F or G for wire-off detection (0.4mA).

<sup>4</sup> Add a jumper between 50mV and RET (Frequency - channel 0-4 to 3; channel 1-11 to 12). (Gate - channel 0-21 to 20; channel 1-28 to 29).

<sup>5</sup> Connect cable shields to Chassis Gnd terminals.

<sup>6</sup> All 4 RET terminals (ch 0 and 1, Freq, Gate) are internally connected together.

	Channel 0 Terminals <sup>5</sup>			Channel 1 Terminals <sup>5</sup>		
Type of Inputs	Power	Input	RET <sup>6</sup>	Power	Input	RET <sup>6</sup>
Gate						
24V dc IEC1+ Proximity <sup>1,2</sup>	B-24	B-23	B-20	B-25	B-26	B-29
24V dc Contact Switch <sup>3</sup>	B-24	B-23	B-20	B-25	B-26	B-29
500mV ac Magnetic Pickup	B-24	B-22	B-20	B-25	B-27	B-29
50mV ac Magnetic Pickup <sup>4</sup>	B-24	B-22	B-20	B-25	B-27	B-29

<sup>1</sup> As defined by standard IEC 1131-2.

<sup>2</sup> RET not used on 2-wire devices.

<sup>3</sup> Add external resistor from 24V to F or G for wire-off detection (0.4mA).

<sup>4</sup> Add a jumper between 50mV and RET (Frequency - channel 0-4 to 3; channel 1-11 to 12). (Gate - channel 0-21 to 20; channel 1-28 to 29).

<sup>5</sup> Connect cable shields to Chassis Gnd terminals.

<sup>6</sup> All 4 RET terminals (ch 0 and 1, Freq, Gate) are internally connected together.

	Channel 0 Terminals <sup>1</sup>				Channel 1 Terminals <sup>1</sup>			
Output Alarm Connections	Sply +	Sply RET	Out +	Out RET	Sply +	Sply RET	Out +	Out RET
Supply Connection	C-37	C-39			C-46	C-48		
Output Connection			B-17	B-18			B-31	B-32

<sup>1</sup> Connect cable shields to Chassis Gnd terminals.

# **ATTENTION**



To reduce the susceptibility to noise, power analog modules and digital modules from separate power supplies. Do not exceed a length of 10m (33ft) for dc power cabling.

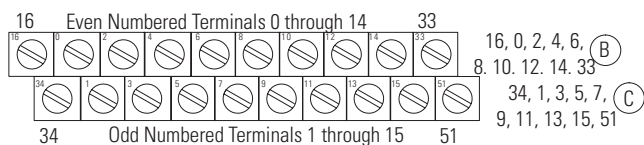
Do not daisy chain power or ground from this module to any ac or dc digital module terminal base unit.

Also, total current draw through the terminal base unit is limited to 10A. Separate power connections to the terminal base unit may be necessary.



## 1794-IM8

1794-TBN



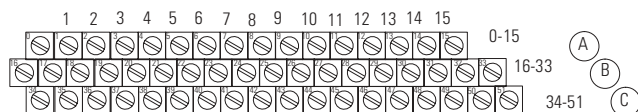
Connect 220V ac L2 to B-16; B-16 and B-33 are connected internally.  
Connect 220V ac L1 to C-34; C-34 and C-51 are connected internally.  
Use B-33 and C-51 for daisy chaining to the next terminal base unit.

Input Channel	Input Terminals	220V ac Supply <sup>1</sup>
0	B-0	C-1
1	B-2	C-3
2	B-4	C-5
3	B-6	C-7
4	B-8	C-9
5	B-10	C-11
6	B-12	C-13
7	B-14	C-15

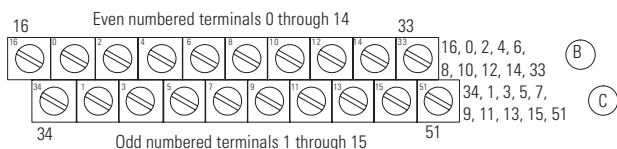
1. Terminals C-1, 3, 5, 7, 9, 11, 13 and 15 are connected internally to 220V ac L1.

## 1794-IP4

1794-TB3, -TB3S



1794-TBN, 1794-TBNF



Connect +V to C-34  
Connect +V common to B-16  
Use B-33 and C-51 for daisy chaining to the next terminal base unit.

Channel	Signal Name <sup>1</sup>	Terminal Base Units 1794-TB3 and -TB3S			Terminal Base Unit 1794-TBN, -TBNF
		Input	0V dc (Common)	12/24V dc	Input
16-Bit Period Time Measurement					
0	N	A-0	B-17	C-35	B-0
	$\overline{N}$	A-1	B-18	C-36	C-1
1	N	A-2	B-19	C-37	B-2
	$\overline{N}$	A-3	B-20	C-38	C-3
2	N	A-4	B-21	C-39	B-4
	$\overline{N}$	A-5	B-22	C-40	C-5
3	N	A-6	B-23	C-41	B-6
	$\overline{N}$	A-7	B-24	C-42	C-7
32-Bit Period Time Measurement					
0	D	A-8	B-25	C-43	B-8
	$\overline{D}$	A-9	B-26	C-44	C-9
1	D	A-10	B-27	C-45	B-10
	$\overline{D}$	A-11	B-28	C-46	C-11
2	D	A-12	B-29	C-47	B-12
	$\overline{D}$	A-13	B-30	C-48	C-13
3	D	A-14	B-31	C-49	B-14
	$\overline{D}$	A-15	B-32	C-50	C-15
	Common	Terminals 16 through 33			Terminals 16 and 33
	+V dc	Terminals 34 through 51			Terminals 34 and 51

1 Any unused signals have to be connected to the associated common.

2 Auxiliary terminal blocks are required when using these terminal base units.

## 1794-IR8

1794-TB3, -TB3S, -TB 2, -TB3T, or -TB3TS



Terminals 35 through 50 are not used on the 1794-TB2

**ATTENTION**

Use the following Belden cables for connecting the RTD to the terminal base unit.

RTD Type	Length of Run/Humidity Level	Belden Cable Number
2-wire	Not applicable	9501
3-wire	Less than 100 ft (30.5m) with normal humidity	9533
	Over 100 ft (30.5m) or high humidity <sup>1</sup>	8350 3

<sup>1</sup> Greater than 55% for more than 8 hours

To reduce the susceptibility to noise, power analog modules and digital modules from separate power supplies. Do not exceed a length of 3m (9.8ft) for dc power cabling.

Do not daisy chain power or ground from the RTD terminal base unit to any ac or dc digital module terminal base unit.

Channel	High Signal	Low Signal	Signal Return <sup>1</sup>	Shield Return	
				TB2, TB3, TB3S	TB3T, TB3TS
0	A-0	A-1	B-17	B-18	C-39
1	A-2	A-3	B-19	B-20	C-40
2	A-4	A-5	B-21	B-22	C-41
3	A-6	A-7	B-23	B-24	C-42
4	A-8	A-9	B-25	B-26	C-43
5	A-10	A-11	B-27	B-28	C-44
6	A-12	A-13	B-29	B-30	C-45
7	A-14	A-15	B-31	B-32	C-46
Common	B-16 through B-33 for 1794-TB2, -TB3, and -TB3S B-16, B-17, B-19, B-21, B-23, B-25, B-27, B-29, B-31 and B-33 for 1794-TB3T and -TB3TS				
+V dc	C-34 through C-51 for 1794-TB3, and -TB3S; C-34 and C-51 for 1794-TB2 C-34, C-35, C-50 and C-51 for 1794-TB3T and -TB3TS				

- When using a 2-wire RTD, jumper the signal return to the low signal terminal.
- B-18, B-20, B-22, B-24, B-26, B-28, B-30 and B-32 are tied to Common on 1794-TB2, -TB3, -TB3S; C-39 through C-46 are tied to chassis ground on 1794-TB3T and 1794-TB3TS

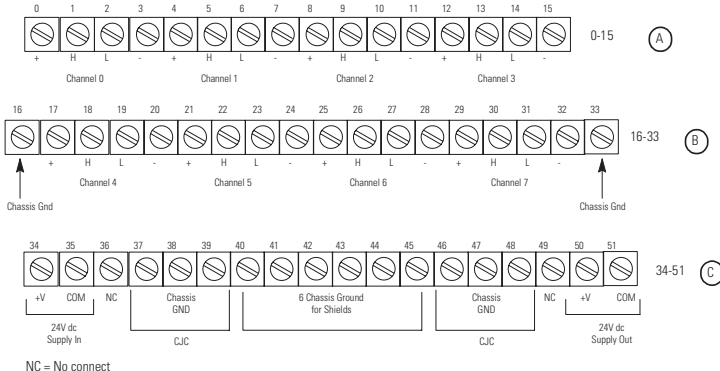
Connect +V to C-34

Connect +V common to B-16

Use B-33 and C-51 for daisy chaining to the next terminal base unit

## 1794-IRT8

Connections for 1794-TB3G and -TB3GS (TB3G shown)

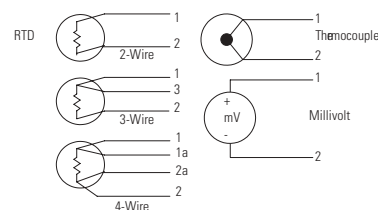


NC = No connect

**ATTENTION**

To reduce the susceptibility to noise, power analog modules and digital modules from separate power supplies. Do not exceed a length of 3m (9.8ft) for dc power cabling.

Do not daisy chain power or ground from this module to any ac or dc digital module terminal base unit.



Type of Input	Connect the following				
	H	L	+	-	Shield <sup>1</sup>
RTD - 2-wire			1	2	
RTD - 3-wire		3	1	2	
RTD - 4-wire	1a	2a	1	2	
Thermocouple			1	2	
Millivolt			1	2	

<sup>1</sup> Terminals B-16, B-33 and C-40 through C-45 are Chassis Gnd for signal wire shields.

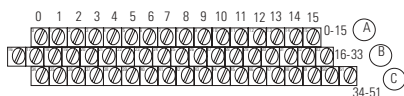
RTD or Thermocouple Channel	1794-TB3G and -TB3GS Terminal Base Units			
	High Signal Terminal (H)	Low Signal Terminal (L)	RTD Source Current (+)	Signal Return (-)
0	A-1	A-2	A-0	A-3
1	A-5	A-6	A-4	A-7
2	A-9	A-10	A-8	A-11
3	A-13	A-14	A-12	A-15
4	B-18	B-19	B-17	B-20
5	B-22	B-23	B-21	B-24
6	B-26	B-27	B-25	B-28
7	B-30	B-31	B-29	B-32
+V dc	C-34 and 50 - Connect +V to C-34			
Common	C-35 and 51 - Connect +V common to C-35			

Input	CJC Sensor			
	+	Chassis Ground	-	CJC Tail <sup>1</sup>
CJC1	37	38	39	5 (22)
CJC2	46	47	48	12 (29)

<sup>1</sup> - Use pins 5 and 12 when channels 0-7 are configured as thermocouples. Use pins 12 and 29 when only channels 4-7 are configured as thermocouples.

## 1794-IT8

1794-TB 3, -TB 3S, -TB2, -TB 3T, or -TB 3TS



Terminals 35 through 50 are not used on the 1794-TB2

**ATTENTION**

To reduce the susceptibility to noise, power analog modules and digital modules from separate power supplies. Do not exceed a length of 3m (9.8ft) for dc power cabling.

Do not daisy chain power or ground from this terminal base unit to any ac or dc digital module terminal base unit.

Channel	High Signal	Low Signal	Shield Return <sup>1</sup>	
			TB2, TB3, TB3S	TB3T, TB3TS
0	A-0	A-1	B-17	C-39
1	A-2	A-3	B-19	C-40
2	A-4	A-5	B-21	C-41
3	A-6	A-7	B-23	C-42
4	A-8	A-9	B-25	C-43
5	A-10	A-11	B-27	C-44
6	A-12	A-13	B-29	C-45
7	A-14	A-15	B-31	C-46
Common	B-16 through B-33 for 1794-TB2, -TB3, and -TB3S B-16, B-17, B-19, B-21, B-23, B-25, B-27, B-29, B-31 and B-33 for 1794-TB3T and -TB3TS			
+V dc	C-34 through C-51 for 1794--TB3, and -TB3S; C-34 and C-51 for 1794-TB2 C-34, C-35, C-50 and C-51 for 1794-TB3T and -TB3TS			

1. B-17, B-19, B-21, B-23, B-25, B-27, B-29 and B-31 are tied to Common on 1794-TB2, -TB3, -TB3S;  
C-39 through C-46 are tied to chassis ground on 1794-TB3T and 1794-TB3TS

Use 1794-TB3T or -TB3TS for thermocouple or millivolt inputs. Use 1794-TB2, -TB3 and -TB3S for millivolt inputs only.

Connect +V to C-34.

Connect +V common to B-16.

Use B-33 and C-51 for daisy chaining to the next terminal base unit.

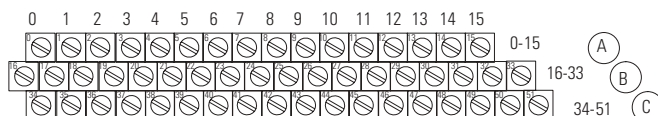
## 1794-TG3T and 1794-TB3TS

Input	CJC Sensor			
	+	Chassis Ground	-	CJC Tail
CJC1	36	37	38	A0 through A7 (any terminal)
CJC2	47	48	49	A8 through A15 (any terminal)

The tail of the cold junction compensator shares a terminal with an input.

## 1794-IV16

1794-TB2, 1794-TB3, 1794-TB3S



Terminals 35 through 50 are not used on 1794-TB2

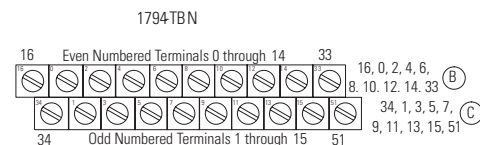
1794-TB2, 1794-TB3, 1794-TB3S					
Input Channel	Input Terminal	Common Terminal	Input Channel	Input Terminal	Common Terminal
0	A-0	B-17	8	A-8	B-25
1	A-1	B-18	9	A-9	B-26
2	A-2	B-19	10	A-10	B-27
3	A-3	B-20	11	A-11	B-28
4	A-4	B-21	12	A-12	B-29
5	A-5	B-22	13	A-13	B-30
6	A-6	B-23	14	A-14	B-31
7	A-7	B-24	15	A-15	B-32
Common	B-16 through B-33		+V dc	C-34 through C-51 (C-34 and C-51 for TB2)	

Connect +V to C-34.

Connect +V common to B-16.

Use B-33 and C-51 for daisy chaining to the next terminal base unit.

## 1794-0A16



Output Terminals		120V ac Common <sup>1</sup>	Output Terminals		120V ac Common <sup>1</sup>
Channel	TB3, TB3S, TB2	TBN	Channel	TB3, TB3S, TB2	TBN
0	A-0	B-0	8	A-8	B-8
1	A-1	C-1	9	A-9	C-9
2	A-2	B-2	10	A-10	B-10
3	A-3	C-3	11	A-11	C-11
4	A-4	B-4	12	A-12	B-12
5	A-5	C-5	13	A-13	C-13
6	A-6	B-6	14	A-14	B-14
7	A-7	C-7	15	A-15	C-15

For TB3, TB3S and TB2:

A = Output terminals.

B = B-17 through B-32 are connected internally to 120V ac common L2. Connect 120V ac common L2 to B-16.

C = Power terminals (C-34 and C-51 for TB2; C-34 through C-51 for TB3 and TB3S) are connected internally. Connect 120V ac L1 to terminal C-34.

For TBN: Connect 120V ac common L2 to B-16. Connect 120V ac L1 to C-34.

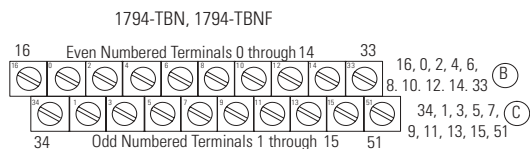
B = Even numbered output terminals 0 through 14; B-16 and B-33 are connected internally.

C = Odd numbered output terminals 1 through 15; C-34 and C-51 are connected internally.

1. When using the 1794-TBN, an auxiliary terminal block must be used to provide connection points for each channel's second sensor wire, 120V ac common.

Use B-33 and C-51 for daisy chaining to the next terminal base unit.

## 1794-0A8



Output Channel	1794-TB 3, -TB3S, and -TB 2		1794-TB NF and -TB N	
	Output Terminal	Common Terminal <sup>1</sup>	Output Terminal	Common Terminal <sup>2</sup>
0	A-0	A-1 /B-17	B-0	C-1
1	A-2	A-3 /B-19	B-2	C-3
2	A-4	A-5 /B-21	B-4	C-5
3	A-6	A-7 /B-23	B-6	C-7
4	A-8	A-9 /B-25	B-8	C-9
5	A-10	A-11 /B-27	B-10	C-11
6	A-12	A-13 /B-29	B-12	C-13
7	A-14	A-15 /B-31	B-14	C-15

A = output terminals

B = common terminals - 120V ac Common L2

C = Power terminals (C-34 thru 51 for TB3 and TB3S) (C-34 and C-51 for TB2)

B = even numbered terminals 0 through 14, ac common L2 terminals 16 and 33

C = Power Terminals C-34 and C-51, and odd numbered common terminals 1 through 15

1. A-1, 3, 5, 7, 9, 11, 13 and 15 on 1794-TB3, -TB3S and -TB2 are connected internally to 120V ac common L2.

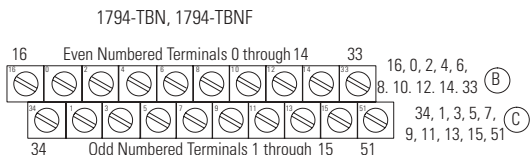
2. C-1, 3, 5, 7, 9, 11, 13 and 15 on 1794-TBN and -TBNF are connected internally to 120V ac common L2.

Connect 120V ac L1 to C-34.

Connect 120V ac L2 common to B-16.

Use B-33 and C-51 for daisy chaining to the next terminal base unit.

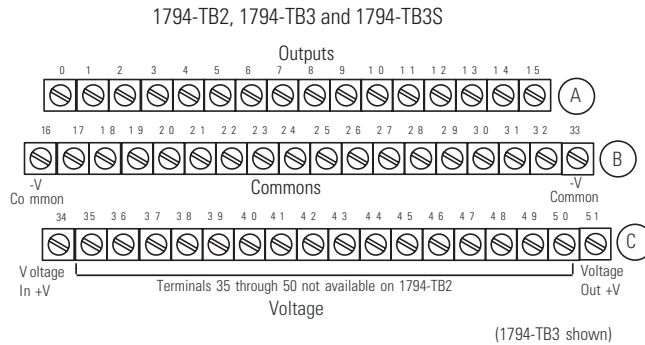
## 1794-0A8I



Output Channel	1794-TB 3, -TB3S, and -TB 2		1794-TB NF and -TB N	
	Output Terminal	120V ac L1 Terminal	Output Terminal	120V ac L1 Terminal
0	A-0	A-1	B-0	C-1
1	A-2	A-3	B-2	C-3
2	A-4	A-5	B-4	C-5
3	A-6	A-7	B-6	C-7
4	A-8	A-9	B-8	C-9
5	A-10	A-11	B-10	C-11
6	A-12	A-13	B-12	C-13
7	A-14	A-15	B-14	C-15

A = even numbered output terminals 0 through 14  
odd numbered 120V ac L1 terminals 1 through 15

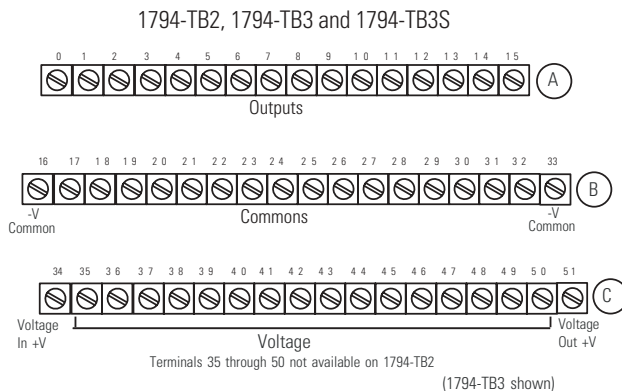
B = even numbered output terminals 0 through 14  
C = odd numbered 120V ac L1 terminals 1 through 15

**1794-OB16, 1794-OB16P, and 1794-OB8**

Connect +V to C-34.  
 Connect +V common to B-16.  
 Use B-33 and C-51 for daisy chaining to next terminal base unit.

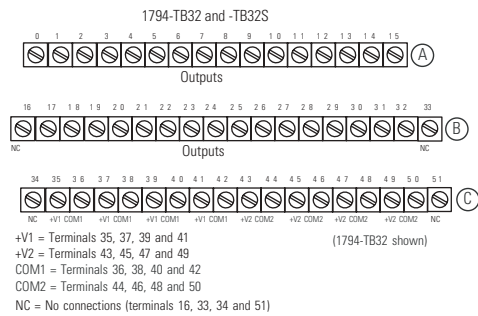
Output Channel <sup>1</sup>	Output Terminal	Common Terminal
0	A-0	B-17
1	A-1	B-18
2	A-2	B-19
3	A-3	B-20
4	A-4	B-21
5	A-5	B-22
6	A-6	B-23
7	A-7	B-24
8	A-8	B-25
9	A-9	B-26
10	A-10	B-27
11	A-11	B-28
12	A-12	B-29
13	A-13	B-30
14	A-14	B-31
15	A-15	B-32
+V dc	C-34 and C-51 for 1794-TB2 C-34 through B-51 for the 1794-TB3 and -TB3S	
Common	B-16 through B-33	

1. 1794-OB8 uses only outputs 0 through 7.

**1794-OB16D**

Connect +V to C-34.  
 Connect +V common to B-16.  
 Use B-33 and C-51 for daisy chaining to next terminal base unit.

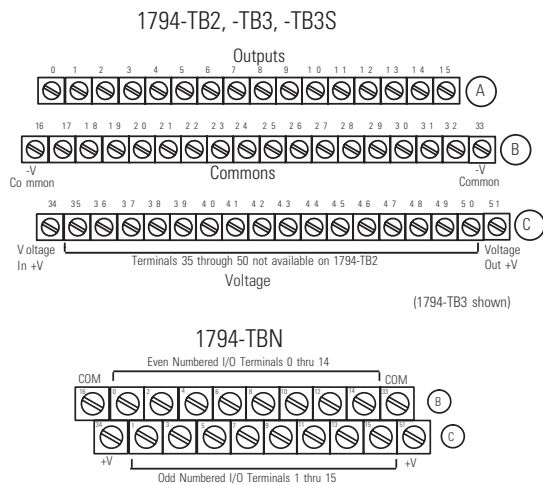
Output Channel	Output Terminal	Common Terminal
00	A-0	B-17
01	A-1	B-18
02	A-2	B-19
03	A-3	B-20
04	A-4	B-21
05	A-5	B-22
06	A-6	B-23
07	A-7	B-24
08	A-8	B-25
09	A-9	B-26
10	A-10	B-27
11	A-11	B-28
12	A-12	B-29
13	A-13	B-30
14	A-14	B-31
15	A-15	B-32
+V dc	C-34 and C-51 (1794-TB2) C-34 through C-51 (1794-TB3 and -TB3S)	
Common	B-16 through B-33	



1794-OB32P

Output Channel	Output Terminal	Common	Output Channel	Output Terminal	Common
0	A-0	Connect common to terminals 36, 38, 40 and 42	16	B-17	Connect common to terminals 44, 46, 48 and 50
1	A-1		17	B-18	
2	A-2		18	B-19	
3	A-3		19	B-20	
4	A-4		20	B-21	
5	A-5		21	B-22	
6	A-6		22	B-23	
7	A-7		23	B-24	
8	A-8		24	B-25	
9	A-9		25	B-26	
10	A-10		26	B-27	
11	A-11		27	B-28	
12	A-12		28	B-29	
13	A-13		29	B-30	
14	A-14		30	B-31	
15	A-15		31	B-32	
For Outputs 0 through 15, use +V1 and COM1			For Outputs 16 through 31, use +V2 and COM2		
+V1 dc power		Power terminals 35, 37, 39 and 41	+V2 dc power		Power terminals 43, 45, 47 and 49
Com1 dc Return		Common terminals 36, 38, 40 and 42	Com2 dc Return		Common terminals 44, 46, 48 and 50

1794-OB8EP



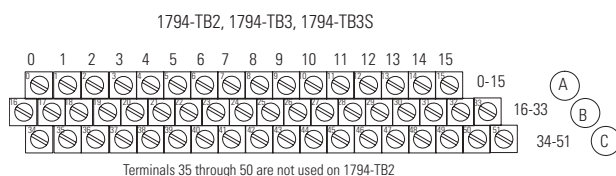
	1794-TB2, -TB3, TB3S		1794-TBN	
Output Channel	Output Terminal	Common Terminal <sup>1</sup>	Output Terminal	Common Terminal <sup>2</sup>
0	A-0	A-1/B-17	B-0	C-1
1	A-2	A-3/B-18	B-2	C-3
2	A-4	A-5/B-19	B-4	C-5
3	A-6	A-7/B-20	B-6	C-7
4	A-8	A-9/B-21	B-8	C-9
5	A-10	A-11/B-22	B-10	C-11
6	A-12	A-13/B-23	B-12	C-13
7	A-14	A-15/B-24	B-14	C-15
+V dc	C-34 through C-51 for 1794-TB3 and -TB3S C-34 and C-51 for 1794-TB2, -TBN			
Common	B-16 through B-33 for 1794-TB2, -TB3, -TB3S B-16 and B33 for 1794-TBN			

1. For the 1794-TB2, -TB3, -TB3S terminal bases, the A-1, A-3, A-5, A-7, A-9, A-11, A-13 and A-15 are connected internally to 24V dc common.

2. For the 1794-TBN terminal base, the C-1, C-3, C-5, C-7, C-9, C-11, C-13 and C-15 are connected internally to 24V dc common.

Connect +V to C-34.  
Connect +V common to B-16.  
Use B-33 and C-51 for daisy chaining to next terminal base unit.

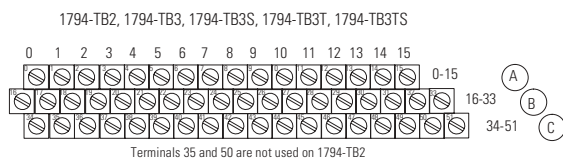
## 1794-0C16



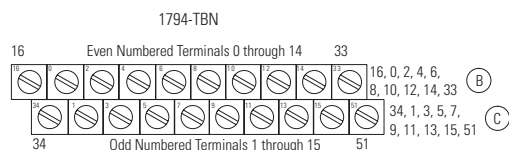
Connect +V to C-34.  
Connect +V common to B-16.  
Use B-33 and C-51 for daisy chaining to next terminal base unit.

1794-TB 3, -TB3S, and -TB 2					
Output Channel	Output Terminal	Common Terminal	Output Channel	Output Terminal	Common Terminal
0	A-0	B-17	8	A-8	B-25
1	A-1	B-18	9	A-9	B-26
2	A-2	B-19	10	A-10	B-27
3	A-3	B-20	11	A-11	B-28
4	A-4	B-21	12	A-12	B-29
5	A-5	B-22	13	A-13	B-30
6	A-6	B-23	14	A-14	B-31
7	A-7	B-24	15	A-15	B-32
Common	B-16 through B-33		+V dc		C-34 through C-51 (C-34 and C-51 for TB2)

## 1794-0E4



		TB 3, TB 3S, TB 2, TB 3T, TB 3TS	TB3T, TB3TS			TB 3, TB 3S, TB 2, TB 3T, TB 3TS	TB3T, TB 3T
Output Channel	Signal Type	Output Terminal	Shield	Output Channel	Signal Type	Input Terminal	Shield
0	Current Signal	A-0	C-39	2	Current Signal	A-8	C-43
	Current Common	A-1'	C-39		Current Common	A-9'	C-43
	Voltage Signal	A-2	C-40		Voltage Signal	A-10	C-44
	Voltage Common	A-3'	C-40		Voltage Common	A-11'	C-44
1	Current Signal	A-4	C-41	3	Current Signal	A-12	C-45
	Current Common	A-5'	C-41		Current Common	A-13'	C-45
	Voltage Signal	A-6	C-42		Voltage Signal	A-14	C-46
	Voltage Common	A-7'	C-42		Voltage Common	A-15'	C-46
Common for TB2, TB3, TB3S: B-16 thru B-33 Common for TB3T and TB3TS: B-16, 17, 19, 21, 23, 25, 27, 29, 31, and 33				+ V dc Power for TB2: C-34 and C-51 + V dc Power for TB3 and TB3S: C-34 thru C-51 + V dc Power for TB3T and TB3TS: C-34, 35, 50, and 51			
1 A-1, 3, 5, 7, 9, 11, 13, and 15 are internally connected in the module to +V common.							



**ATTENTION** Only connect either a voltage signal or a current signal per channel, not both.

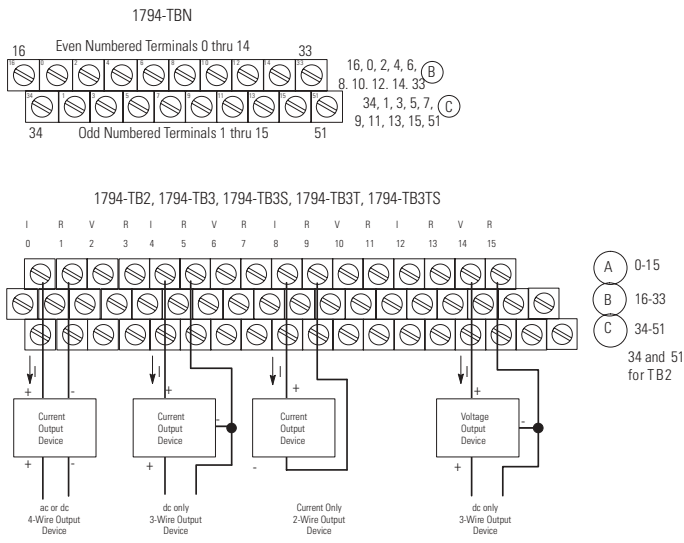


To reduce susceptibility to noise, power analog and digital modules from separate power supplies. Do not exceed a length of 3M (9.8 ft) for DC power cabling.

Output Channel	Signal Type	Output Terminal	Output Channel	Signal Type	Output Terminal
0	Current Signal	B-0	2	Current Signal	B-8
	Current Common	C-1		Current Common	C-9
	Voltage Signal	B-2		Voltage Signal	B-10
	Voltage Common	C-3		Voltage Common	C-11
1	Current Signal	B-4	3	Current Signal	B-12
	Current Common	C-5		Current Common	C-13
	Voltage Signal	B-6		Voltage Signal	B-14
	Voltage Common	C-7		Voltage Common	C-15
Common	B-16 and B-33		+ V dc	C34 and C-51	

Connect +V to C-34.  
Connect +V common to B-16.  
Use B-33 and C-51 for daisy chaining to the next terminal base unit.  
Connect any signal wiring shield to functional ground as near as possible to the module when using the 1794-TB2, -TB3, -TB3S or -TBN. With the 1794-TB3T and -TB3TS, use terminals C-39 through C-46.

1794-OF4I



**ATTENTION** Only connect either a voltage signal or a current signal per channel, not both.

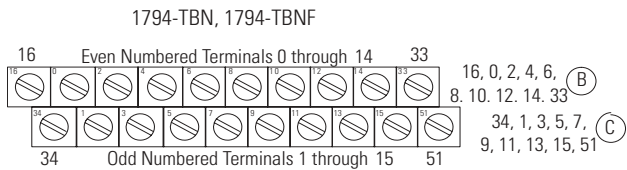


To reduce susceptibility to noise, power analog and digital modules from separate power supplies. Do not exceed a length of 3M (9.8 ft) for DC power cabling.

1794-TB3, -TB3S, -TB2, -TB3T, and -TB3TS					1794-TB N
Output Channel	Signal Type	Label Markings	Terminal	Shield (TB3T/TB3TS)	Terminal
0	Current Output	I0	A-0	C-39	B-0
	Current Return	I0 Ret	A-1		C-1
	Voltage Output	V0	A-2	C-40	B-2
	Voltage Return	V0 Ret	A-3		C-3
1	Current Output	I1	A-4	C-41	B-4
	Current Return	I1 Ret	A-5		C-5
	Voltage Output	V1	A-6	C-42	B-6
	Voltage Return	V1 Ret	A-7		C-7
2	Current Output	I2	A-8	C-43	B-8
	Current Return	I2 Ret	A-9		C-9
	Voltage Output	V2	A-10	C-44	B-10
	Voltage Return	V2 Ret	A-11		C-11
3	Current Output	I3	A-12	C-45	B-12
	Current Return	I3 Ret	A-13		C-13
	Voltage Output	V3	A-14	C-46	B-14
	Voltage Return	V3 Ret	A-15		C-15
Common	TB2, TB3, TB3S: Terminals 16 thru 33 are internally connected in the terminal base unit TB3T, TB3TS: Terminals 16, 17, 19, 21, 23, 25, 27, 29, 31, and 33 are internally connected in the terminal base unit TBN: Terminals 16 and 33 are internally connected in the terminal base unit				
+V dc	TB2 and TBN: Terminals 34 and 51 are internally connected in the terminal base unit TB3, TB3S: Terminals 34 thru 51 are internally connected in the terminal base unit TB3T, TB3TS: Terminals 34, 35, 50, and 51 are internally connected in the terminal base unit				
Chassis Gnd	TB3T, TB3TS: Terminals 39 thru 46 are internally connected to chassis gnd				

Connect +V to C-34.  
Connect +V common to B-16.  
Use B-33 and C-51 for daisy chaining to the next terminal base unit.  
Connect any signal wiring shield to functional ground as near as possible to the module when using the 1794-TB2, -TB3, -TB3S or -TBN. With the 1794-TB3T and -TB3TS, use terminals C-39 through C-46.

1794-OM8



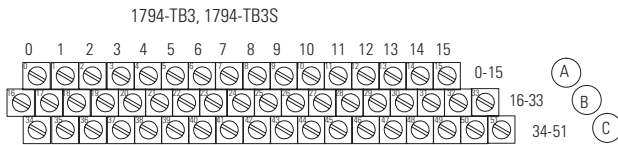
Connect 220V ac L2 common to B-16.  
Connect 220V ac L1 to C-34.  
Use B-33 and C-51 for daisy chaining to the next terminal base unit.

1794-TBN, -TBN F		
Output Channel	Output Terminal	Common Terminal <sup>1</sup>
0	B-0	C-1
1	B-2	C-3
2	B-4	C-5
3	B-6	C-7
4	B-8	C-9
5	B-10	C-11
6	B-12	C-13
7	B-14	C-15

B = even numbered output terminals 0 thru 14, ac common terminals 16 and 33  
C = power terminals C-34 and C-51, and odd numbered output common terminals 1 through 15  
1. C-1, 3, 5, 7, 9, 11, 13, and 15 are internally connected in the module to 220V ac common L2.



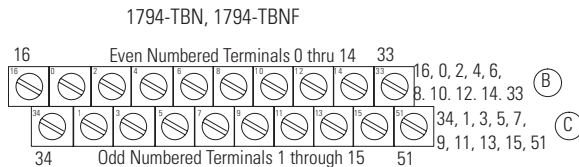
## 1794-OV16, 1794-OV16P



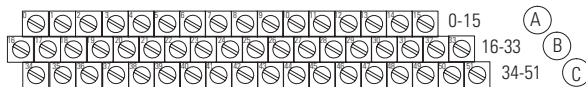
Connect +V to C-34.  
 Connect +V common to B-16.  
 Use B-33 and C-51 for daisy chaining to the next terminal base unit.

1794-TB3 and -TB3S					
Output Channel	Output Terminal	Power Terminal	Output Channel	Output Terminal	Power Terminal
0	A-0	C-35	8	A-8	C-43
1	A-1	C-36	9	A-9	C-44
2	A-2	C-37	10	A-10	C-45
3	A-3	C-38	11	A-11	C-46
4	A-4	C-39	12	A-12	C-47
5	A-5	C-40	13	A-13	C-48
6	A-6	C-41	14	A-14	C-49
7	A-7	C-42	15	A-15	C-50
Common	B-16 through B-33		+V dc	C-34 through C-51	

## 1794-OW8



1794-TB2, 1794-TB3, 1794-TB3S



Terminals 35 and 50 are not used on 1794-TB2

## ATTENTION



Do not attempt to increase load current or wattage capability beyond the maximum rating by connecting 2 or more outputs in parallel. The slightest variation in relay switching time may cause one relay to momentarily switch the total load current.

Apply only +24V dc power to the power terminals on the terminal base unit. Make certain that all relay wiring is properly connected before applying any power to the module.

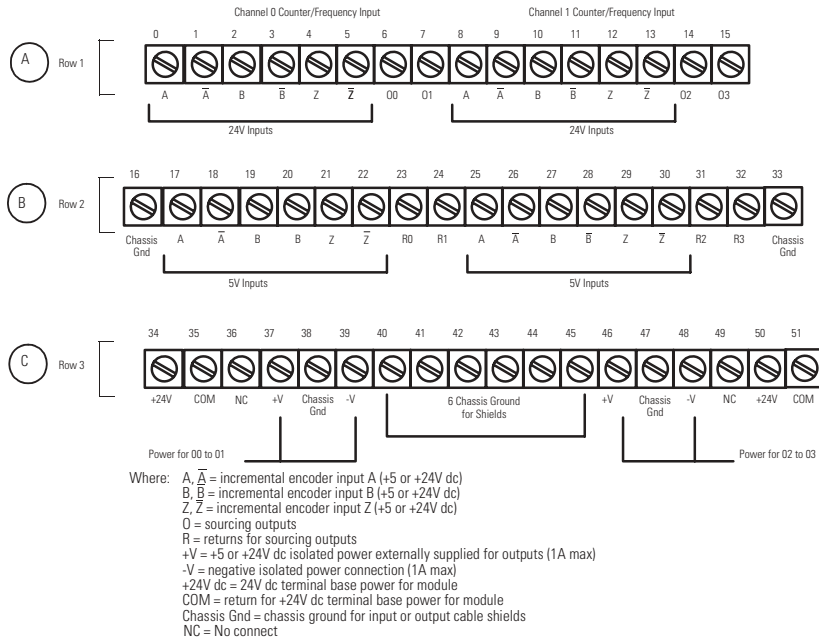
Total current draw through the terminal base unit is limited to 10A. Separate power connections to the terminal base unit may be necessary.

Output Channel	1794-TB2, -TB3, -TB3S Output Terminal	1794-TBN, -TBNF Output Terminal
0	A-0	B-0
	A-1	C-1
1	A-2	B-2
	A-3	C-3
2	A-4	B-4
	A-5	C-5
3	A-6	B-6
	A-7	C-7
4	A-8	B-8
	A-9	C-9
5	A-10	B-10
	A-11	C-11
6	A-12	B-12
	A-13	C-13
7	A-14	B-14
	A-15	C-15
	A = output terminals B = dc common terminals C = power terminals (C-34 through C-51 for 1794-TB3, -TB3S; C-34 and C-51 for 1794-TB2)	B = even numbered output terminals 0-14, 24V dc common terminals 8-16 and B-33 C = odd numbered output terminals 1-15; 24V dc power terminals C-34 and C-51

Connect +24V dc to C-34.  
 Connect +24V dc common to B-16.  
 Use B-33 and C-51 for daisy chaining to the next terminal base unit.

## 1794-VHSC

Connections for 1794-TB3G and -TB3GS (TB3G shown)



Incremental Encoder Inputs	Channel 0		Channel 1	
	+24V Inputs	+5V Inputs	+24V Inputs	+5V Inputs
Input A	A-0	B-17	A-8	B-25
Input $\bar{A}$	A-1	B-18	A-9	B-26
Input B	A-2	B-19	A-10	B-27
Input $\bar{B}$	A-3	B-20	A-11	B-28
Input Z	A-4	B-21	A-12	B-29
Input $\bar{Z}$	A-5	B-22	A-13	B-30

Outputs	Sourcing Out	Return	Outputs	Sourcing Out	Return
Output 0 (00)	A-6	B-23	Output 0 (02)	A-14	B-31
Output 1 (01)	A-7	B-24	Output 1 (03)	A-15	B-32
+24V Terminal Base Power		Terminals C-34 and C-50			
24V COM		Terminals C-35 and C-51			
+5V or +24V power (this isolated power is externally supplied for outputs with a 1A max.)		Terminals C-37 and C-46			
-V output power		Terminals C-39 and C-48			
Chassis Ground		Terminals C-16, B-33 and C-38, C-40 through C-45, C-47			

### ATTENTION

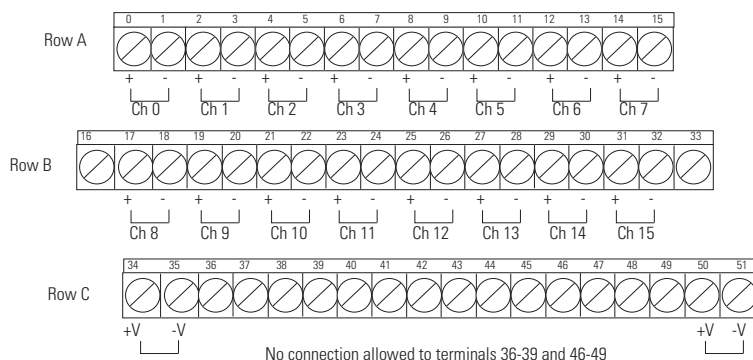


To reduce the susceptibility to noise, power analog modules and digital modules from separate power supplies. Do not exceed a length of 3m (9.8ft) for dc power cabling.

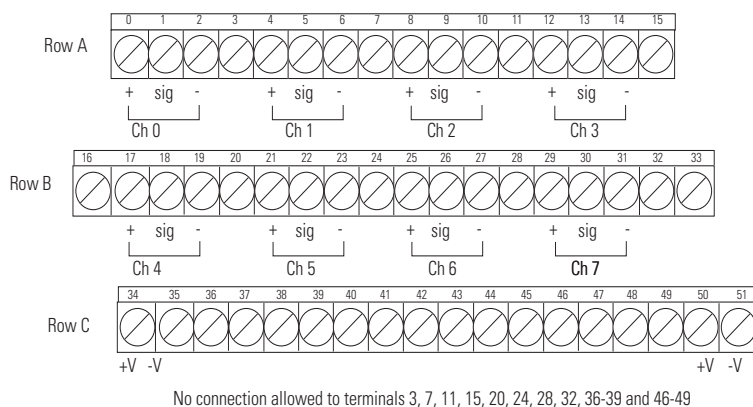
Total current draw through the terminal base unit is limited to 10A. Separate power connections to the terminal base unit may be necessary.

## 1797 FLEX Ex Modules

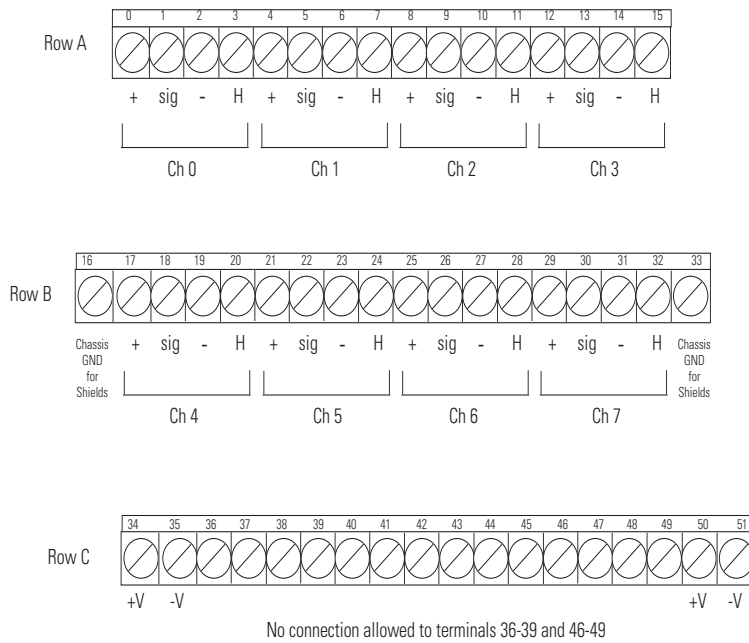
### 1797-IBN16



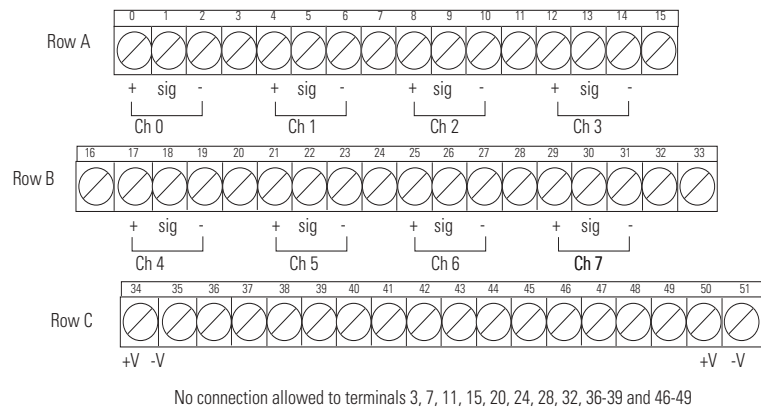
### 1797-IE8

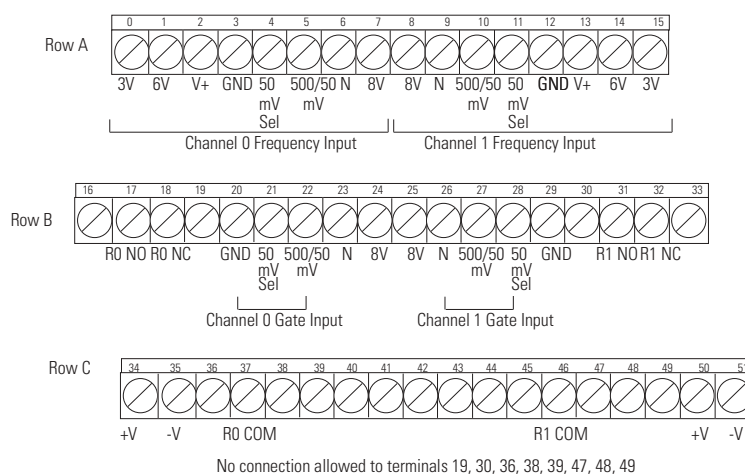
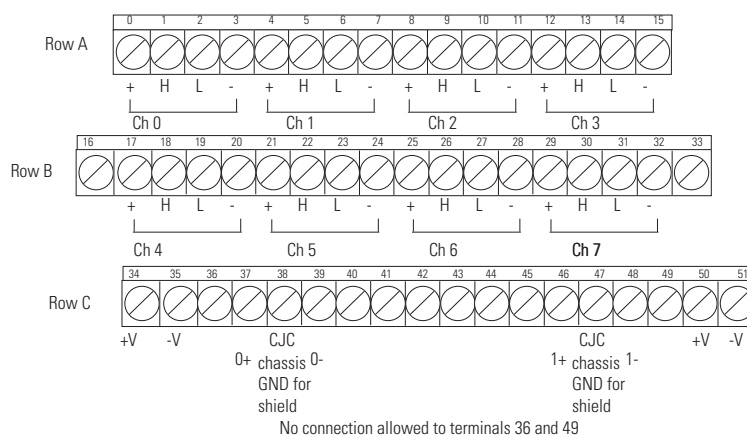
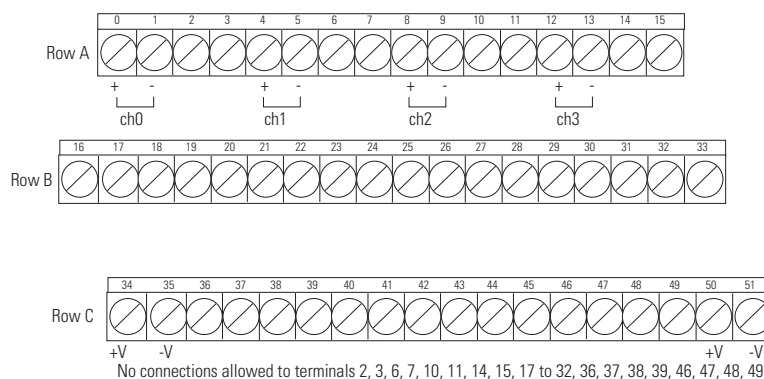


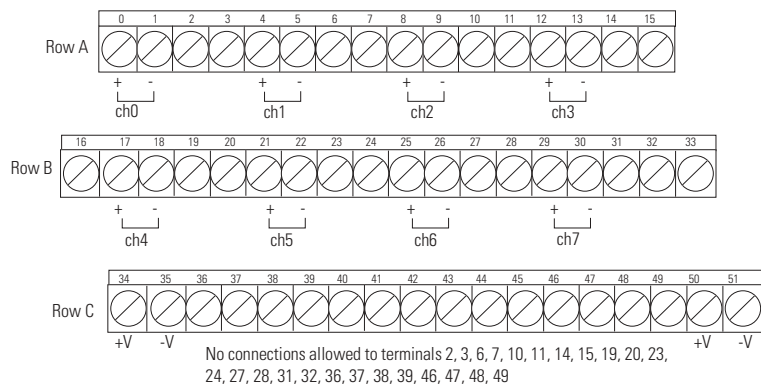
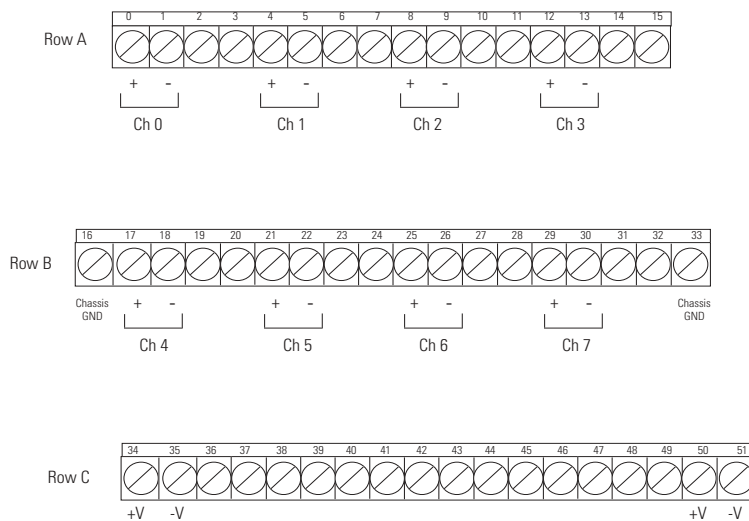
**1797-IE8H**



**1797-IE8NF**

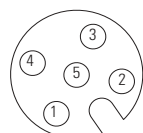


**1797-IJ2****1797-IRT8****1797-OB4D**

**1797-0E8****1797-0E8H**

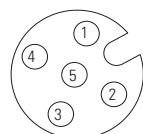
## 1798 FLEX Armor I/O Modules

### 1798-DFTP1

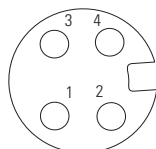


Male M12 Micro Connector (In)  
(View into Socket)

Pin 1 Drain Wire  
Pin 2 +Voltage  
Pin 3 -Voltage  
Pin 4 Controller Area Network (CAN) High  
Pin 5 Controller Area Network (CAN) Low



Female M12 Micro Connector  
(Daisy Chain Out)

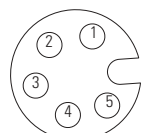


Male Power Connector

The connection to the power connector should be a 4-pin female mini quick disconnect connector.

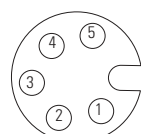
Pin 1 Output Power +  
Pin 2 Sensor Power + (Red wire)  
Pin 3 Sensor Power -  
Pin 4 Output Power -

### 1798-DFTP2

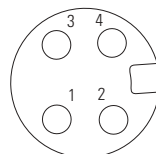


Male M18 Mini Connector (In)  
(View into Socket)

Pin 1 Drain Wire  
Pin 2 +Voltage  
Pin 3 -Voltage  
Pin 4 Controller Area Network (CAN) High  
Pin 5 Controller Area Network (CAN) Low



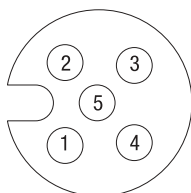
Female M18 Mini Connector  
(Daisy Chain Out)



Male Power Connector

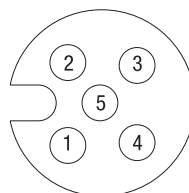
Pin 1 Output Power +  
Pin 2 Sensor Power +  
Pin 3 Sensor Power -  
Pin 4 Output Power -

### 1798-IB4, -IB4D and -IB8



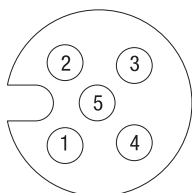
Female Input Micro- Connector  
(View into Socket)  
Pin 1 Sensor Power  
Pin 2 Input B (IB8 Modules Only)  
Pin 3 Sensor Common  
Pin 4 Input A  
Pin 5 Not Used

### 1798-IE4



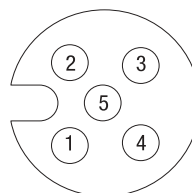
Female Input Micro- Connector  
(View into Socket)  
Pin 1 Sensor Power  
Pin 2 Current Input  
Pin 3 Sensor Common  
Pin 4 Voltage Input  
Pin 5 Not Used

### 1798-OB4E and -OB8E



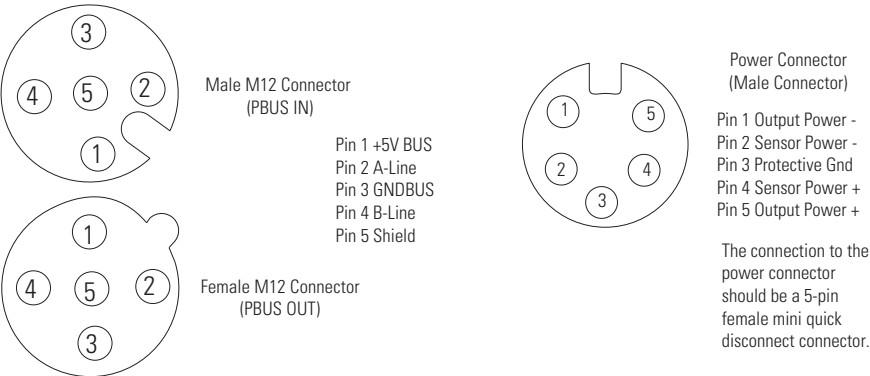
Female Output Micro Connector  
(View into Socket)  
Pin 1 Not Used  
Pin 2 Output B (OB8E modules only)  
Pin 3 Output Common  
Pin 4 Output A  
Pin 5 Not Used

### 1798-OE2



Female Input Micro- Connector  
(View into Socket)  
Pin 1 Sensor Power  
Pin 2 Current Output  
Pin 3 Sensor Common  
Pin 4 Voltage Output  
Pin 5 Not Used

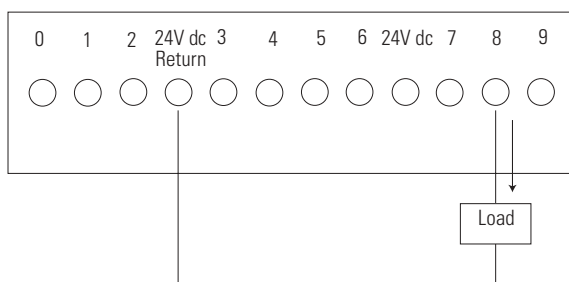
1798-PFTP1



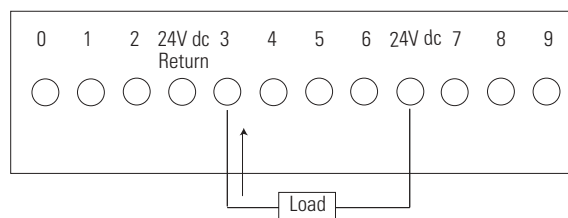


## 1799 Embedded I/O Cards

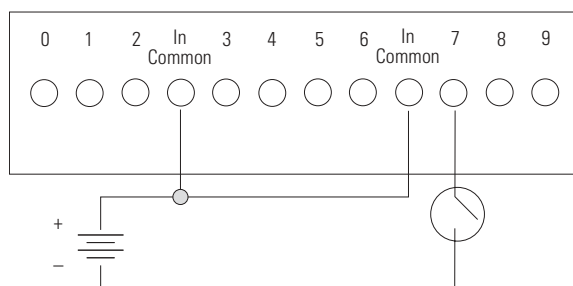
**1799-D10U10B, -D10U10BL – Outputs Sourcing**



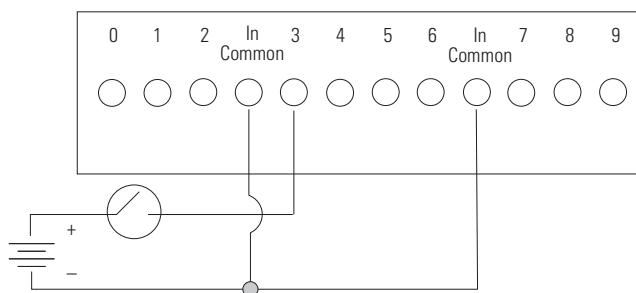
**1799-D10U10V, -D10U10VL Outputs Sinking**



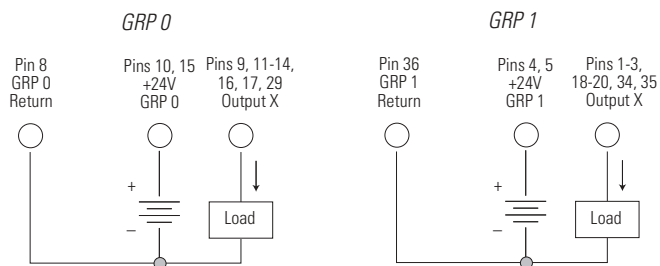
**1799-D10U10B, -D10U10BL, -D10U10V, -D10U10VL – Inputs Sinking**



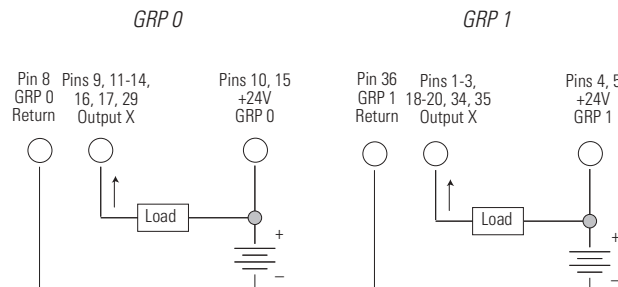
**1799-D10U10B, -D10U10BL, -D10U10V, -D10U10VL – Inputs Sinking**



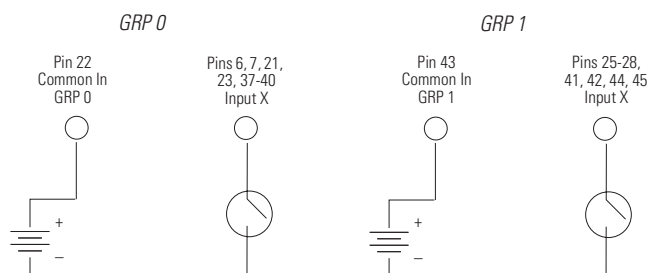
**1799-D16U16B, -D16U16BL – Outputs Sourcing**



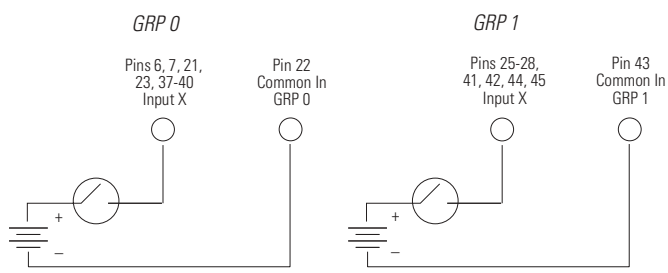
**1799-D16U16B, -D16U16BL Outputs Sinking**



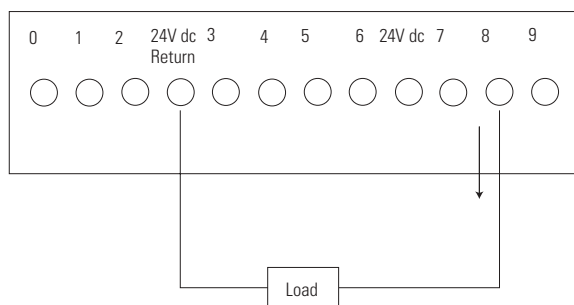
**1799-D16U16B, -D16U16BL, -D16U16V,  
-D16U16VL – Inputs Sinking**



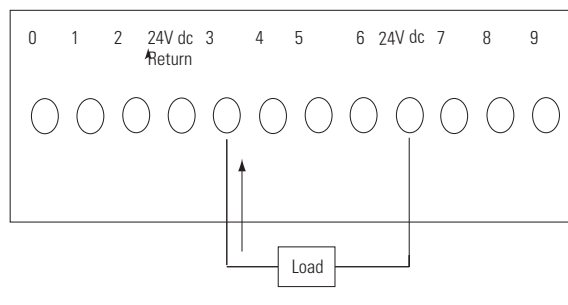
**1799-D16U16B, -D16U16BL, -D16U16V,  
-D16U16VL – Inputs Sinking**



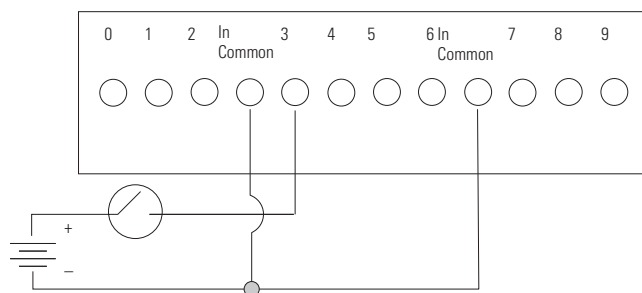
**1799-ZCIOB – Outputs Sourcing**



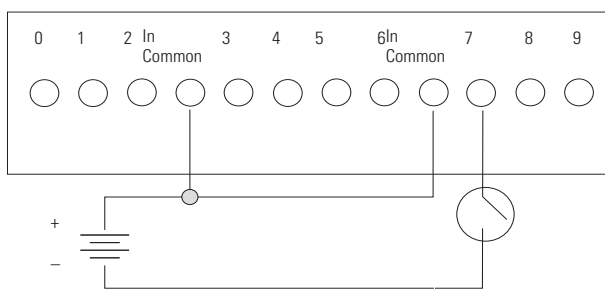
**1799-ZCIOV – Outputs Sinking**



**1799-ZCIOB, -ZCIOV – Inputs Sinking**



**1799-ZCIOB, -ZCIOV – Inputs Sourcing**





# Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our products. At <http://support.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

## Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

## New Product Satisfaction Return

Rockwell tests all of our products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

**[www.rockwellautomation.com](http://www.rockwellautomation.com)**

### Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

### Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36-BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

### Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433

Europe: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741

Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 351 6723, Fax: (65) 355 1733