



# Compact I/O to Compact 5000 I/O Migration Guide

Bulletin Numbers 1769 and 5069



**Allen-Bradley**

by ROCKWELL AUTOMATION

Reference Manual

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## About This Publication

This manual provides information to help migrate a Compact I/O™ system to a Compact 5000® I/O system. The Compact 5000 I/O system includes network adapters, I/O modules, and specialty modules. Descriptions, wiring diagrams, dimensions, features, and specifications are provided to help you select the appropriate adapter, modules, and accessories to replace your Compact I/O system.

This document is intended for users of Compact I/O modules in a Logix control system.

## Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Added the 5069-IB32 and 5069-OB32 modules	Throughout

## Download Firmware, AOP, EDS, and Other Files

Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes from the Product Compatibility and Download Center at [rok.auto/pcdc](http://rok.auto/pcdc).

Before you migrate a Compact I/O™ system to a Compact 5000® I/O system, review your existing system requirements and compare them to what is available in Compact 5000 I/O system. To understand the migration options and considerations, read this chapter.



## Product Lifecycle Status

Use the Rockwell Automation Product Lifecycle Status website to plan proactively and manage the transition from existing equipment to leading-edge products and technologies. With the search tool, you can view up-to-date product lifecycle status and identify the most contemporary Rockwell Automation products.

The product lifecycle status is one of the following:

- Active – Most current offering within a product category.
- Active Mature – Product is fully supported, but a new product or family exists. Gain value by migrating.
- End of Life – Discontinued date announced – Actively execute migrations and last-time buys. Product is orderable until the Discontinued date.<sup>(a)</sup>
- Discontinued – New product no longer manufactured or procured.<sup>(b)</sup> Repair/exchange services may be available.

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(a) Outages on specific items may occur before the Discontinued date.

(b) Limited stock may be available in run-out mode, regionally.

To view the lifecycle information for a product:

1. Go to the Rockwell Automation Support Center website at [rok.auto/support](http://rok.auto/support).
2. Select Product Lifecycle Status.
3. Enter the catalog number of the product in the search field.



Enter a catalog number in the search field for the most up-to-date lifecycle status on products and software you are interested in.

4. Click Search.

The product lifecycle information displays.

Catalog Number	Product	Lifecycle Status	Discontinued Date	Replacement Category	Replacement
1769-IA16-CC	Conformal Coated 1769-IA16	Discontinued	9/30/2018	N/A	N/A
<a href="#">1769-IA16</a>	CompactLogix 16 Pt 120VAC D/I Module	Active Mature	N/A	Engineering Replacement	5069-IA16
<a href="#">1769-IA16K</a>	CompactLogix 16 Pt 120VAC D/I Module	Active Mature	N/A	No planned RA replacement	N/A

The lifecycle information shows the lifecycle status and recommended replacement module, if available.

## Compact 5000 I/O Product Family

The Compact 5000 I/O family offers a wide variety of standard, safety, and specialty modules. The family also includes Ethernet adapters that have embedded ports and are capable of dual gigabit (Gb), for Device Level Ring (DLR), Linear, and Star network topologies. This flexibility provides more customization for applications that demand high performance and speed.

The system expands performance capabilities within the Logix platform in a compact design, and functions as local I/O modules with CompactLogix™ 5380, Compact GuardLogix® 5380, or CompactLogix 5480 controllers.

The Compact 5000 I/O modules also offer a high-performance distributed I/O solution for CompactLogix 5380, Compact GuardLogix 5380, CompactLogix 5480, ControlLogix® 5580, and GuardLogix 5580 controllers over an EtherNet/IP™ network.

Smart	Safety	Secure	Productive
<ul style="list-style-type: none"> <li>• Embedded switch technology supports DLR, linear, and star topologies</li> <li>• Status indicators provide information without software connection</li> <li>• Channel isolation and Highly Integrated HART</li> </ul>	<ul style="list-style-type: none"> <li>• Single channel SIL 3/PLe rated</li> <li>• Faster safety response reaction time</li> <li>• Enhanced diagnostics information</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce power termination to I/O modules with integrated power supply</li> <li>• Increased security with digitally signed module firmware</li> </ul>	<ul style="list-style-type: none"> <li>• Faster transfer rates with high-speed backplane</li> <li>• Solve multiple applications with support up to 31 local I/O modules</li> </ul>

## Compact I/O Product Family

The Compact I/O modules act as both local and distributed I/O for CompactLogix 5370 or Compact GuardLogix 5370 controllers. This I/O family also offers a distributed I/O solution for CompactLogix 5380, Compact GuardLogix 5380, CompactLogix 5480, ControlLogix 5580, and GuardLogix 5580 controllers over an EtherNet/IP network.

A Compact I/O system provides rack-like features in a rackless design, which lowers costs and reduces a replacement parts inventory. A built-in removable terminal block provides connections to I/O sensors and actuators.

- Provides flexibility with DIN rail or panel mounting options
- Includes individual point diagnostic status indicators for troubleshooting
- Prevents incorrect positioning of module with software keying
- A communication adapter connects a controller to up to three banks of Compact I/O modules with one power supply per bank.

## Product Family Features Comparison

Attribute	Compact I/O	Compact 5000 I/O
Module capacity, max	1 Ethernet adapter supports up to 30 modules in three banks with one power supply per bank	1 Ethernet adapter supports up to 31 modules in one bank
Mounting	DIN rail or panel	DIN rail
Diagnostics	<ul style="list-style-type: none"> <li>Analog modules have a module status indicator</li> <li>Digital modules have I/O channel status indicators</li> <li>Some specialty modules have specific status indicators</li> </ul>	<ul style="list-style-type: none"> <li>Module status indicator</li> <li>I/O channel status indicators</li> <li>Safety modules have a SA Power status indicator</li> </ul>
Digital modules	<ul style="list-style-type: none"> <li>8...32 points per module</li> <li>Variety of AC and DC voltages</li> <li>Sink/source, isolated, non-isolated, solid-state, high-speed, TTL, and terminated input modules</li> <li>Sink, source, high-current, TTL, protected, terminated, and relay contact output modules</li> <li>Combination sink/source input and relay output module</li> </ul>	<ul style="list-style-type: none"> <li>4...32 points per module</li> <li>Variety of AC and DC voltages</li> <li>Sink, conformal-coated, and fast input modules</li> <li>Source, isolated, non-isolated, high-speed, conformal coated, high-current, and relay output modules</li> <li>Enhanced built-in capabilities; event triggers, simple counter, time stamps, schedule output</li> <li>Enhanced protection capability</li> </ul>
Analog modules	<ul style="list-style-type: none"> <li>High-density input modules</li> <li>Isolated and non-isolated I/O modules</li> <li>Combination and fast combination I/O modules</li> <li>RTD and thermocouple input modules</li> </ul>	<ul style="list-style-type: none"> <li>High-resolution modules for fast conversion rates</li> <li>Isolated, non-isolated, conformal coated, and HART I/O modules</li> <li>RTD and thermocouple input module</li> </ul>
Safety modules	-	<ul style="list-style-type: none"> <li>Use side by side with standard Compact 5000 I/O</li> <li>Safety digital input module, single-channel PLd, dual-channel PLd</li> <li>Configurable safety output module</li> <li>Sourcing Mode: single channel PLd, dual channel PLd</li> <li>Bipolar Mode: PLd</li> </ul>
Specialty modules	<ul style="list-style-type: none"> <li>Address reserve</li> <li>Boolean control</li> <li>High-speed counter</li> <li>Direct 1769 platform connection to PowerFlex® drives and other devices through Compact 5000 I/O to DPI™/SCANport™ and Compact 5000 to DSI/Modbus modules</li> </ul>	<ul style="list-style-type: none"> <li>Address reserve</li> <li>High-speed counter</li> <li>Field potential distributor</li> </ul>
Network connectivity modules	<ul style="list-style-type: none"> <li>EtherNet/IP adapter</li> <li>DeviceNet® adapter</li> <li>DeviceNet scanner</li> <li>ASCII network interface</li> </ul>	<ul style="list-style-type: none"> <li>EtherNet/IP adapter</li> <li>DeviceNet scanner</li> <li>Serial network interface</li> <li>HART I/O modules</li> </ul>
Temperature, operating	0...60 °C (32...140 °F) Safety modules: 0 °C ≤ Ta ≤ +60 °C (+32 °F ≤ Ta ≤ +140 °F)	
Removable terminal block (RTB)	Fingersafe terminal block removed via screws	RTB removed via a handle
Terminal types	Screw	<ul style="list-style-type: none"> <li>Screw</li> <li>Spring</li> </ul>
Wire size	0.34...2.5 mm <sup>2</sup> (22...14 AWG), solid copper wire rated at 90 °C (194 °F) 0.5...1.5 mm <sup>2</sup> (22...16 AWG), stranded copper wire rated at 90 °C (194 °F)	0.34...1.5 mm <sup>2</sup> (22...16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F) or greater 5069-0W16 module only: 0.75 mm <sup>2</sup> (18 AWG), or greater, for load connections to relay output modules Spring-type RTB: 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only Screw-type RTB: 3.5 mm (0.14 in.) max diameter including insulation, single wire connection only
	Expansion power supplies only: 2.5 mm <sup>2</sup> (14 AWG) solid copper wire rated at 90 °C (194 °F), or greater, 1.2 mm (3/64 in.) insulation max	5069-AENTR, 5069-AENTRK modules only: 0.34...2.5 mm <sup>2</sup> (22...14 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in) insulation max diameter including insulation, single wire connection only Grounding: 2.5 mm <sup>2</sup> (14 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in) max diameter including insulation, single wire connection only

## Network Considerations

Compact I/O supports the DeviceNet and EtherNet/IP networks, and communication with Serial, DPI/SCANport, and Modbus RTU devices. Compact 5000 I/O supports the EtherNet/IP network, and communication with Serial and HART devices.

We recommend that you migrate your existing DeviceNet network to an EtherNet/IP network. If you are not able to update your DeviceNet network when you update your Compact I/O modules, you may be able to use the 1788-EN2DNR linking device to bridge between the existing DeviceNet network and the required EtherNet/IP network. For more information, see the EtherNet/IP to DeviceNet Linking Device User Manual, publication [1788-UM059](#).

## EtherNet/IP Network Overview

EtherNet/IP networks offer a comprehensive suite of messages and services for many automation applications. This open network standard uses standard Ethernet communication products to support real-time I/O messaging, information exchange, and general messaging. EtherNet/IP networks support CIP Safety™ applications. Such support makes the simultaneous transmission of safety and standard control data and diagnostics information over a common network possible. EtherNet/IP networks also support CIP Motion™ and CIP Security™ applications.

For more information, see the Ethernet Media Specifications Technical Data, publication [1585-TD001](#).

## Power Considerations

The connected controller or adapter provides power to the Compact 5000 I/O modules. There are three different types of power that are used in a Compact 5000 I/O system.

Power Type	Description
Module (MOD) power	System-side power that is used to operate a local or remote system. Power passes across a MOD power bus. Modules draw current from the bus and pass the remaining current to the next module.
Sensor Actuator (SA) power	Field-side power that some modules use to power field-side devices. Power passes across an SA power bus. Some modules draw current from the bus and pass the remaining current to the next module. Other modules do not draw current from the bus but do pass the current to the next module.
Local Actuator (LA) power	Field-side power that some modules use instead of SA power. Modules that use LA power do not use SA power. They only pass SA power to the next I/O module in the system. You must install modules that use LA power on an SA power bus with the same SA power type. For example, the 5069-0B8 module uses LA power but is still a DC-type module, so you must install it on a DC SA power bus.

For more information about power in a Compact 5000 I/O system, see these user manuals:

- CompactLogix 5380 and Compact GuardLogix Controllers User Manual, publication [5069-UM001](#)
- CompactLogix 5480 Controllers User Manual, publication [5069-UM002](#)
- Compact 5000 EtherNet/IP Adapters User Manual, publication [5069-UM007](#)

### Compact 5000 Field Potential Distributor

The 5069-FPD field potential distributor breaks the field-side power distribution in a Compact 5000 I/O system and creates a new SA power bus from which additional modules draw current. The 5069-FPD module passes MOD power bus signals to the next module in the system, and does not occupy a logic slot in the controller program.

These application conditions require a 5069-FPD module:

- AC-type modules and DC-type modules must be isolated from each other. A 5069-FPD module must be installed between the two groups to end one type of SA power bus and start a new type of SA power bus.
- A system requires additional SA power bus current because the I/O modules collectively draw more than 10 A current from the SA power bus. A 5069-FPD module can be added to provide more power.
- The Compact GuardLogix 5380 controller does not supply AC SA power, so AC-type modules cannot be installed directly next to the controller. A 5069-FPD module must be installed in between the controller and an AC module.

#### *Isolate SA Power*

To create separate SA power buses in a system that uses both AC SA power and DC SA power, complete these steps.

1. Install the modules that use one type of SA power, for example DC, to the right of the adapter or controller.  
This is the first SA power bus.
2. To create a second SA power bus, install the 5069-FPD field module to the right of these modules.
3. Install the modules that use the other type of SA power, for example AC, to the right of the 5069-FPD module.

## Controller Considerations

The Compact 5000 I/O family supports these controllers.

- CompactLogix 5380 - local and remote I/O
- Compact GuardLogix 5380 - local and remote I/O
- CompactLogix 5480 - local and remote I/O
- ControlLogix 5580 - remote I/O
- GuardLogix 5580 - remote I/O

If your existing Compact I/O system uses CompactLogix 5370 or Compact GuardLogix 5370 controllers, migrate to controllers that support your system requirements. For controller migration information, see the Replacement Guidelines: Logix 5000 Controllers Reference Manual, publication [1756-RM100](#).

### Compact 5000 I/O Modules Controller and Software Compatibility Requirements

I/O Type	Controller		Studio 5000 Logix Designer Application Version			
	System	Cat. Nos.	Standard I/O Modules	Safety I/O Modules	HART I/O Modules	
Local	CompactLogix 5380	5069-L320ER, 5069-L320ERMK, 5069-L330ERMK, 5069-L340ERM, 5069-L350ERMK	28.00.00 or later	-	33.00.00 or later	
		5069-L306ER, 5069-L306ERM, 5069-L310ER, 5069-L310ERM, 5069-L310ERMK, 5069-L310ER-NSE, 5069-L310ERS2, 5069-L320ERM, 5069-L320ERMK, 5069-L320ERP, 5069-L330ER, 5069-L330ERM, 5069-L330ERMK, 5069-L340ER, 5069-L340ERP	29.00.00 or later			
		5069-L350ERM, 5069-L350ERMK, 5069-L380ERM, 5069-L3100ERM	30.00.00 or later			
	CompactLogix 5480	5069-L46ERMW	32.00.00 or later			
		5069-L430ERMW, 5069-L450ERMW, 5069-L4100ERMW, 5069-L4200ERMW	32.01.00 or later			
	Compact GuardLogix 5380	5069-L306ERS2, 5069-L306ERMS2, 5069-L310ERS2, 5069-L310ERMS2, 5069-L320ERS2, 5069-L320ERS2K, 5069-L320ERMS2, 5069-L320ERS2K, 5069-L330ERS2, 5069-L330ERS2K, 5069-L330ERMS2, 5069-L330ERMS2K, 5069-L340ERS2, 5069-L340ERMS2, 5069-L350ERS2, 5069-L350ERS2K, 5069-L350ERMS2, 5069-L350ERMS2K, 5069-L380ERS2, 5069-L380ERMS2, 5069-L3100ERS2, 5069-L3100ERMS2	31.00.00 or later			32.00.00 or later
5069-L306ERMS3, 5069-L310ERMS3, 5069-L320ERMS3, 5069-L330ERMS3, 5069-L340ERMS3, 5069-L350ERMS3, 5069-L380ERMS3, 5069-L3100ERMS3		32.00.00 or later				
Remote	CompactLogix 5380	5069-L320ER, 5069-L340ERM	28.00.00 or later	-	33.00.00 or later	
		5069-L306ER, 5069-L306ERM, 5069-L310ER, 5069-L310ERM, 5069-L310ERMK, 5069-L310ER-NSE, 5069-L310ERS2, 5069-L320ERM, 5069-L320ERP, 5069-L330ER, 5069-L330ERM, 5069-L340ER, 5069-L340ERP	29.00.00 or later			
		5069-L350ERM, 5069-L380ERM, 5069-L3100ERM	30.00.00 or later			
	CompactLogix 5480	5069-L46ERMW	32.00.00 or later			
		5069-L430ERMW, 5069-L450ERMW, 5069-L4100ERMW, 5069-L4200ERMW	32.01.00 or later			
	Compact GuardLogix 5380	5069-L306ERS2, 5069-L306ERMS2, 5069-L310ERS2, 5069-L310ERMS2, 5069-L320ERS2, 5069-L320ERS2K, 5069-L320ERMS2, 5069-L320ERMS2K, 5069-L330ERS2, 5069-L330ERS2K, 5069-L330ERMS2, 5069-L330ERMS2K, 5069-L340ERS2, 5069-L340ERMS2, 5069-L350ERS2, 5069-L350ERS2K, 5069-L350ERMS2, 5069-L350ERMS2K, 5069-L380ERS2, 5069-L380ERMS2, 5069-L3100ERS2, 5069-L3100ERMS2	31.00.00 or later			32.00.00 or later
		5069-L306ERMS3, 5069-L310ERMS3, 5069-L320ERMS3, 5069-L330ERMS3, 5069-L340ERMS3, 5069-L350ERMS3, 5069-L380ERMS3, 5069-L3100ERMS3	32.00.00 or later			
	ControlLogix 5580	1756-L81E, 1756-L82E, 1756-L84E	29.00.00 or later			-
		1756-L83E, 1756-L85E	28.00.00 or later			
	GuardLogix 5580	1756-L81ES, 1756-L82ES, 1756-L83ES, 1756-L84ES	31.00.00 or later			32.00.00 or later
1756-L85ES		36.00.00 or later	36.00.00 or later	36.00.00 or later		

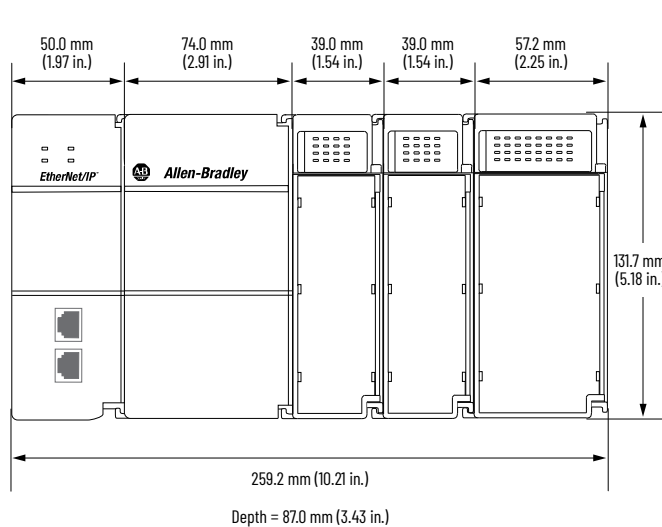
For controller specification information, see the CompactLogix 5380, Compact GuardLogix 5380, and CompactLogix 5480 Controllers Specifications, publication [5069-TD002](#)

## Mounting Considerations

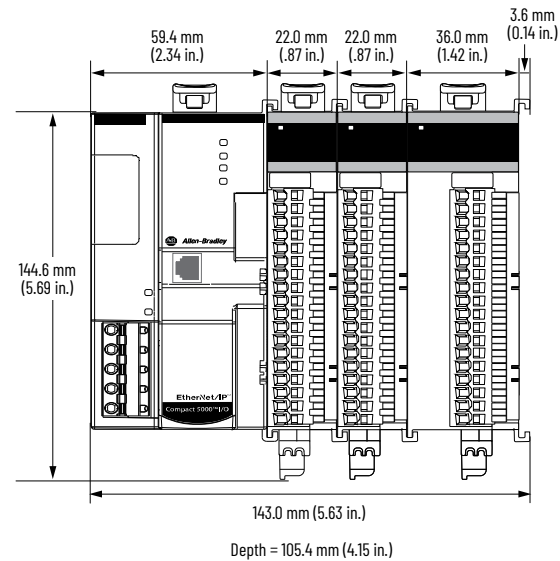
Verify that the area has sufficient space to install the Compact 5000 I/O modules. In general, Compact 5000 I/O are greater in height and depth, but smaller in width than the Compact I/O modules.

Component	Dimensions (HxWxD)	
	Compact I/O	Compact 5000 I/O
Network adapter	131.7 x 50.0 x 87.0 mm (5.18 x 1.97 x 3.43 in.)	141.4 x 63.0 x 105.4 mm (5.57 x 2.48 x 4.15 in.)
Power supply	131.7 x 74.0 x 87.0 mm (5.18 x 2.91 x 3.43 in.)	Power is supplied through the controller or EtherNet/IP adapter
I/O module	131.7 x 39.0 x 87.0 mm (5.18 x 1.54 x 3.43 in.) Width of 1769-IF8, 1769-IF8K, 1769-IQ32, 1769-IQ32K, 1769-OB32, 1769-OB32K, 1769-OW16, 1769-OW16K only: 57.2 mm (2.25 in.)	144.6 x 22.0 x 105.4 mm (5.69 x 0.87 x 4.15 in.) Width of 5056-IB32, 5069-OB32, 5069-OW16, 5069-OBV8S, 5069-OBV8SK only: 36 mm (1.42 in.)

### Example Compact I/O System



### Example Compact 5000 System



For more information about the dimensions of all Compact 5000 I/O modules, see the Compact 5000 I/O and Specialty Modules Specifications, publication [5069-TD001](#).

This list includes additional installation requirements for a Compact 5000 I/O system.

- Only install the system in horizontal or vertical orientations.
- An Ethernet adapter supports up to 31 modules in one bank, no expansion cables are necessary.
- Compact 5000 I/O must be installed to the right of the controller or EtherNet/IP adapter.
- An end cap must be installed to the right of the last module in the system. The end cap is included with each controller or adapter.
- RTBs are available in both spring-type and screw-type, and must be ordered separately for every controller, adapter and module in the system.

## Minimum Space Requirements

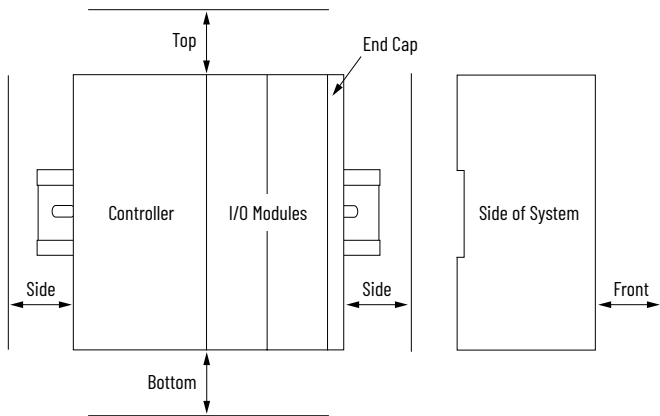
The minimum space requirements for Compact 5000 I/O modules are based on if they are installed in a CompactLogix 5380, Compact GuardLogix 5380, CompactLogix 5480 controller system or in a Compact 5000 EtherNet/IP adapter system.

- IMPORTANT**
- If Compact 5000 I/O modules are installed next to a CompactLogix 5380 or Compact GuardLogix 5380, or CompactLogix 5480 controller, you must mount the system horizontally.
  - If Compact 5000 I/O modules are installed next to a CompactLogix 5480 controller, you must mount the system horizontally.
  - If Compact 5000 I/O modules are installed next to a 5069-AENTR adapter, you can mount the system horizontally or vertically.

### CompactLogix 5380 or Compact GuardLogix 5380 System

The minimum distance between all sides of the CompactLogix 5380 system or Compact GuardLogix 5380 system and enclosure walls, wireways, and adjacent equipment varies based on the current operating temperature.

Controllers	Minimum Space at		
	50 °C (122 °F)	55 °C (131 °F)	60 °C (140 °F)
CompactLogix 5380 Standard and Process	50.8 mm (2.00 in)	50.8 mm (2.00 in)	101.6 mm (4.00 in)
Compact GuardLogix 5380 SIL 2	Series A catalog numbers	101.6 mm (4.00 in)	152.4 mm (6.00 in)
	Series B catalog numbers	50.8 mm (2.00 in)	50.8 mm (2.00 in)
Compact GuardLogix 5380 SIL 3	50.8 mm (2.00 in)	50.8 mm (2.00 in)	101.6 mm (4.00 in)



For more installation information, see these manuals:

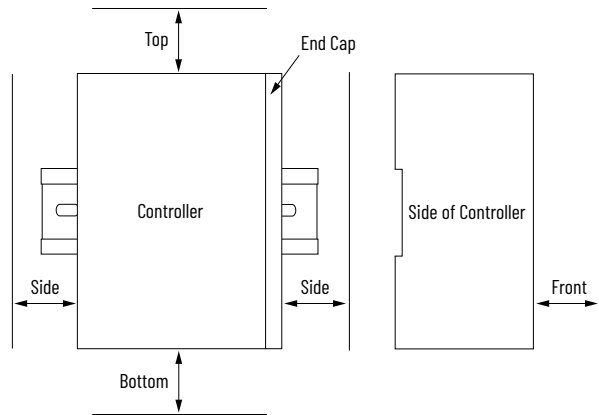
- CompactLogix 5380 Controllers Installation Instructions, publication [5069-IN013](#).
- Compact GuardLogix 5380 SIL 2 Controllers Installation Instructions, publication [5069-IN014](#).
- Compact GuardLogix 5380 SIL 3 Controllers Installation Instructions, publication [5069-IN023](#).

### CompactLogix 5480 System

The minimum distance for a system that includes only a CompactLogix 5480 controller is as follows:

- Between the front and sides of the controller and the cabinet: 25.0 mm (0.98 in.)
- Between the top and bottom of the controller and the cabinet: 50.0 mm (1.96 in.)

We recommend that you install the controller near the bottom of the enclosure, where the ambient temperature is lower.

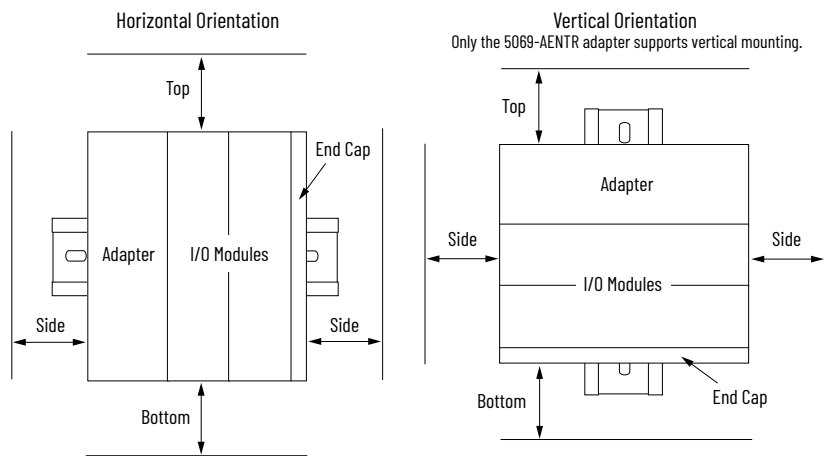


For more installation information, see the CompactLogix 5480 Controllers Installation Instructions, publication [5069-IN019](#).

## EtherNet/IP Adapter System

The minimum distance on all sides of the adapter system is as follows:

- For systems with Compact 5000 standard I/O modules: 25.4 mm (1.00 in.)
- For systems with one or more Compact 5000 safety I/O modules: 50.8 mm (2.00 in.)



For more information, see the Compact 5000 I/O EtherNet/IP Adapters Installation Instructions, publication [5069-IN003](#).

## Choose Compact 5000 Components

Both of the Compact I/O and Compact 5000 I/O platforms have a large selection of module types, but in some cases there is no direct equivalent. Verify that the recommended module fits your application.

For specification information, see the Compact 5000 I/O and Specialty Modules Specifications, publication [5069-TD001](#).

For wiring diagrams, see [Wiring Diagram Comparisons on page 17](#).

## Network Adapters, Scanners, and Interface Modules

A Compact 5000 system supports network communication over an EtherNet/IP network. If your existing system uses another network type, you must determine what additional work is needed to move from your existing network to an EtherNet/IP network.

Migrate from Compact I/O Cat. No.	Network or Communication Type	Migrate to Compact 5000 Cat. No.	Network or Communication Type
1769-AENTRK	EtherNet/IP	5069-AENTRK	EtherNet/IP
1769-AENTR		5069-AENTR	
1768-EWEB			
1768-CNB, 1768-CNBR	ControlNet®		
1769-ADN	DeviceNet	5069-SDN <sup>(1)</sup>	DeviceNet
1769-SDN			
1769-ASCII	Serial	5069-SERIAL	Serial
1769-SM2	Modbus RTU		
1769-SM1	DPI/SCANport	-	

(1) Available through Softing Inc.

The Compact I/O EtherNet/IP adapters are DLR capable and have a maximum EtherNet/IP speed of 100 Mbps. The adapters support 128 Logix communication connections. The 1769-AENTR module supports 96 TCP/IP communication connections and the 1768-EWEB module supports 64 TCP/IP communication connections.

The Compact 5000 I/O EtherNet/IP adapters are DLR capable and have a maximum EtherNet/IP speed of 1000 Mbps and support up to 31 modules. If you want to use the Compact 5000 I/O adapter at 1000 Mbps, verify that your cables and switches can handle that speed.

## I/O Modules

The Compact I/O system and the Compact 5000 I/O system have similar I/O category types – analog, digital, and specialty. Both systems offer isolated modules and conformally coated modules, verify that the Compact 5000 I/O replacement module meets your needs.

Wiring systems are available for the Compact 5000 modules, see the 5069 CompactLogix Wiring Systems Technical Data, [1492-TD018](#).

### Digital Modules

Migrate from Compact I/O	Migrate to Compact 5000	Notes
1769-IA8I	-	Compact 5000 I/O does not offer an exact replacement. If channel isolation and conformal coating are not required, migrate to the 5069-IA16 module. You may be able to consolidate modules when you migrate.
1769-IA8IK	-	
1769-IA16	5069-IA16	-
1769-IA16K	-	Compact 5000 I/O does not offer an exact replacement. If conformal coating is not required, migrate to the 5069-IA16 module.
1769-IG16	-	Compact 5000 I/O does not offer an exact replacement.
1769-IM12	5069-IA16	Compact 5000 I/O has more channels. You may be able to consolidate modules when you migrate.
1769-IQ6XOW4	Sinking: 5069-IB16 Sourcing: 5069-IV16F-SC 5069-OW4I	Compact 5000 I/O may require multiple modules and slots to achieve similar functionality. The 5069-IV16F-SC and 5069-IV16FK-SC modules have high-speed inputs and are available through Spectrum Controls. For the 1769-IQ32T module: Verify that the voltage, current, and impedance specifications meet your needs.
1769-IQ16	Sinking: 5069-IB16 Sourcing: 5069-IV16F-SC	
1769-IQ16F	Sinking: 5069-IB16 Sourcing: 5069-IV16F-SC	
1769-IQ16K	Sinking: 5069-IB16K Sourcing: 5069-IV16FK-SC	
1769-IQ32	Sinking: 5069-IB32	
1769-IQ32T	Sourcing: 5069-IV16F-SC	
1769-IQ32K	Sinking: 5069-IB16K Sourcing: 5069-IV16FK-SC	
1769-OA8	5069-OA16	Compact 5000 I/O has more channels. You may be able to consolidate modules when you migrate.
1769-OA16		-
1769-OA16K	-	Compact 5000 I/O does not offer an exact replacement. If conformal coating is not required, migrate to the 5069-OA16 module.
1769-OB8	5069-OB8	-
1769-OB8K	-	Compact 5000 I/O does not offer an exact replacement. If conformal coating is not required, migrate to the 5069-OB8 module. If your application supports the use of 0.5 A per channel instead of up to 2.0 A per channel, migrate to the 5069-OB16K module. You may be able to consolidate modules when you migrate.
1769-OB16	5069-OB16	-
1769-OB16K	5069-OB16K	
1769-OB16P	5069-OB16	
1769-OB32	-	-
1769-OB32T	5069-OB32	Verify that the voltage, current, and impedance specifications meet your needs.
1769-OB32K	5069-OB16K	Compact 5000 I/O requires multiple modules and slots to achieve similar functionality.
1769-OG16	-	Compact 5000 I/O does not offer an exact replacement.
1769-OV16	5069-OV16F-SC	Compact 5000 I/O has high-speed outputs and is available from Spectrum Controls.
1769-OV32T		For the 1769-OV32T module: Compact 5000 I/O requires multiple modules and slots to achieve similar functionality. Verify that the voltage, current, and impedance specifications meet your needs.
1769-OW8	5069-OW16	Compact 5000 I/O has more channels. You may be able to consolidate modules when you migrate.
1769-OW8I	5069-OW4I	Compact 5000 I/O requires multiple modules and slots to achieve similar functionality.
1769-OW8IK	-	Compact 5000 I/O does not offer an exact replacement. If conformal coating is not required, migrate to multiple 5069-OW4I modules in multiple slots to achieve similar functionality.
1769-OW16	5069-OW16	-
1769-OW16K	-	Compact 5000 I/O does not offer an exact replacement. If conformal coating is not required, migrate to the 5069-OW16 module.

## Analog Modules

Migrate from Compact I/O	Migrate to Compact 5000	Notes
1769-IF4	5069-IF8	Compact 5000 I/O has more channels. You may be able to consolidate modules when you migrate.
1769-IF4K	5069-IY4K	Compact 5000 I/O can communicate with RTD and thermocouple devices.
1769-IF4I	5069-IF4IH	Compact 5000 I/O can communicate with HART devices.
1769-IF4IK	-	Compact 5000 I/O does not offer an exact replacement. If channel isolation is required, but conformal coating is not required, migrate to the 5069-IF4IH module. If conformal coating is required, but channel isolation is not required, migrate to the 5069-IY4K module.
1769-IF8	5069-IF8	-
1769-IF8K	5069-IY4K	Compact 5000 I/O requires multiple modules and slots to achieve similar functionality. The 5069-IY4K module can communicate with RTD and thermocouple devices.
1769-IF16C	5069-IF8	
1769-IF16CK	5069-IY4K	
1769-IF16V	5069-IF8	
1769-IF16VK	5069-IY4K	
1769-IF4XOF2	5069-IY4	Compact 5000 I/O has more output channels. You may be able to consolidate modules when you migrate. The 5069-IY4 and 5069-IY4K modules can communicate with RTD and thermocouple devices. For the 1769-IF4XOF2F module: Compact 5000 input module response time is slower.
1769-IF4XOF2F	5069-OF4	
1769-IF4XOF2K	5069-IY4K 5069-OF4K	
1769-IR6	5069-IY4	Compact 5000 I/O requires multiple modules and slots to achieve similar functionality. The 5069-IY4 and 5069-IY4K modules can communicate with both RTD and thermocouple devices but do not support 10 $\Omega$ Nickel-Iron 518 sensors.
1769-IR6K	5069-IY4K	
1769-IT6	5069-IY4	
1769-IT6K	5069-IY4K	
1769-OF2	5069-OF4	Compact 5000 I/O has more channels. You may be able to consolidate modules when you migrate.
1769-OF2K	5069-OF4K	
1769-OF4	5069-OF4	-
1769-OF4K	5069-OF4K	-
1769-OF4CI	5069-OF4IH	Compact 5000 I/O can communicate with HART devices.
1769-OF4CIK	-	Compact 5000 I/O does not offer an exact replacement. If channel isolation is required, but conformal coating is not required, migrate to the 5069-OF4IH module. If conformal coating is required, but channel isolation is not required, migrate to the 5069-OF4K module.
1769-OF4VI	5069-OF4IH	Compact 5000 I/O can communicate with HART devices.
1769-OF4VIK	-	Compact 5000 I/O does not offer an exact replacement. If channel isolation is required, but conformal coating is not required, migrate to the 5069-OF4IH module. If conformal coating is required, but channel isolation is not required, migrate to the 5069-OF4K module.
1769-OF8C	5069-OF8	-
1769-OF8CK	5069-OF4K	Compact 5000 I/O requires multiple modules and slots to achieve similar functionality.
1769-OF8V	5069-OF8	-
1769-OF8VK	5069-OF4K	Compact 5000 I/O requires multiple modules and slots to achieve similar functionality.

## Specialty Modules

Migrate from Compact I/O	Migrate to Compact 5000	Notes
1769-ARM	5069-ARM	-
1769-BOOLEAN	-	
1769-HSC	5069-HSC2XOB4	

For information about the 5069-FPD module, see [Compact 5000 Field Potential Distributor on page 7](#).

## Accessories

Compact I/O systems with more than four local I/O modules require expansion cables. Compact 5000 I/O systems do not require expansion cables, but do require end caps, 5069-ECR, which are shipped with the controllers and EtherNet/IP adapters.

RTBs do not ship with Compact 5000 I/O modules, you must order them separately. They are available in both spring type and screw type, order only the RTB type that your system requires.

<b>5069 Module Type</b>	<b>Required RTB</b>
Standard and Safety I/O modules	5069-RTB18-SCREW RTB or 5069-RTB18-SPRING RTB
Thermocouple mode on the RTD and thermocouple module, 5069-IY4 and 5069-IY4K	5069-RTB14CJC-SCREW RTB or 5069-RTB14CJC-SPRING
EtherNet/IP adapter, 5069-AENTR and 5069-AENTRK	5069-RTB5-SCREW RTB or 5069-RTB5-SPRING RTB
Field potential distributor, 5069-FPD	5069-RTB6-SCREW RTB or 5069-RTB6-SPRING RTB

**Notes:**

## Wiring Diagram Comparisons

This section provides wiring diagram comparisons of the recommended migrations for an existing Compact I/O™ system.

You must manually move the wiring from Compact I/O to Compact 5000® I/O modules. Verify that the existing wiring is long enough to wire the Compact 5000 I/O modules and replace the wires if they are not the required length. For more information about wiring the Compact 5000 I/O modules, see the Compact 5000 I/O and Specialty Modules Specifications, publication [5069-TD001](#).

Wiring systems are available for the Compact 5000 modules, see the 5069 CompactLogix® Wiring Systems Technical Data, [1492-TD018](#).

**IMPORTANT** To determine if your application supports these migrations, use the information in the [I/O Modules](#) section on [page 13](#).

### Wiring Diagrams

Migrate from Compact I/O	Migrate to Compact 5000	Page
1769-IA8I	5069-IA16	18
1769-IA16		
1769-IA16K		
1769-IF4	5069-IF8	19
1769-IF4I	5069-IF4IH	21
1769-IF4IK	5069-IY4K	23
1769-IF4K		
1769-IF8	5069-IF8	19
1769-IF8K	5069-IY4K	23
1769-IF16C	5069-IF8	19
1769-IF16CK	5069-IY4K	23
1769-IF16V	5069-IF8	19
1769-IF16VK	5069-IY4K	23
1769-IF4X0F2	5069-IY4 5069-OF4	26
1769-IF4X0F2K	5069-IY4K 5069-OF4K	
1769-IM12	5069-IA16	18
1769-IQ6X0W4	Sinking: 5069-IB16 Sourcing: 5069-IV16F-SC 5069-OW4I	28
1769-IQ16	Sinking: 5069-IB16 Sourcing: 5069-IV16F-SC	29
1769-IQ16F		
1769-IQ16K	Sinking: 5069-IB16K Sourcing: 5069-IV16FK-SC	31
1769-IQ32	Sinking: 5069-IB32 Sourcing: 5069-IV16F-SC	
1769-IQ32T	Sinking: 5069-IB16K Sourcing: 5069-IV16FK-SC	31
1769-IQ32K		
1769-IR6	5069-IY4	31
1769-IR6K	5069-IY4K	
1769-IT6	5069-IY4	
1769-IT6K	5069-IY4K	

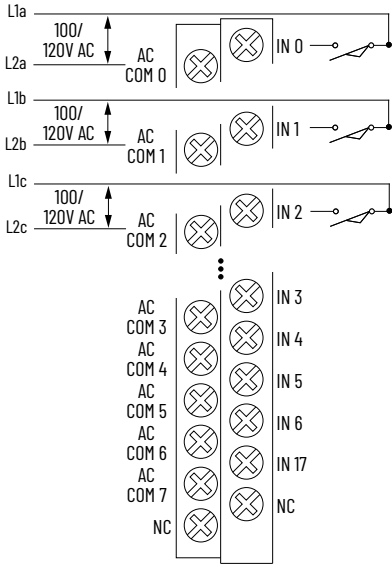
### Wiring Diagrams (Continued)

Migrate from Compact I/O	Migrate to Compact 5000	Page
1769-OA8	5069-OA16	33
1769-OA16		
1769-OB8	5069-OB8	34
1769-OB8K	5069-OB16K	35
1769-OB16	5069-OB16	
1769-OB16K	5069-OB16K	
1769-OB16P	5069-OB16	36
1769-OB32	5069-OB32	
1769-OB32T		
1769-OB32K	5069-OB16K	37
1769-OF2	5069-OF4	
1769-OF4		
1769-OF4K	5069-OF4K	38
1769-OF4CI	5069-OF4IH	39
1769-OF4CIK	5069-OF4K	38
1769-OF4VI	5069-OF4IH	39
1769-OF4VIK	5069-OF4K	40
1769-OF8C	5069-OF8	41
1769-OF8CK	5069-OF4K	40
1769-OF8V	5069-OF8	41
1769-OF8VK	5069-OF4K	42
1769-OV16	5069-OV16F-SC	43
1769-OV32T		
1769-OW8	5069-OW16	44
1769-OW8I	5069-OW4I	43
1769-OW16	5069-OW16	45
1769-ASCII	5069-SERIAL	47
1769-HSC	5069-HSC2X0B4	47

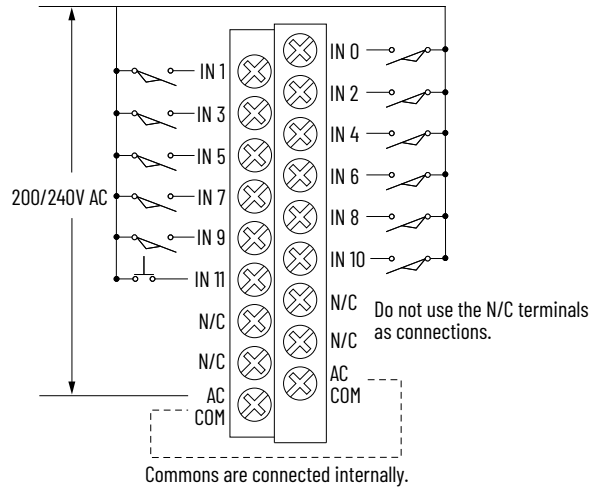
Catalog numbers that end in “-SC” are available through Spectrum Controls.

# 1769-IA8I, 1769-IA16, 1769-IA16K, 1769-IM12 to 5069-IA16 Wiring Comparison

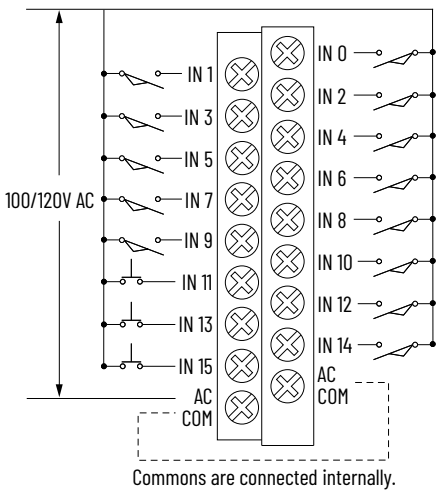
## 1769-IA8I Wiring



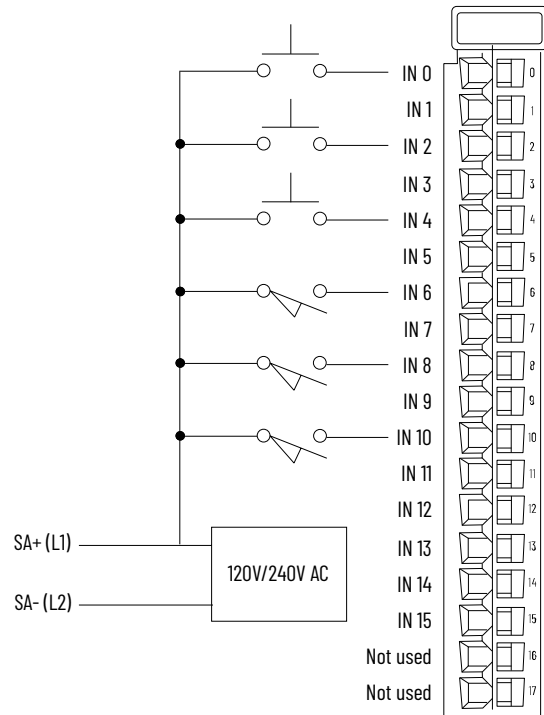
## 1769-IM12 Wiring



## 1769-IA16, 1769-IA16K Wiring



## 5069-IA16 Wiring

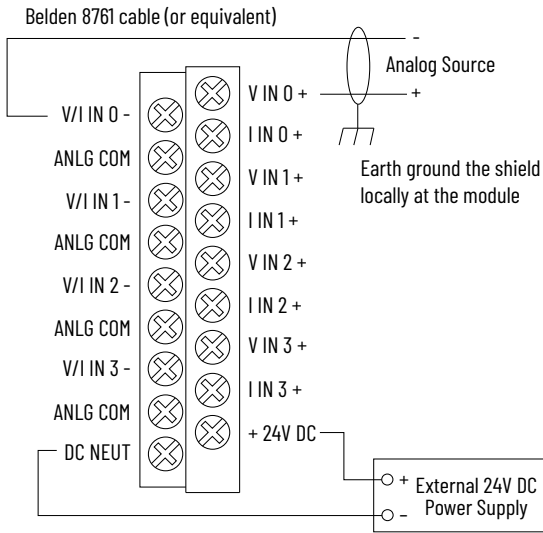


**IMPORTANT:**

- The 5069-IA16 module uses AC SA power. You must connect AC power to the device that supplies SA power to the module. To use this module in a system with DC SA power, see [Isolate SA Power on page 7](#).
- Compact GuardLogix 5380 controllers do not support AC power on their SA power RTBs. To install a local 5069-IA16 module in a Compact GuardLogix 5380 controller system, see [Isolate SA Power on page 7](#).
- The 5069-IA16 module inputs use a shared common. The inputs have a return through internal module circuitry to the SA (-) terminal on the SA power RTB. For more information, see [Power Considerations on page 7](#).

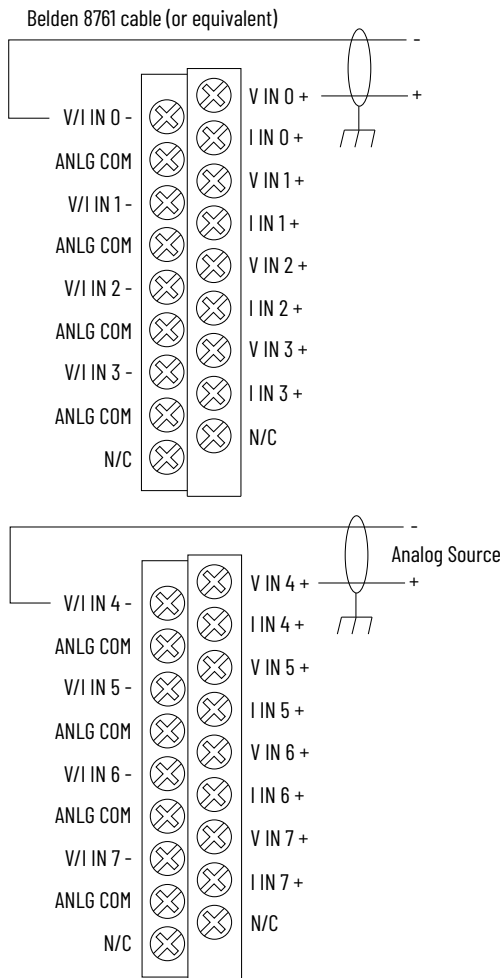
# 1769-IF4, 1769-IF8, 1769-IF16C, 1769-IF16V to 5069-IF8 Wiring Comparison

## 1769-IF4 Differential Wiring

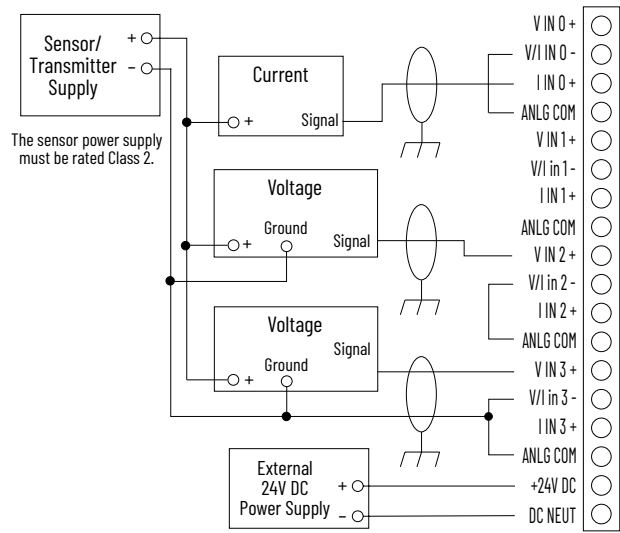


The external power supply must be rated Class 2, with a 24V DC range of 20.4...26.4V DC and 60 mA minimum. Series B and later modules support this option.

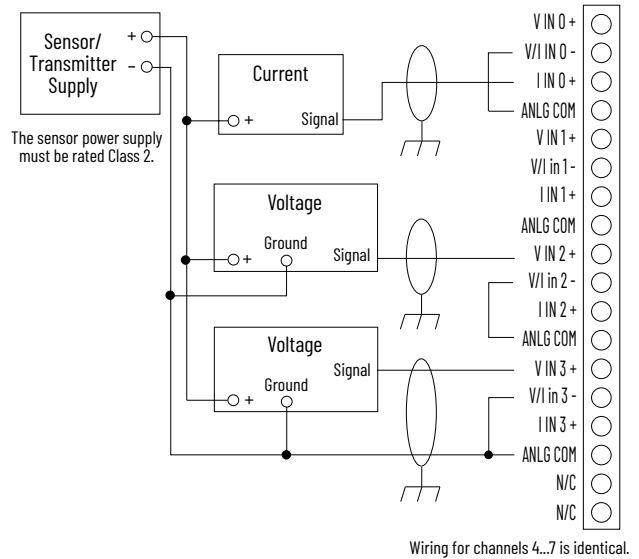
## 1769-IF8 Differential Wiring



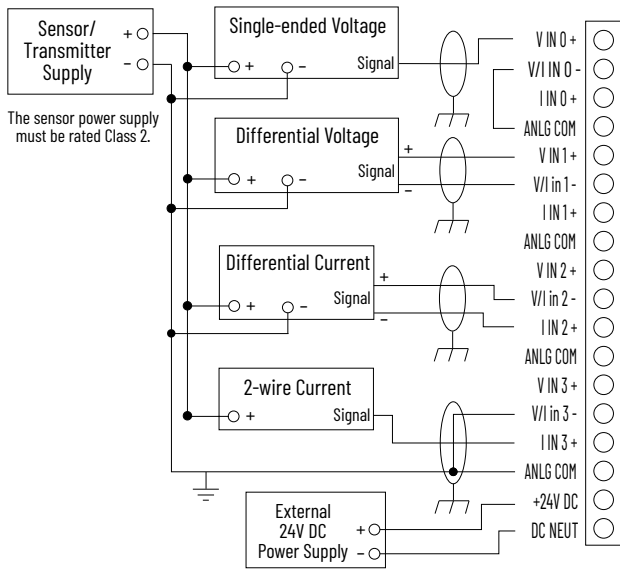
## 1769-IF4 Single-ended Device Wiring



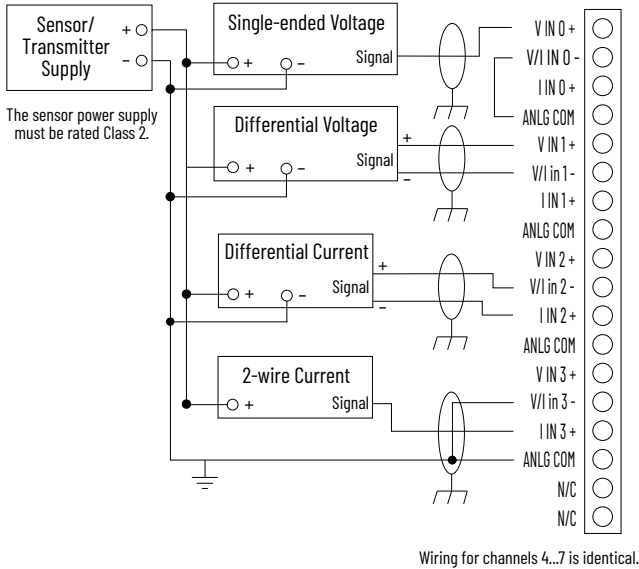
## 1769-IF8 Single-ended Device Wiring



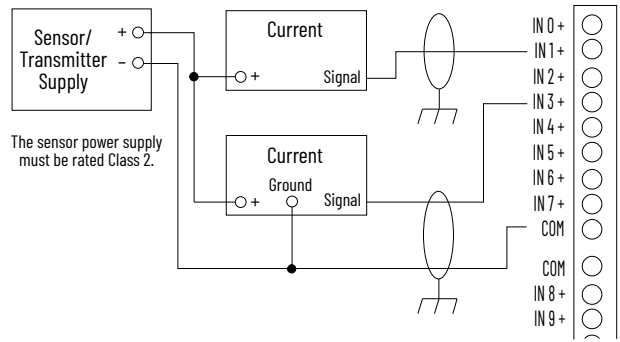
### 1769-IF4 Mixed Device Wiring



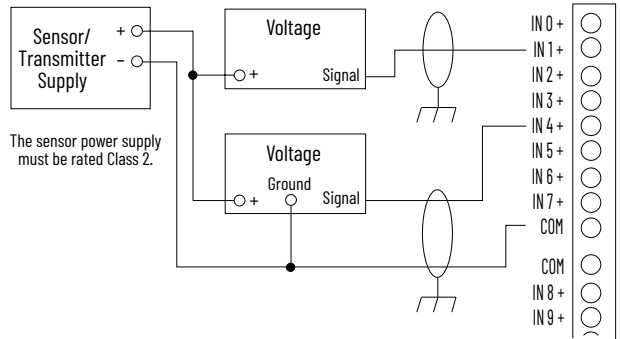
### 1769-IF4, 1769-IF8 Mixed Device Wiring



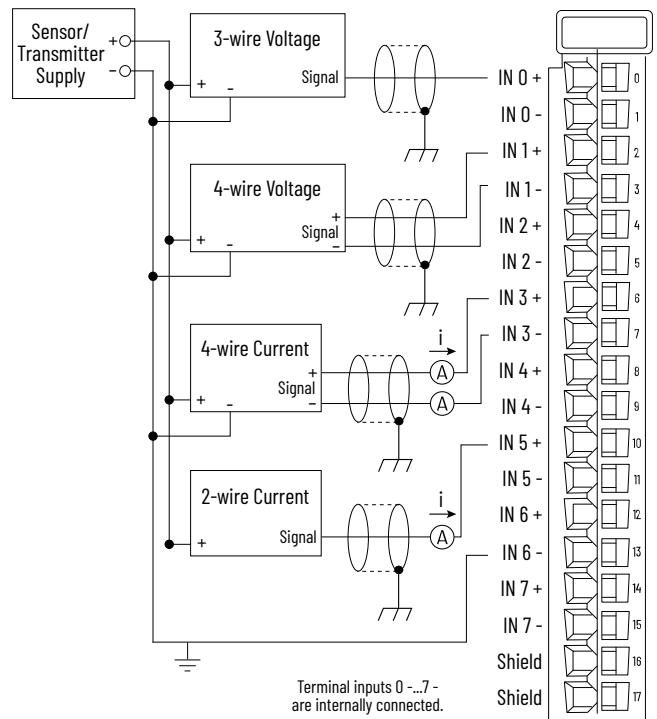
### 1769-IF16C Wiring



### 1769-IF16V Wiring

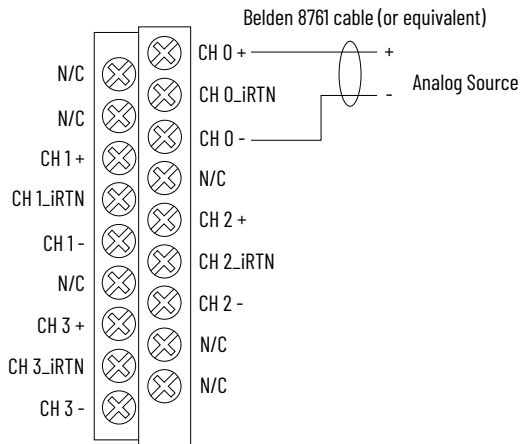


### 5069-IF8 Series B Wiring

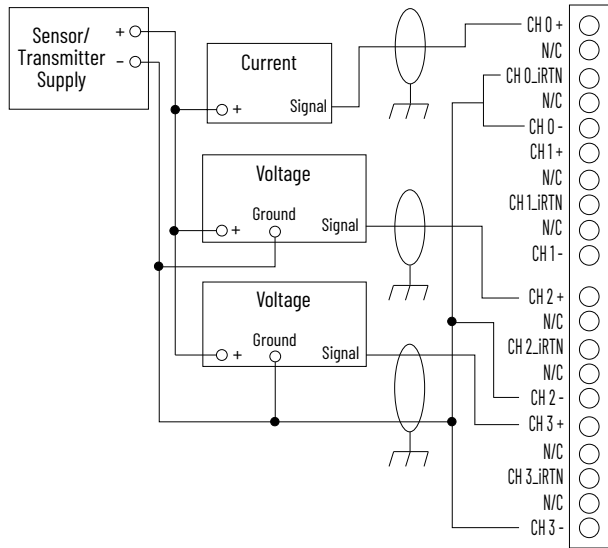


# 1769-IF4I to 5069-IF4IH Wiring Comparison

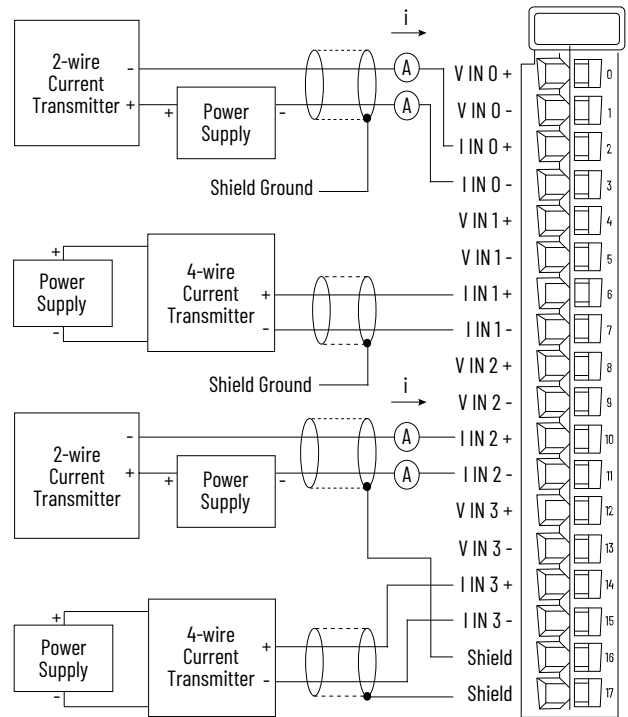
## 1769-IF4I Differential Wiring



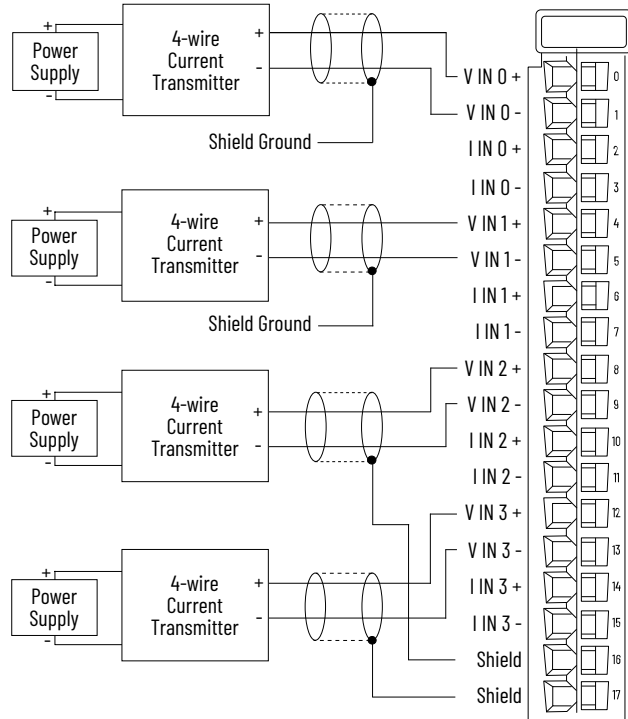
## 1769-IF4I Single-ended Device Wiring



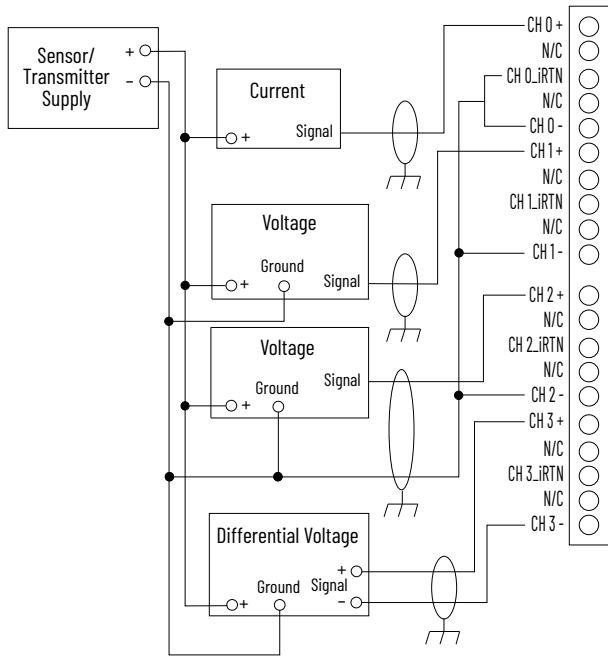
## 5069-IF4IH Current Device Wiring



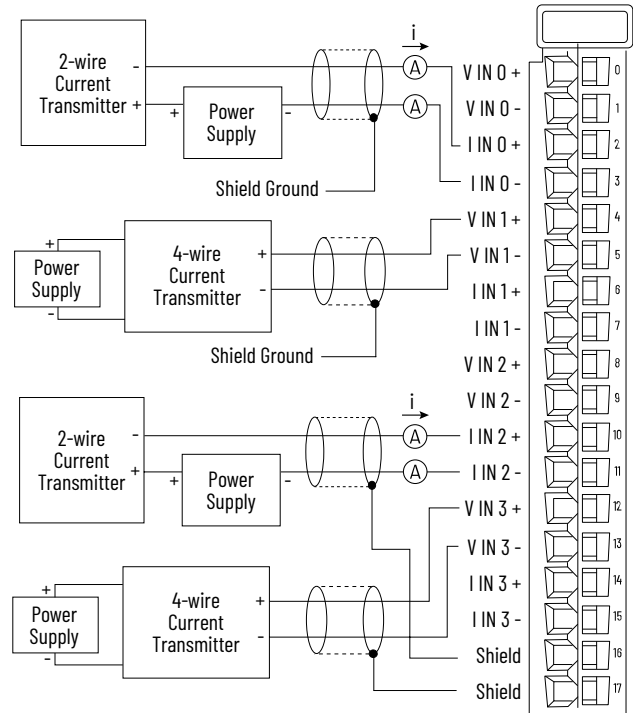
## 5069-IF4IH Voltage Device Wiring



1769-IF4I Mixed Device Wiring

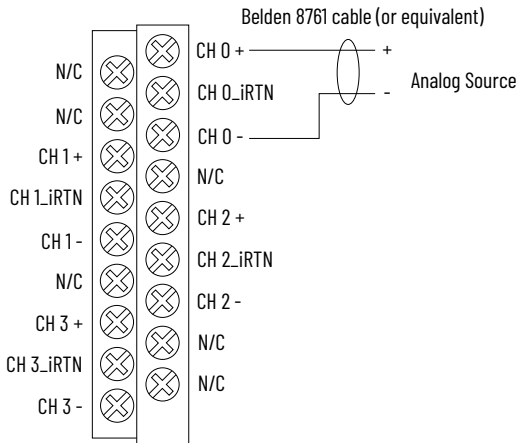


5069-IF4IH Current and Voltage Devices Wiring

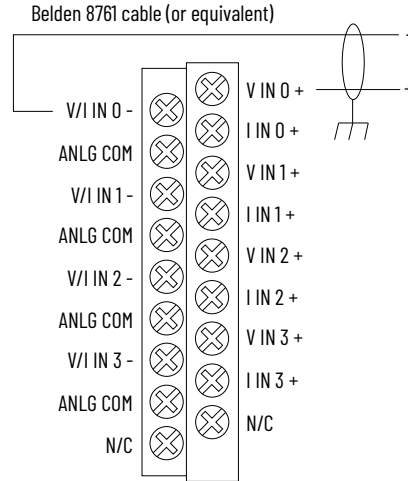


# 1769-IF4IK, 1769-IF4K, 1769-IF8K, 1769-IF16CK, 1769-IF16VK to 5069-IY4K Wiring Comparison

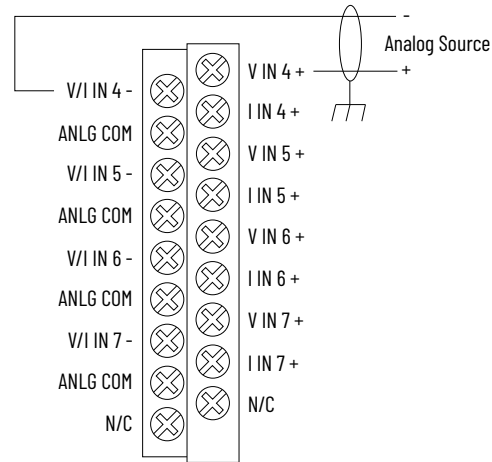
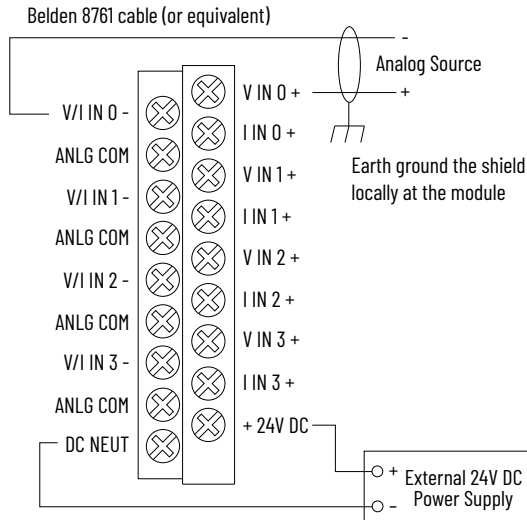
## 1769-IF4IK Differential Wiring



## 1769-IF8K Differential Wiring

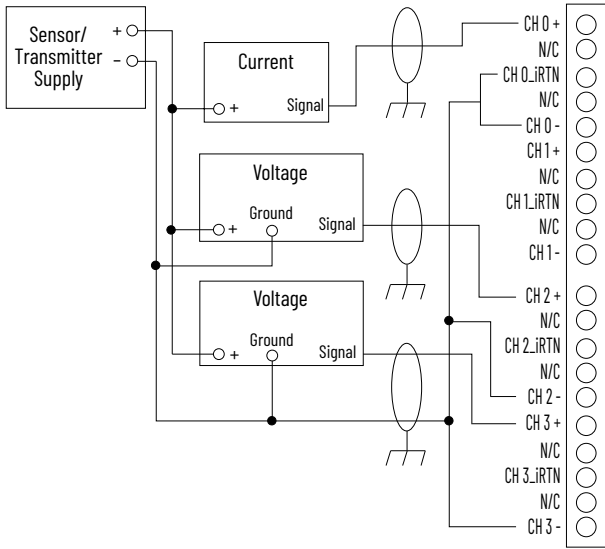


## 1769-IF4K Differential Wiring

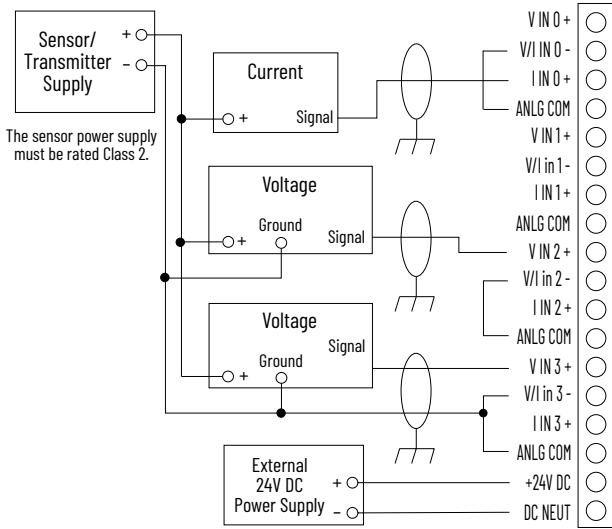


The external power supply must be rated Class 2, with a 24V DC range of 20.4...26.4V DC and 60 mA minimum. Series B and later modules support this option.

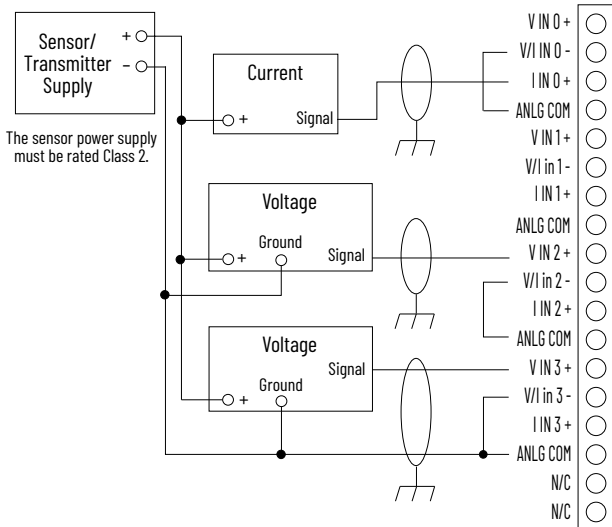
### 1769-IF4IK Single-ended Device Wiring



### 1769-IF4K Single-ended Device Wiring

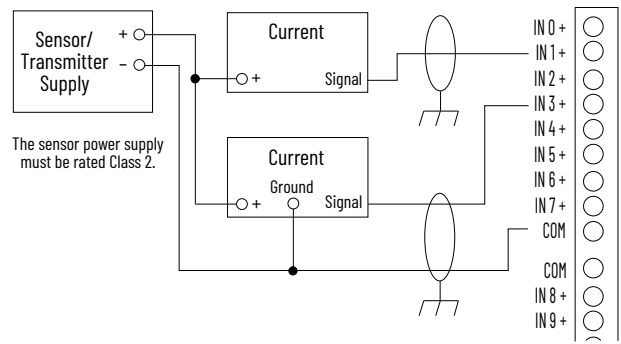


### 1769-IF8K Single-ended Device Wiring

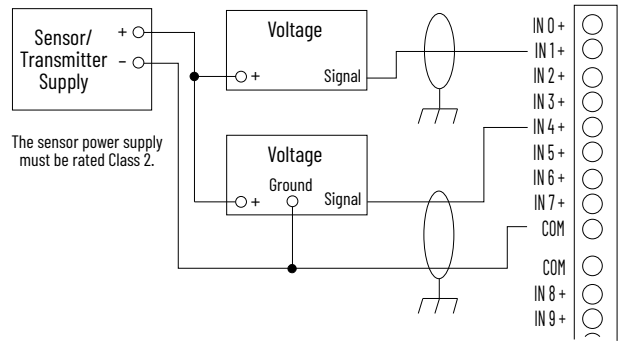


Wiring for channels 4...7 is identical.

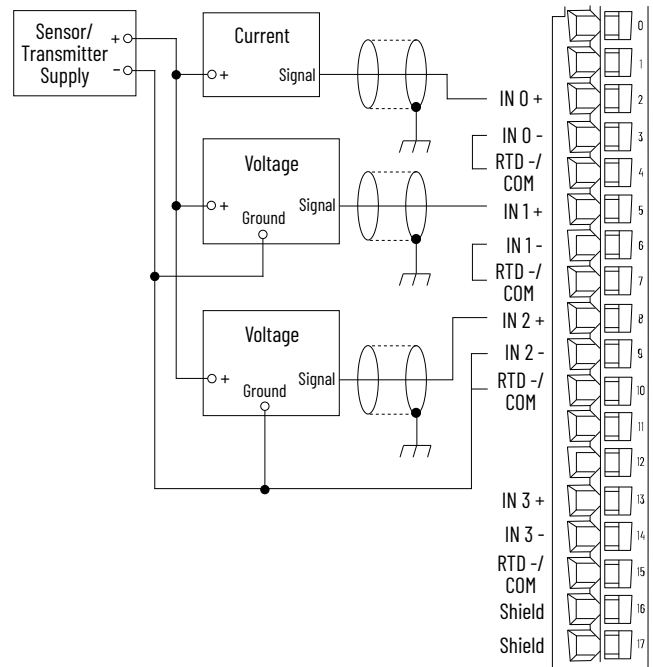
### 1769-IF16CK Wiring



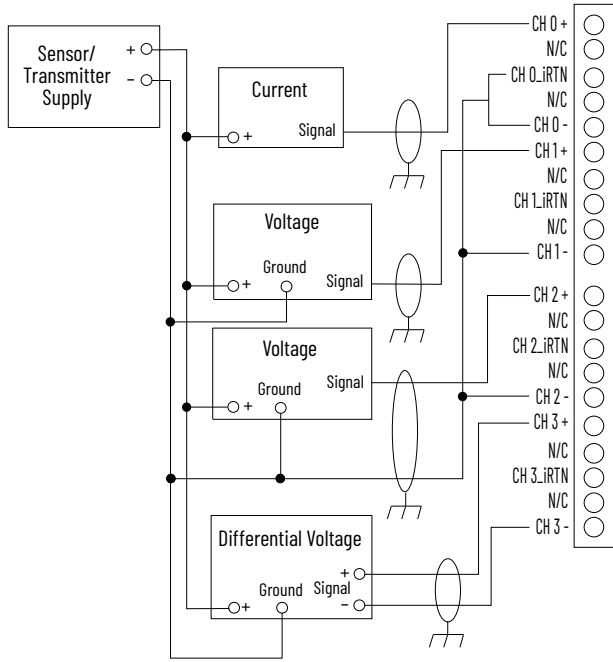
### 1769-IF16VK Wiring



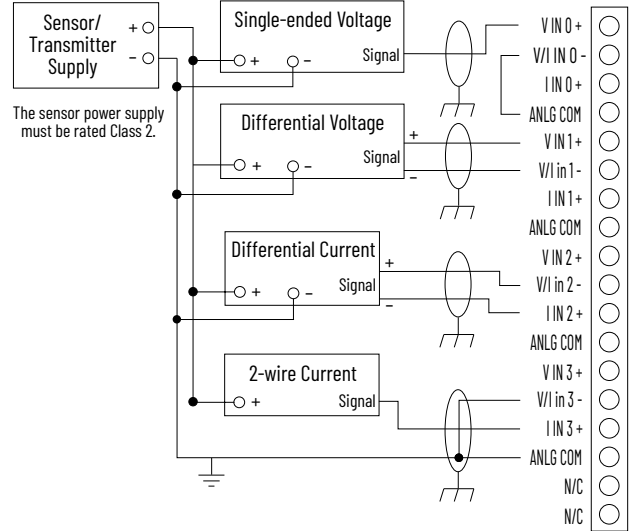
### 5069-IY4K Single-ended Device Wiring



### 1769-IF4IK Mixed Device Wiring

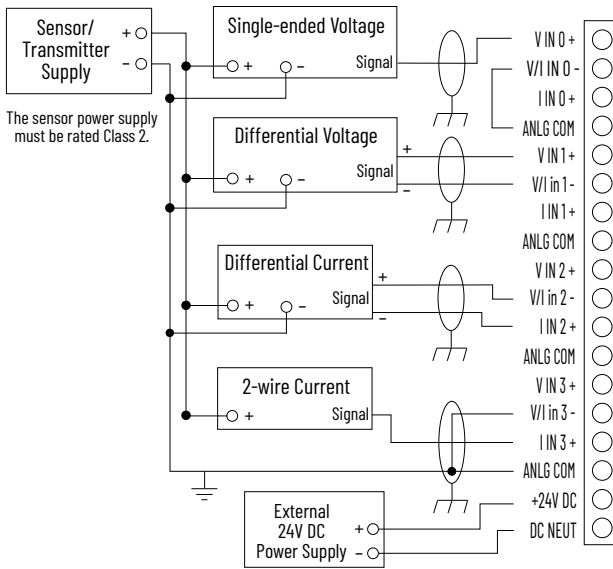


### 1769-IF8K Mixed Device Wiring

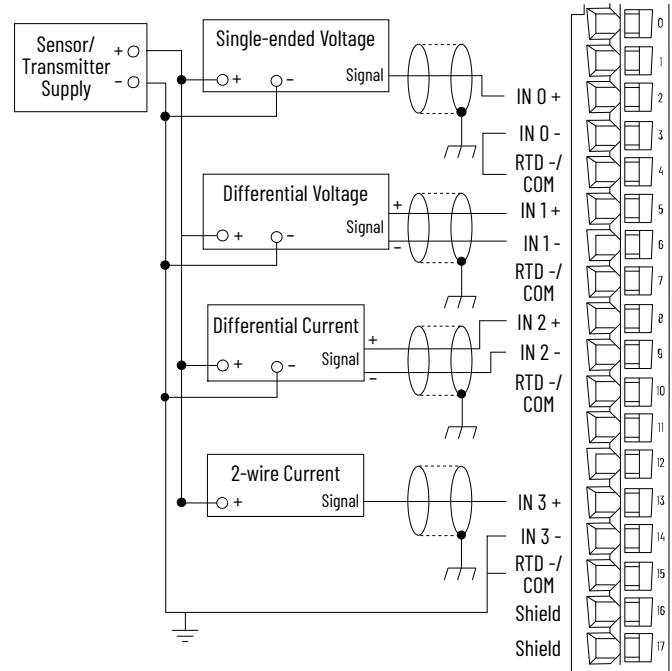


Wiring for channels 4..7 is identical.

### 1769-IF4K Mixed Device Wiring

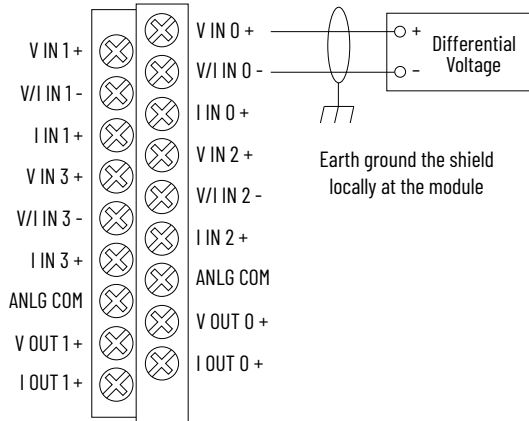


### 5069-IY4K Mixed Device Wiring

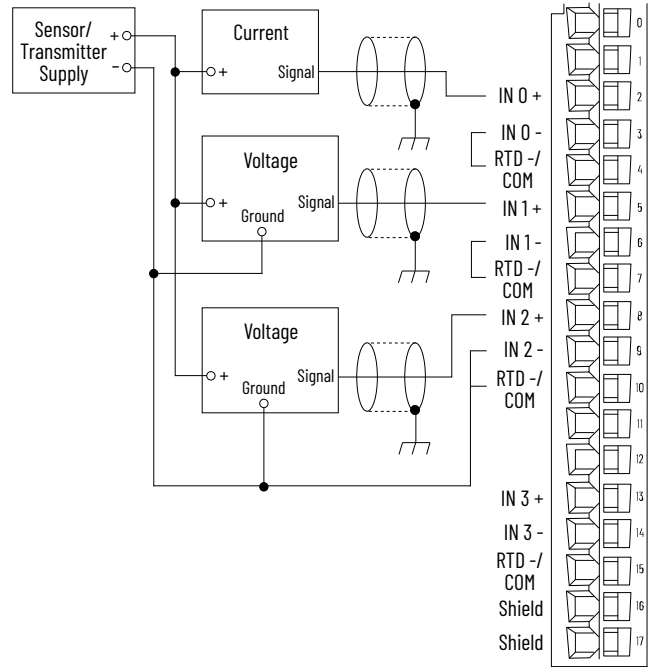


# 1769-IF4XOF2, 1769-IF4XOF2K to 5069-IY4, 5069-IY4K and 5069-OF4, 5069-OF4K Wiring Comparison

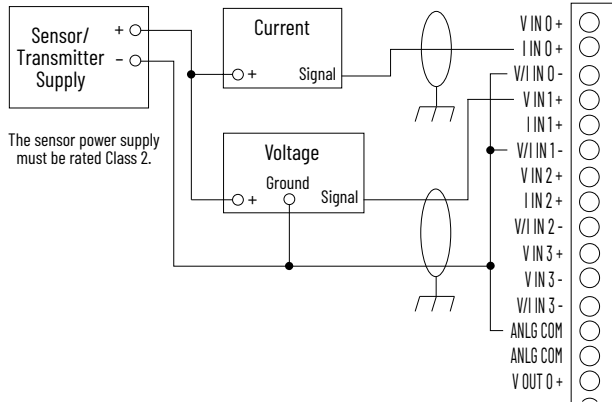
## 1769-IF4XOF2, 1769-IF4XOF2K Differential Wiring



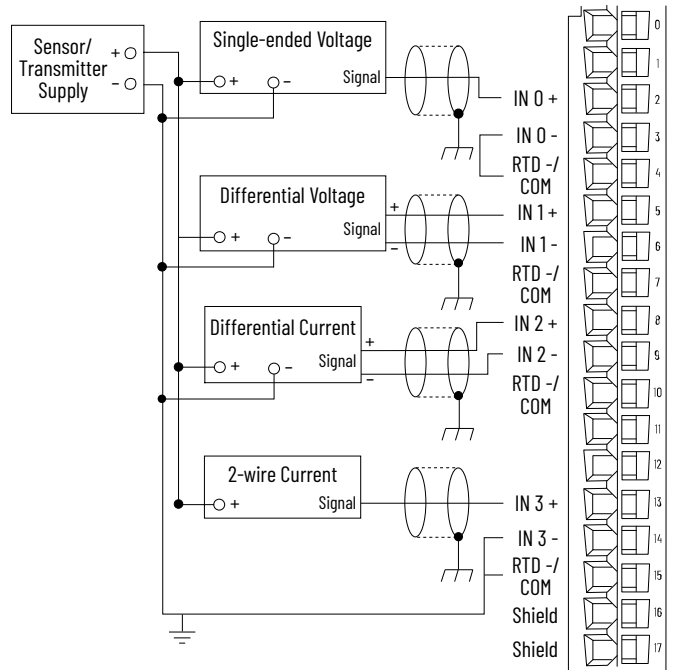
## 5069-IY4, 5069-IY4K Single-ended Device Wiring



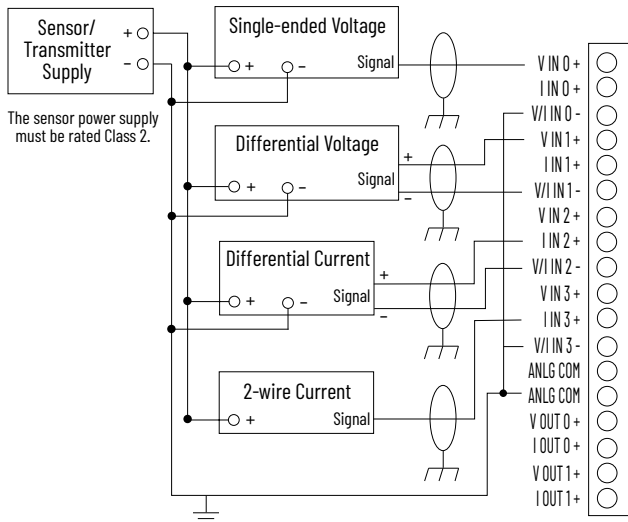
## 1769-IF4XOF2, 1769-IF4XOF2K Single-ended Device Wiring



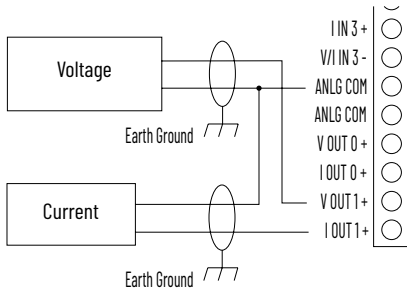
## 5069-IY4, 5069-IY4K Mixed Device Wiring



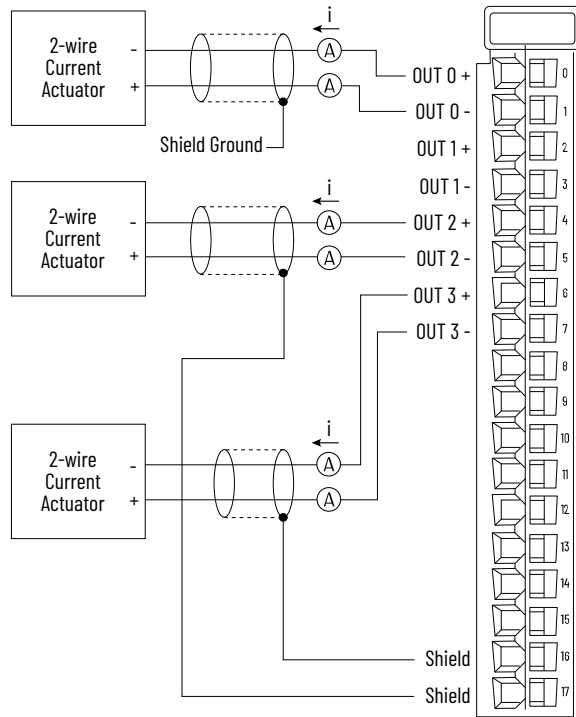
## 1769-IF4XOF2, 1769-IF4XOF2K Mixed Device Wiring



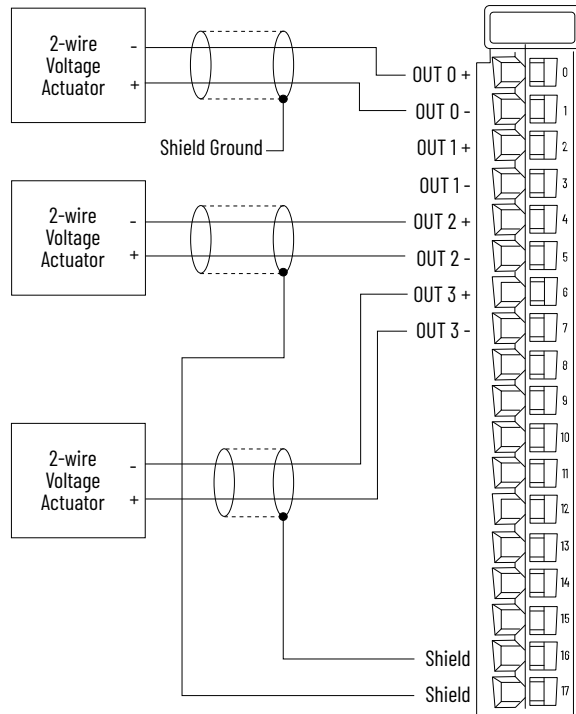
1769-IF4XOF2, 1769-IF4XOF2K Analog Output Wiring



5069-OF4, 5069-OF4K Current Mode Wiring

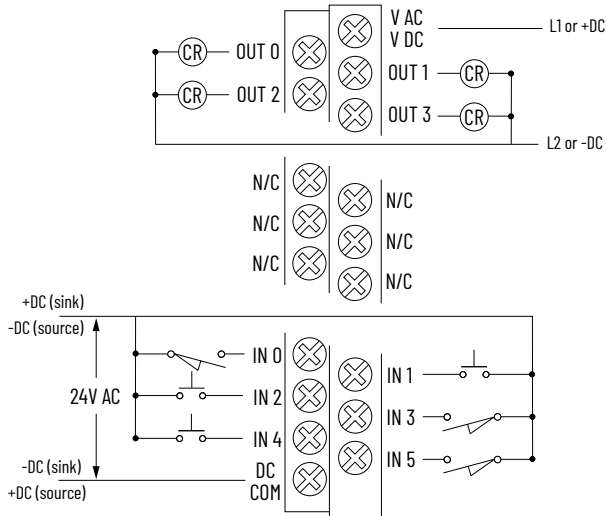


5069-OF4, 5069-OF4K Voltage Mode Wiring

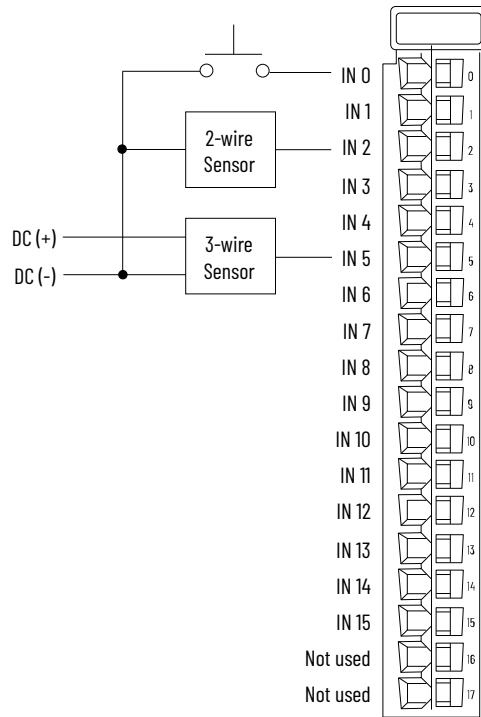


# 1769-IQ6XOW4 to 5069-IB16 or 5069-IV16F-SC, and 5069-OW4I Wiring Comparison

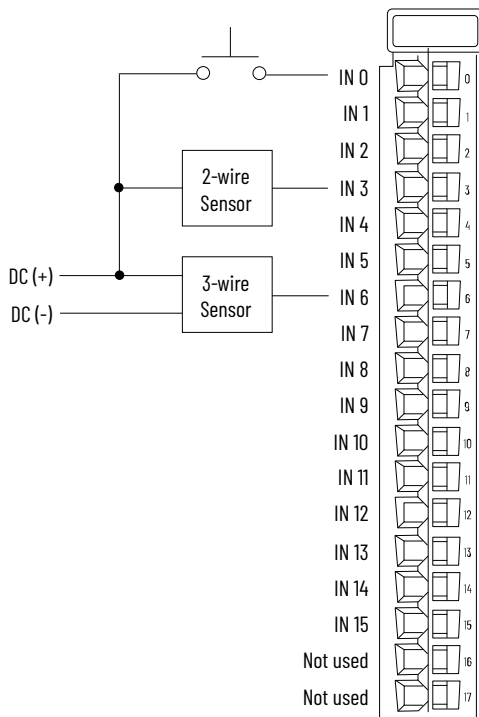
## 1769-IQ6XOW4 Wiring



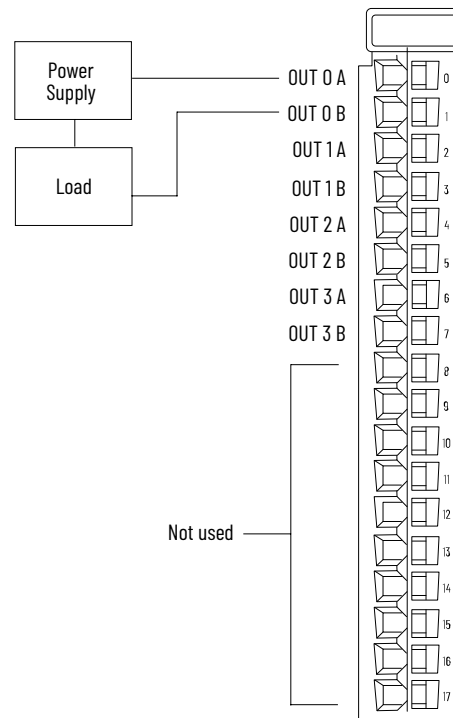
## 5069-IV16F-SC Wiring - Sourcing



## 5069-IB16 Wiring - Sinking



## 5069-OW4I Wiring



**IMPORTANT:**

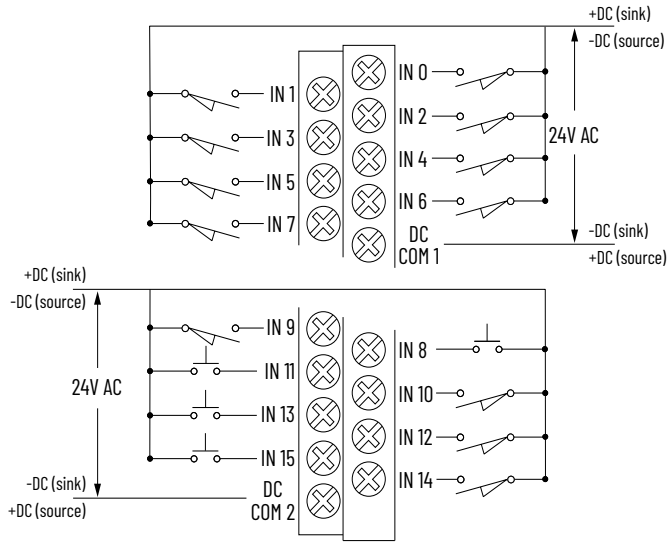
- The 5069-IB16 and 5069-IV16F-SC modules use DC SA power. You must connect DC power to the device that supplies SA power to the module. To use these modules in a system with AC SA power, see [Isolate SA Power on page 7](#).
- The 5069-IB16 and 5069-IV16F-SC module inputs use a shared common. The inputs have a return through internal module circuitry to the SA (-) terminal on the SA power RTB. For more information, see [Power Considerations on page 7](#).

**IMPORTANT:**

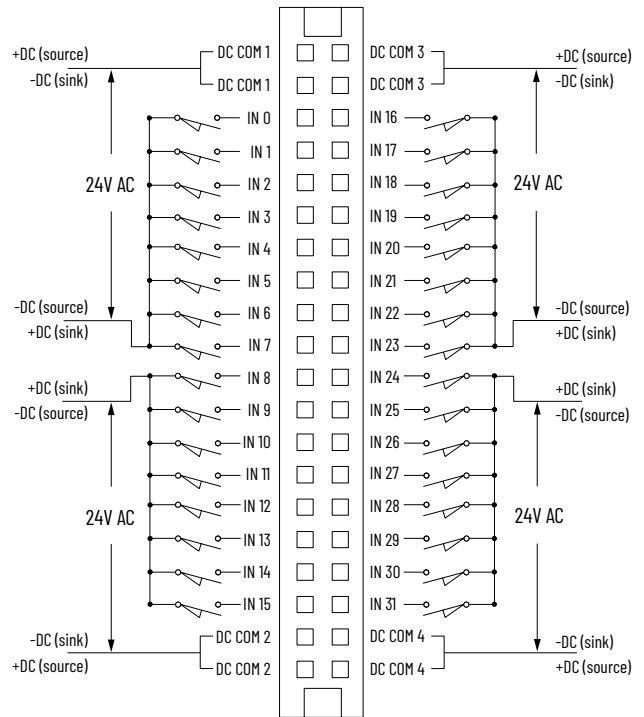
The 5069-OW4I module does not draw current from the SA power bus. Still, the module is a DC-type module, and you must install it on a DC SA power bus. To use this module in a system with AC SA power, see [Isolate SA Power on page 7](#).

# 1769-IQ16, 1769-IQ16K, 1769-IQ16F, 1769-IQ32, 1769-IQ32K, 1769-IQ32T to 5069-IB16, 5069-IB16K, 5069-IB16F, 5069-IB32 or 5069-IV16F-SC, 5069-IV16FK-SC Wiring Comparison

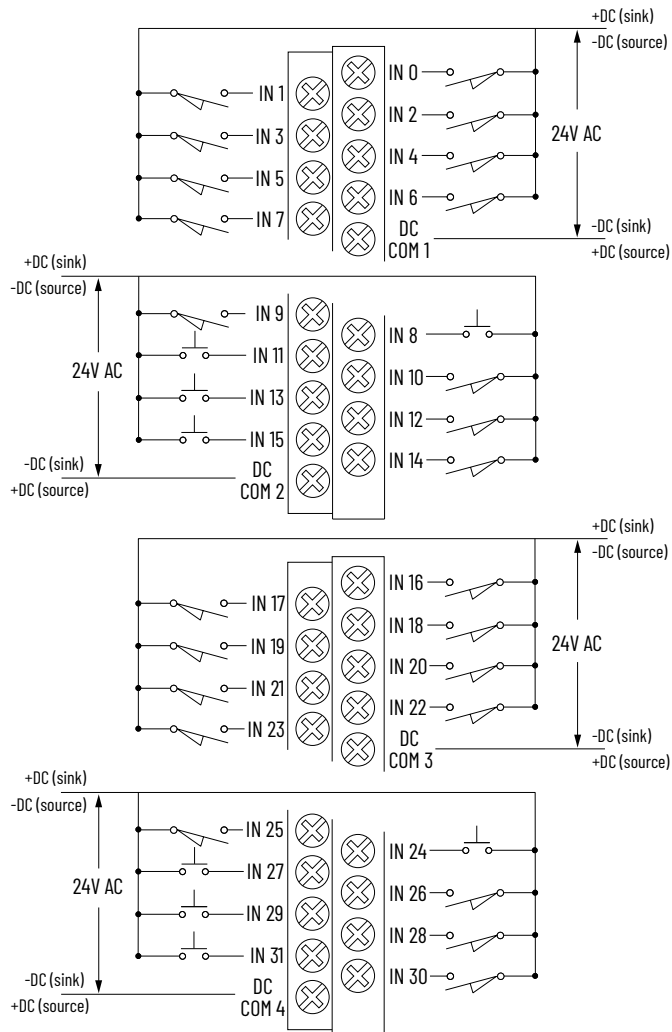
## 1769-IQ16, 1769-IQ16K, 1769-IQ16F Wiring



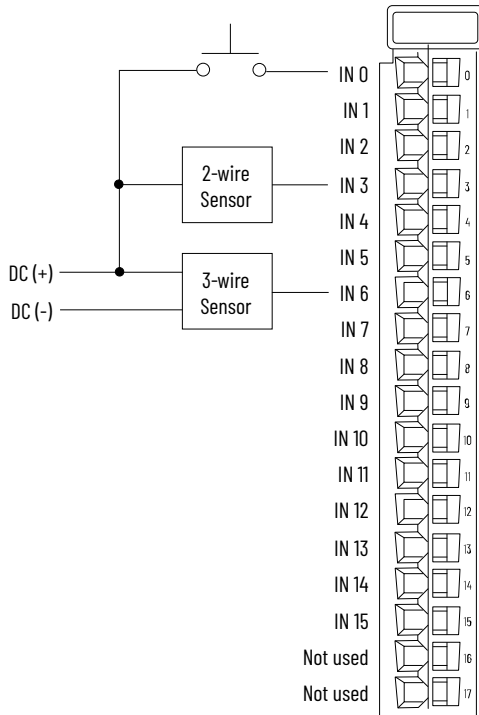
## 1769-IQ32T Wiring



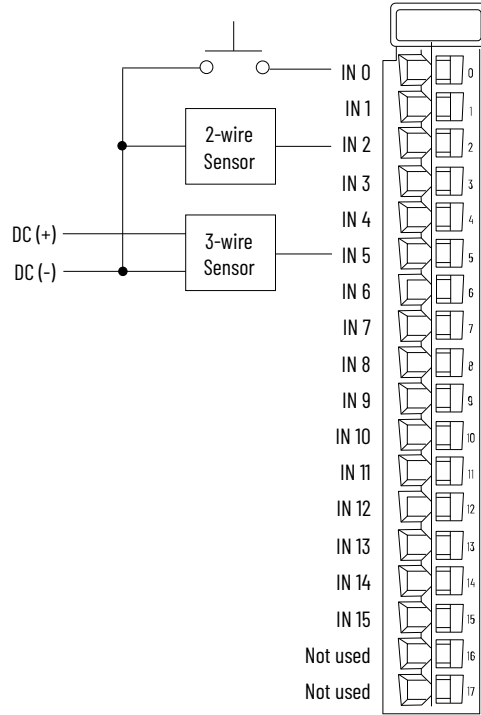
## 1769-IQ32, 1769-IQ32K Wiring



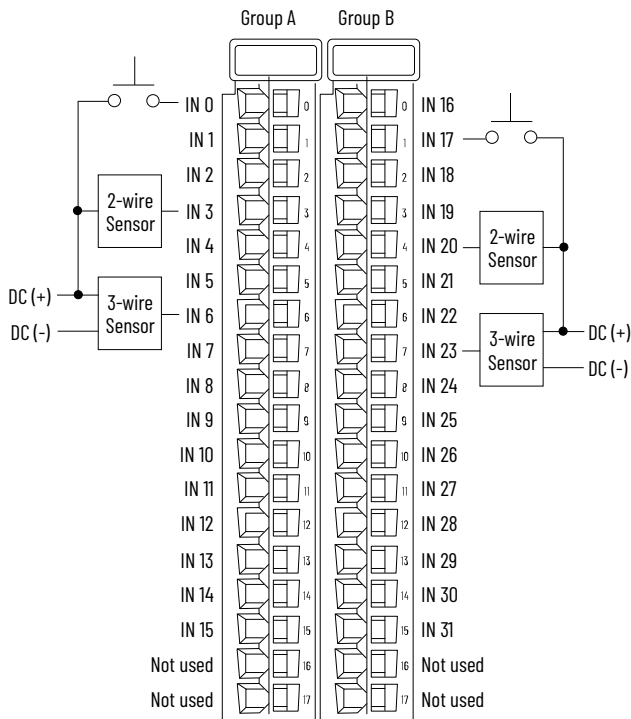
5069-IB16, 5069-IB16K, 5069-IB16F Wiring - Sinking



5069-IV16F-SC, 5069-IV16FK-SC Wiring - Sourcing



5069-IB32 Wiring - Sinking



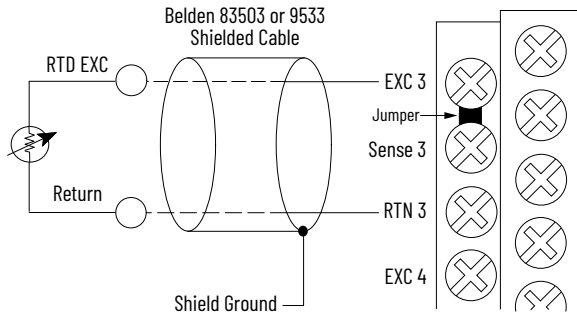
**IMPORTANT:**

- The 5069-IB16, 5069-IB32, and 5069-IV16F-SC modules use DC SA power. You must connect DC power to the device that supplies SA power to the module. To use these modules in a system with AC SA power, see [Isolate SA Power on page 7](#).
- The 5069-IB16, 5069-IB32, and 5069-IV16F-SC module inputs use a shared common. The inputs have a return through internal module circuitry to the SA (-) terminal on the SA power RTB. For more information, see [Power Considerations on page 7](#).

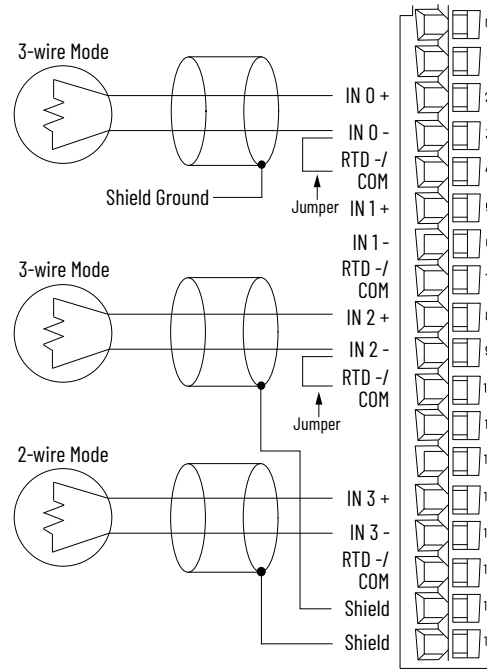
# 1769-IR6, 1769-IR6K or 1769-IT6, 1769-IT6K to 5069-IY4, 5069-IY4K Wiring Comparison

**IMPORTANT** When you use a 2-wire RTD in 3-wire mode, you must include a jumper, as shown.

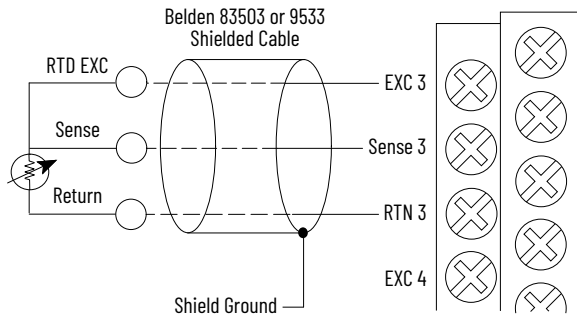
## 1769-IR6, 1769-IR6K 2-wire RTD Wiring



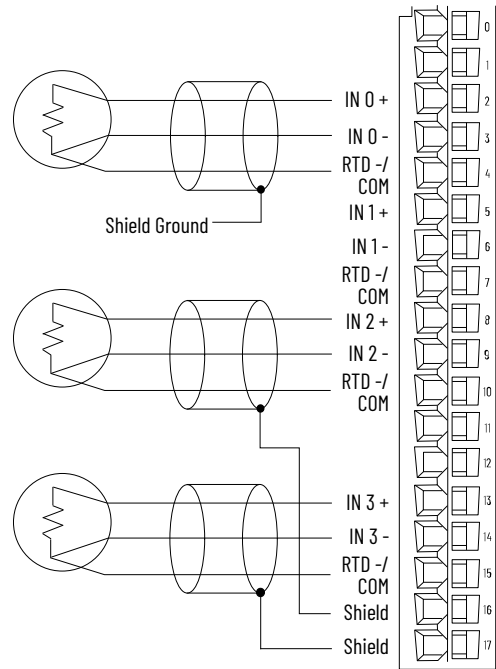
## 5069-IY4, 5069-IY4K 2-wire RTD Wiring



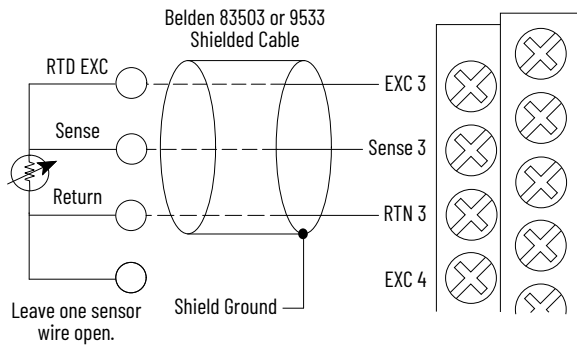
## 1769-IR6, 1769-IR6K 3-wire RTD Wiring



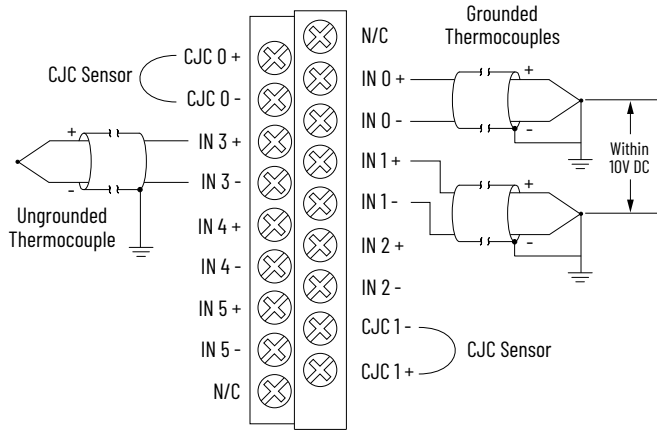
## 5069-IY4, 5069-IY4K 3-wire RTD Wiring



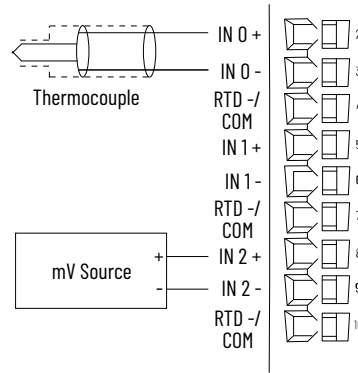
## 1769-IR6, 1769-IR6K 4-wire RTD Wiring



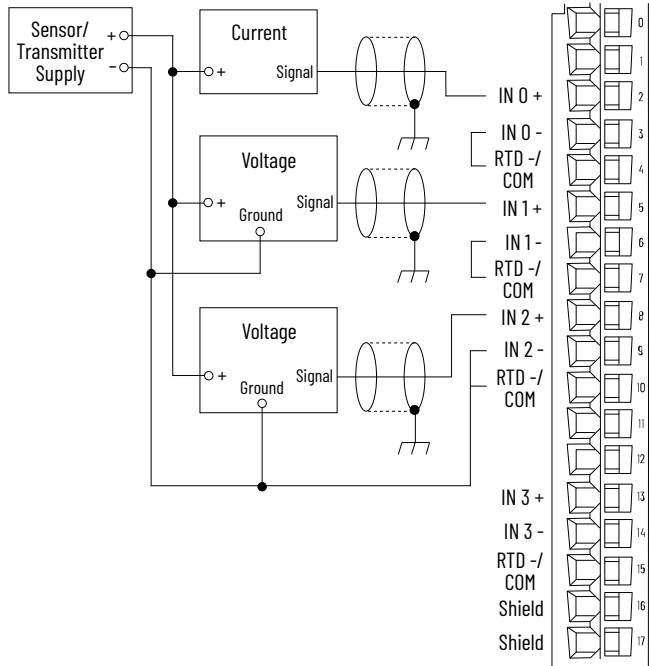
1769-IT6, 1769-IT6K Thermocouple Wiring



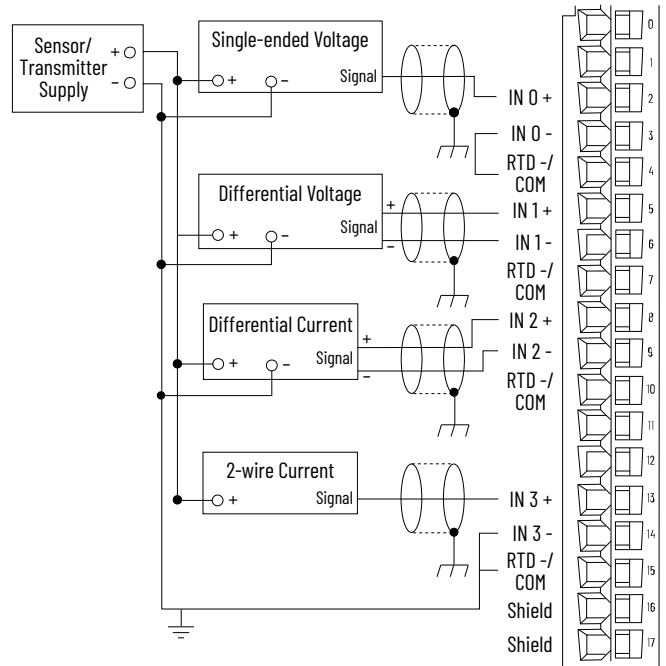
5069-IY4, 5069-IY4K Thermocouple Wiring



5069-IY4, 5069-IY4K Single-ended Device Wiring

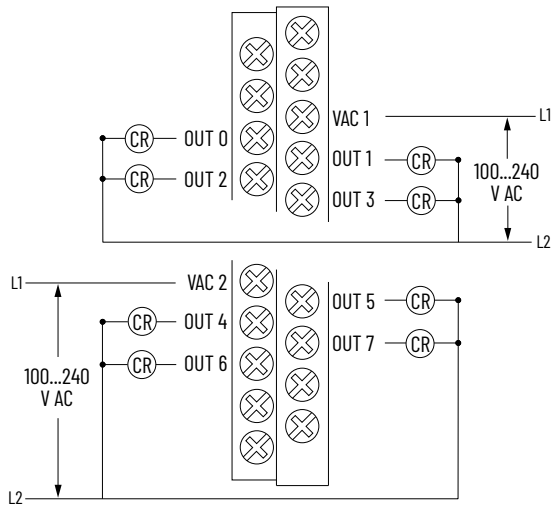


5069-IY4, 5069-IY4K Mixed Device Wiring

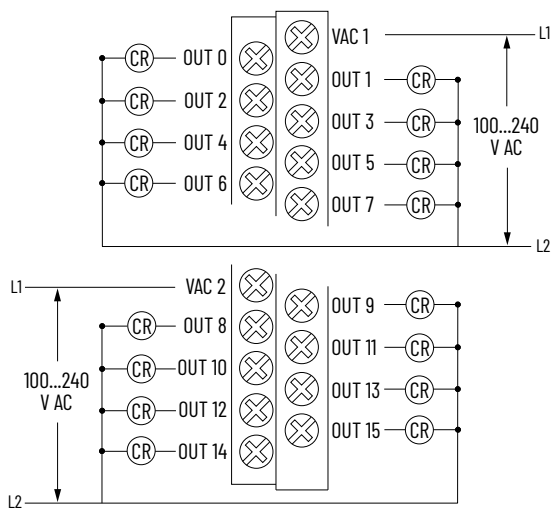


# 1769-0A8, 1769-0A16 to 5069-0A16 Wiring Comparison

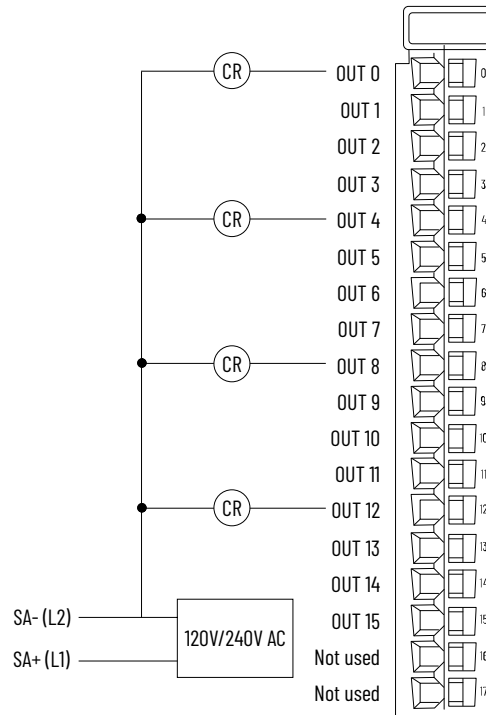
## 1769-0A8 Wiring



## 1769-0A16 Wiring



## 5069-0A16 Wiring

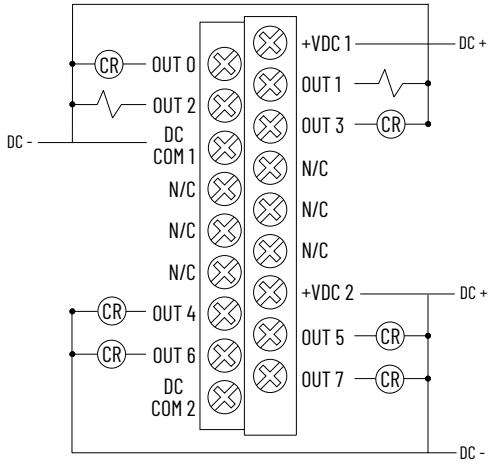


**IMPORTANT:**

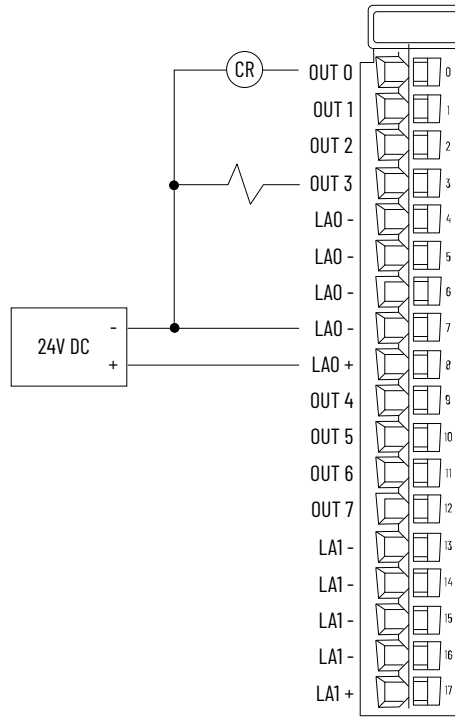
- The 5069-0A16 module uses AC SA power. You must connect AC power to the device that supplies SA power to the module. To use this module in a system with DC SA power, see [Isolate SA Power on page 7](#).
- Compact GuardLogix 5380 controllers do not support AC power on their SA power RTBs. To install a local 5069-0A16 module in a Compact GuardLogix 5380 controller system, see [Isolate SA Power on page 7](#).
- The 5069-0A16 module outputs use a shared common. The outputs have a return through internal module circuitry to the SA (-) terminal on the SA power RTB. For more information, see [Power Considerations on page 7](#).

# 1769-OB8 to 5069-OB8 Wiring Comparison

## 1769-OB8 Wiring



## 5069-OB8 Wiring

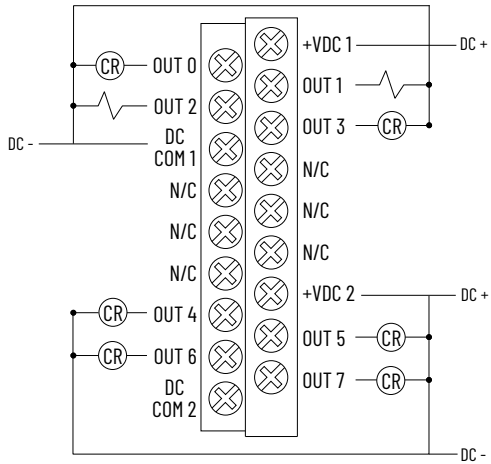


**IMPORTANT:**

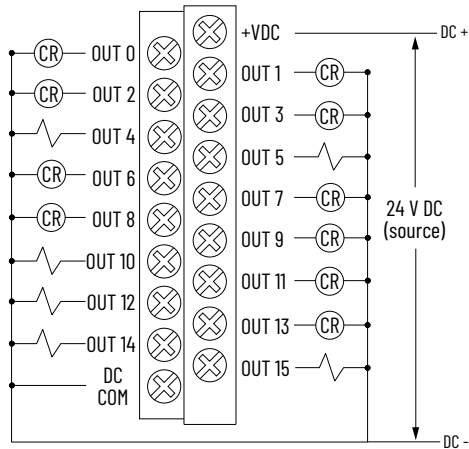
- The 5069-OB8 module does not draw current from the SA power bus. Still, the module is a DC-type module, and you must install it on a DC SA power bus. To use this module in a system with AC SA power, see [Isolate SA Power on page 7](#).
- The LA+ and LA - connections supply field-side power to the module. Output channels 0...3 use LA0 +/-, and output channels 4...7 use LA1 +/-.

# 1769-OB8K, 1769-OB16, 1769-OB16K, 1769-OB16P to 5069-OB16, 5069-OB16K Wiring Comparison

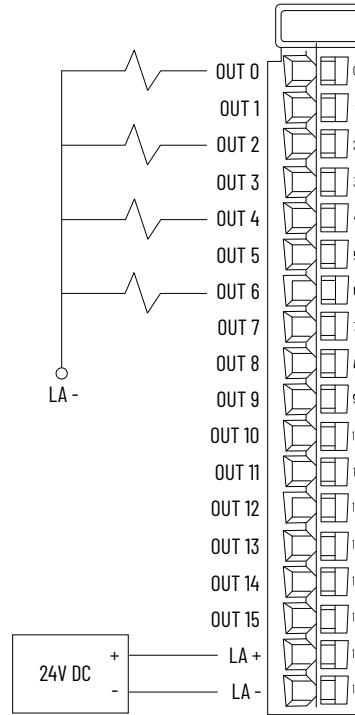
## 1769-OB8K Wiring



## 1769-OB16, 1769-OB16K, 1769-OB16P Wiring



## 5069-OB16, 5069-OB16K Wiring Diagram

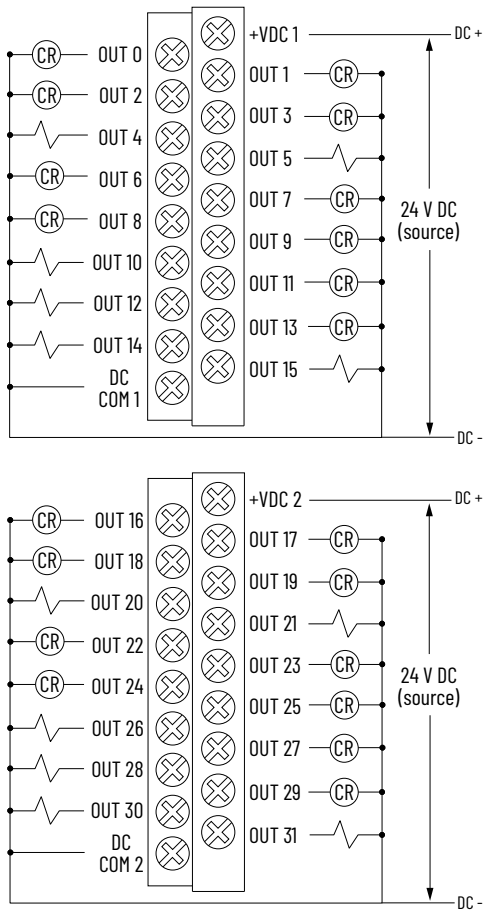


**IMPORTANT:**

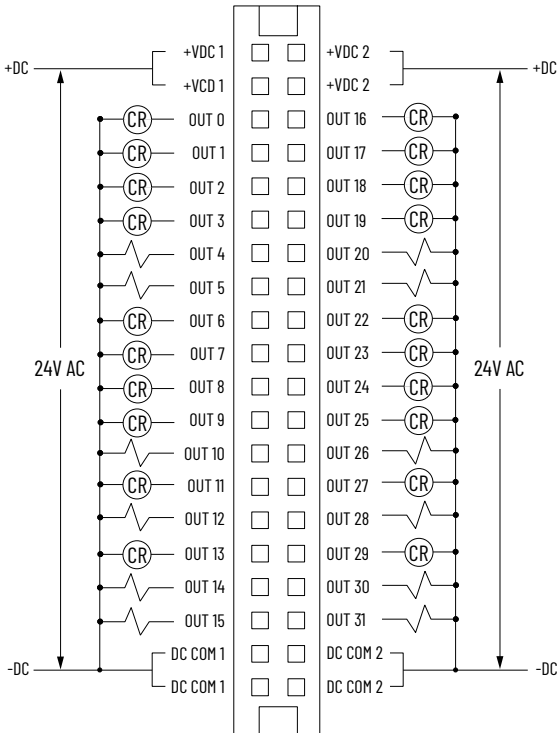
- The 5069-OB16 and 5069-OB16K modules do not draw current from the SA power bus. Still, the modules are DC-type modules, and you must install them on a DC SA power bus. To use these modules in a system with AC SA power, see [Isolate SA Power on page 7](#).
- The LA+ and LA- connections supply field-side power to the modules.

# 1769-OB32, 1769-OB32K, 1769-OB32T to 5069-OB32, 5069-OB16K Wiring Comparison

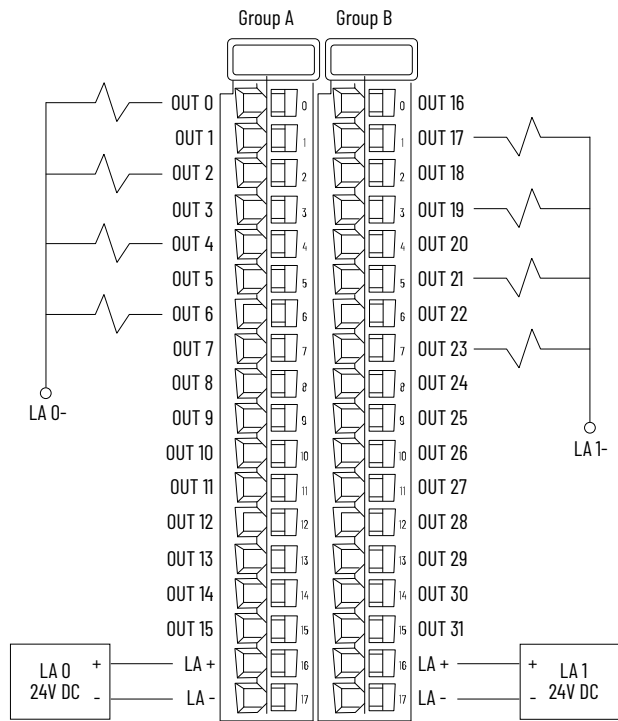
## 1769-OB32, 1769-OB32K Wiring



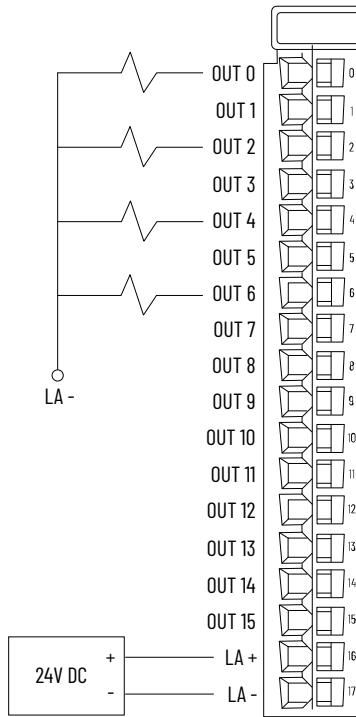
## 1769-OB32T Wiring



## 5069-OB32 Wiring Diagram



## 5069-OB16K Wiring Diagram

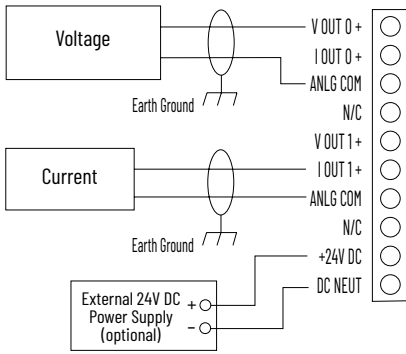


**IMPORTANT:**

- The 5069-OB32 and 5069-OB16K modules do not draw current from the SA power bus. Still, the modules are DC-type modules, and you must install them on a DC SA power bus. To use these modules in a system with AC SA power, see [Isolate SA Power on page 7](#).
- The LA+ and LA- connections supply field-side power to the modules.

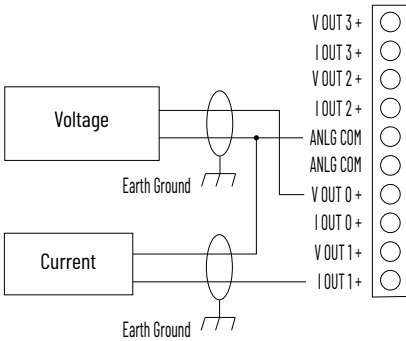
# 1769-OF2, 1769-OF4, 1769-OF4K to 5069-OF4, 5069-OF4K Wiring Comparison

## 1769-OF2 Wiring

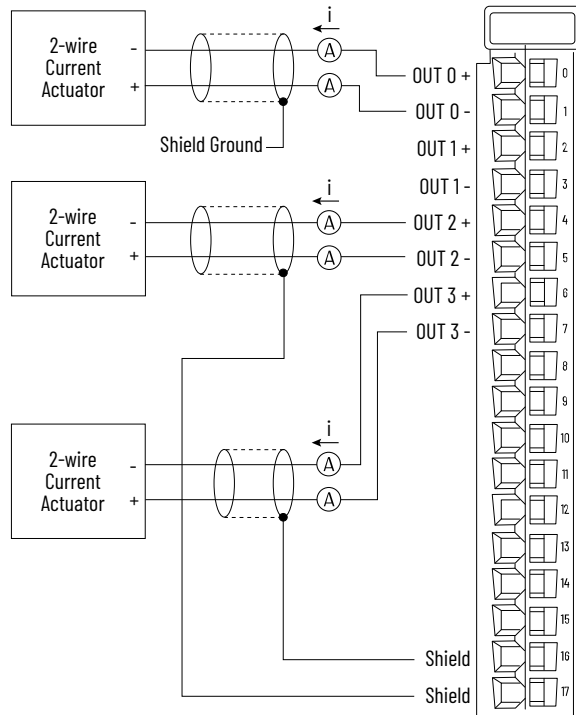


The external power supply must be rated Class 2, with a 24V DC range of 20.4...26.4V DC and 120 mA minimum. Series B and later modules support this option.

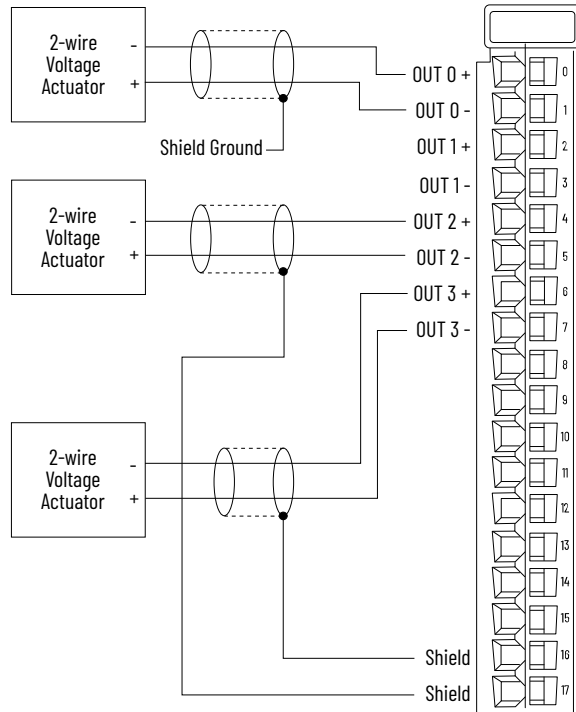
## 1769-OF4, 1769-OF4K Wiring



## 5069-OF4, 5069-OF4K Current Mode Wiring

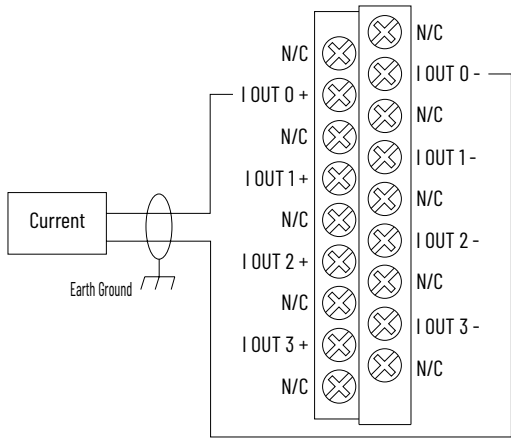


## 5069-OF4, 5069-OF4K Voltage Mode Wiring

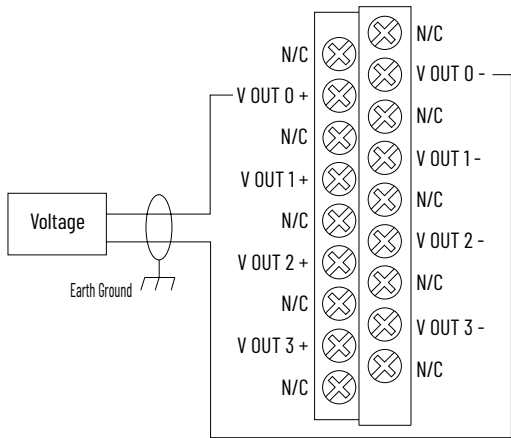


# 1769-OF4CI, 1769-OF4VI to 5069-OF4IH Wiring Comparison

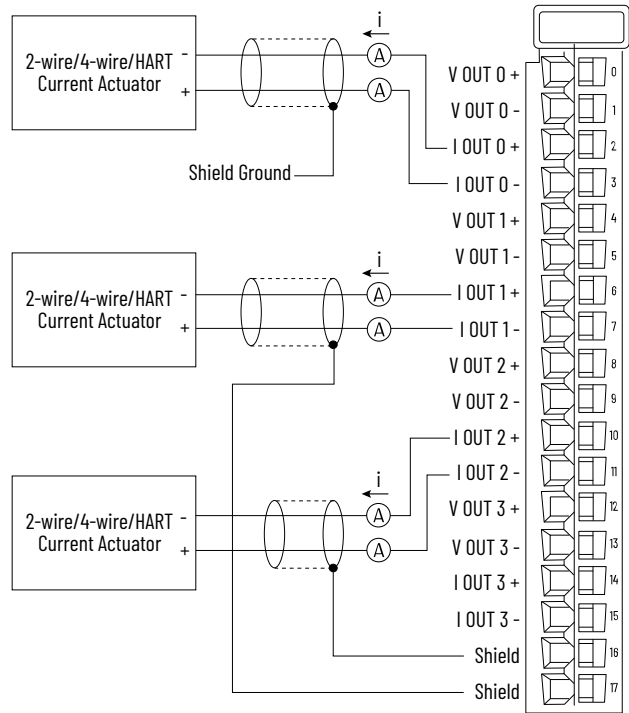
## 1769-OF4CI Wiring



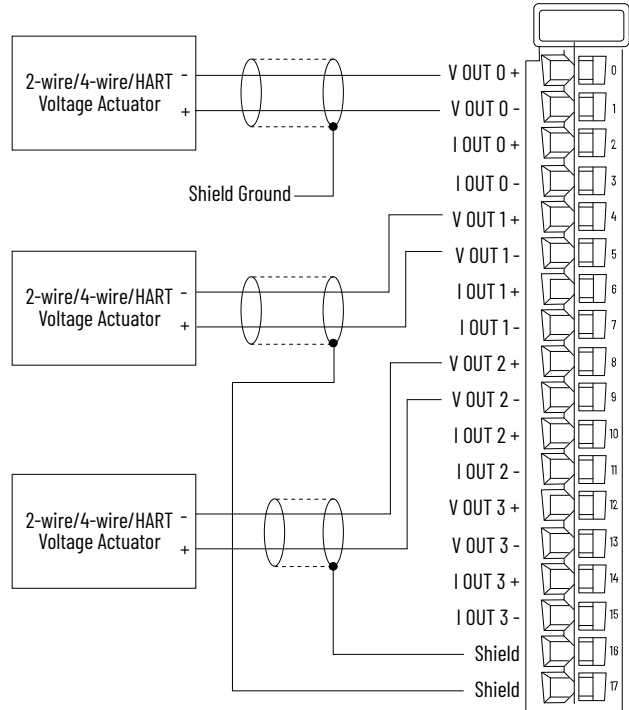
## 1769-OF4VI Wiring



## 5069-OF4IH Current Mode Wiring

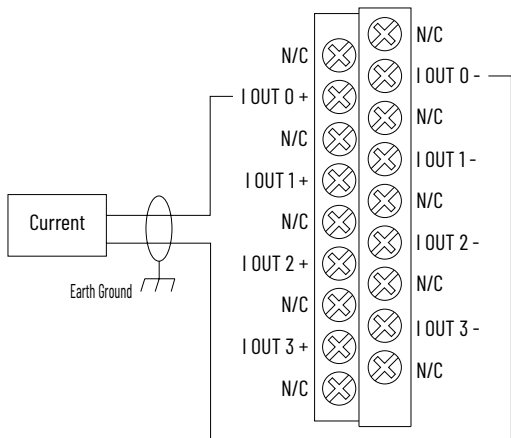


## 5069-OF4IH Voltage Mode Wiring

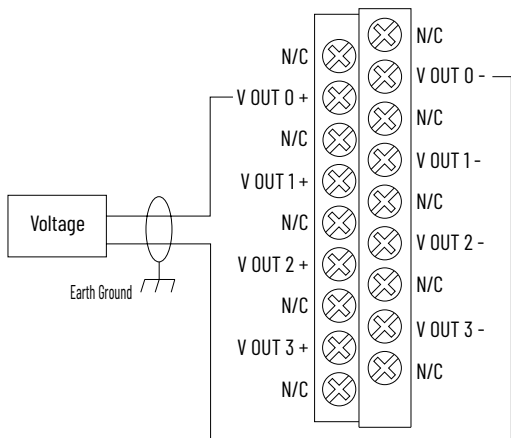


# 1769-OF4CIK, 1769-OF4VIK to 5069-OF4K Wiring Comparison

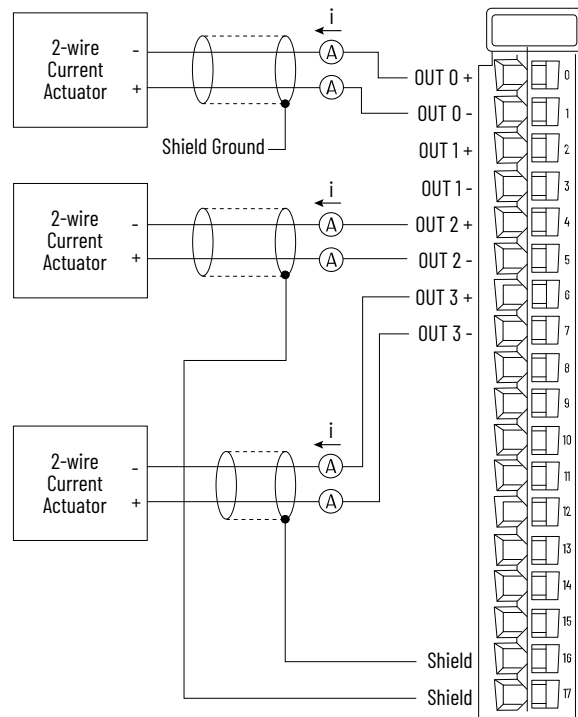
## 1769-OF4CIK Wiring



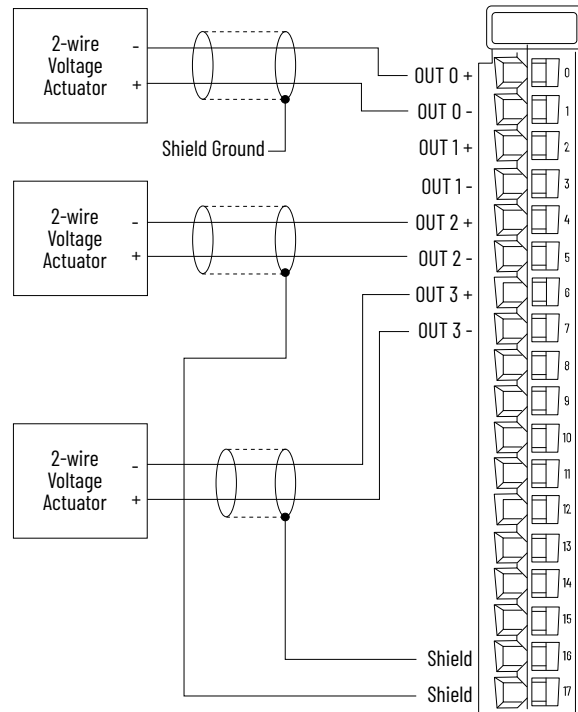
## 1769-OF4VIK Wiring



## 5069-OF4K Current Mode Wiring

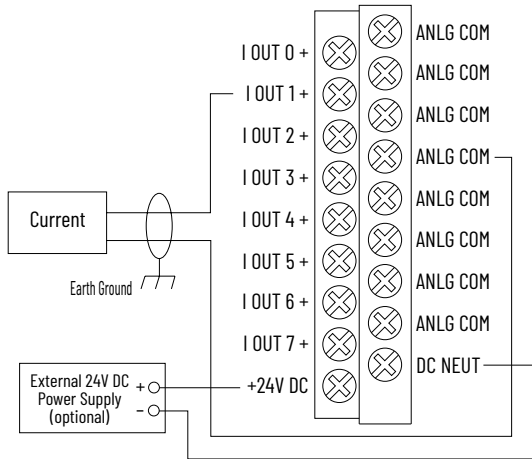


## 5069-OF4K Voltage Mode Wiring



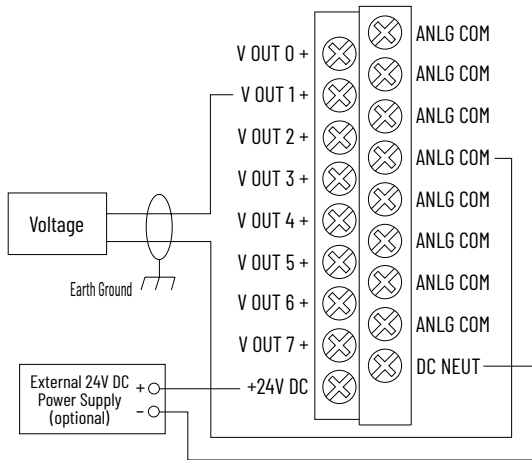
# 1769-OF8C, 1769-OF8V to 5069-OF8 Wiring Comparison

## 1769-OF8C Wiring



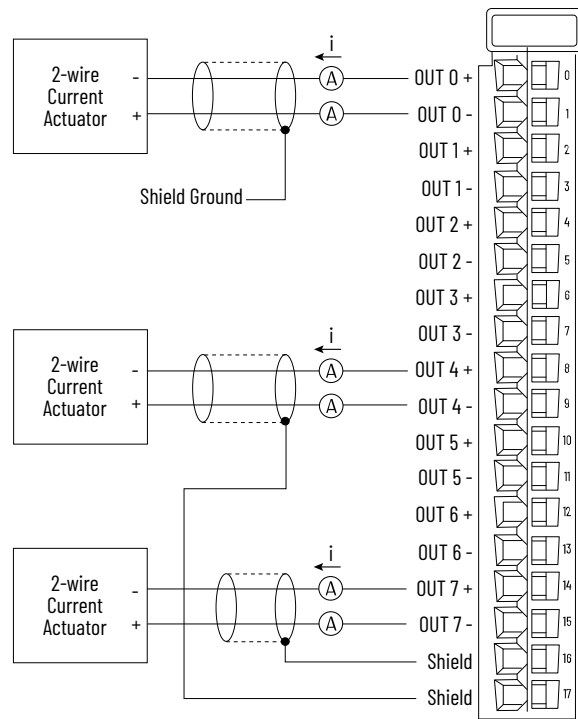
The external power supply must be rated Class 2, with a 24V DC range of 20.4...26.4V DC and 60 mA minimum. Series B and later modules support this option.

## 1769-OF8V Wiring

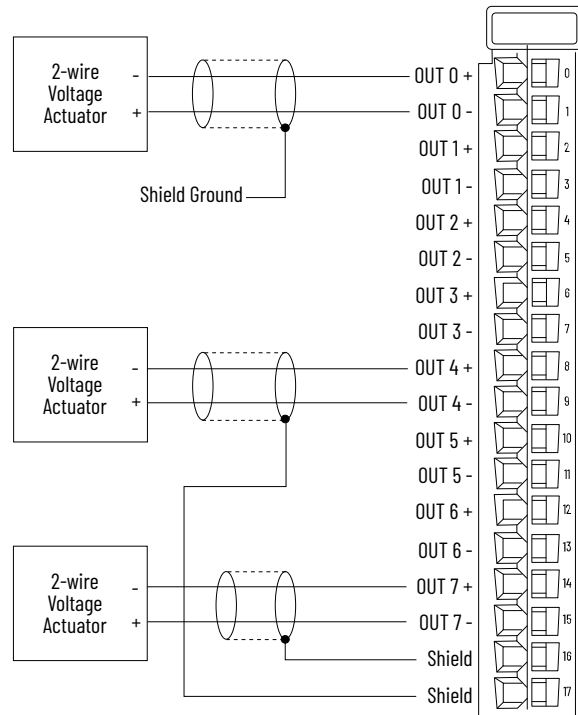


The external power supply must be rated Class 2, with a 24V DC range of 20.4...26.4V DC and 60 mA minimum. Series B and later modules support this option.

## 5069-OF8 Current Mode Wiring

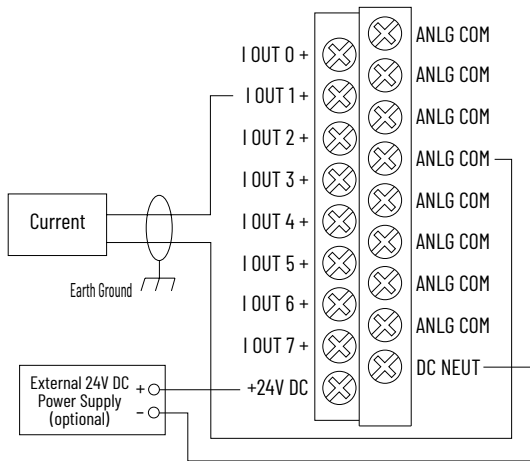


## 5069-OF8 Voltage Mode Wiring



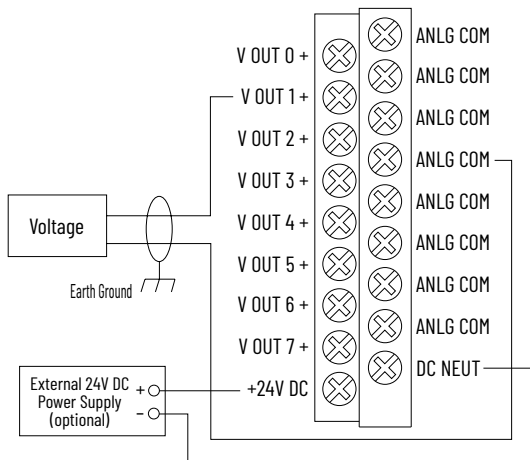
# 1769-OF8CK, 1769-OF8VK to 5069-OF4K Wiring Comparison

## 1769-OF8CK Wiring



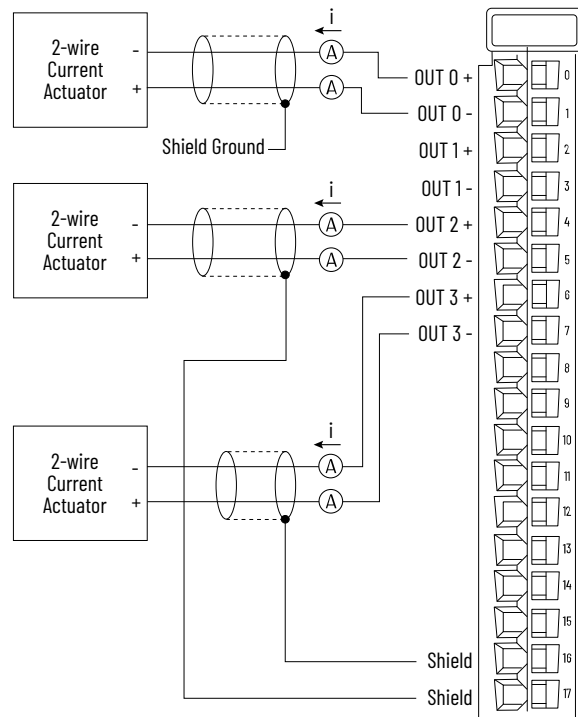
The external power supply must be rated Class 2, with a 24V DC range of 20.4...26.4V DC and 60 mA minimum. Series B and later modules support this option.

## 1769-OF8VK Wiring

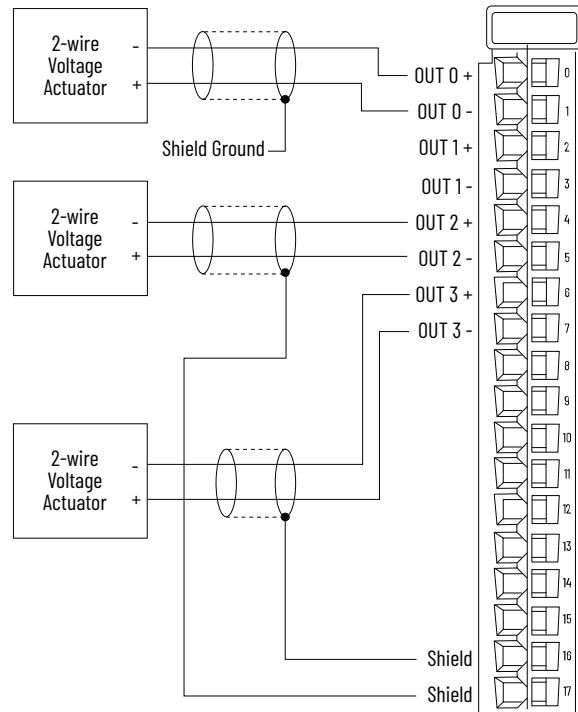


The external power supply must be rated Class 2, with a 24V DC range of 20.4...26.4V DC and 60 mA minimum. Series B and later modules support this option.

## 5069-OF4K Current Mode Wiring

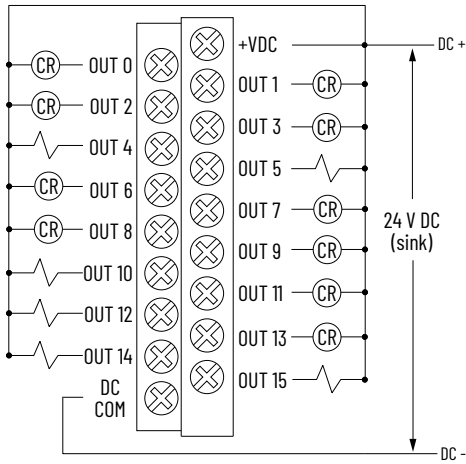


## 5069-OF4K Voltage Mode Wiring

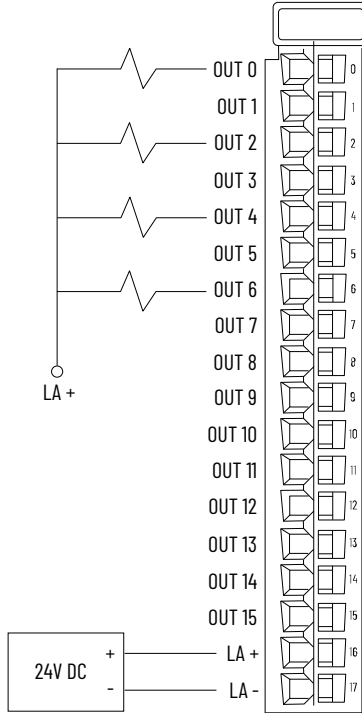


# 1769-0V16, 1769-0V32T to 5069-0V16F-SC Wiring Comparison

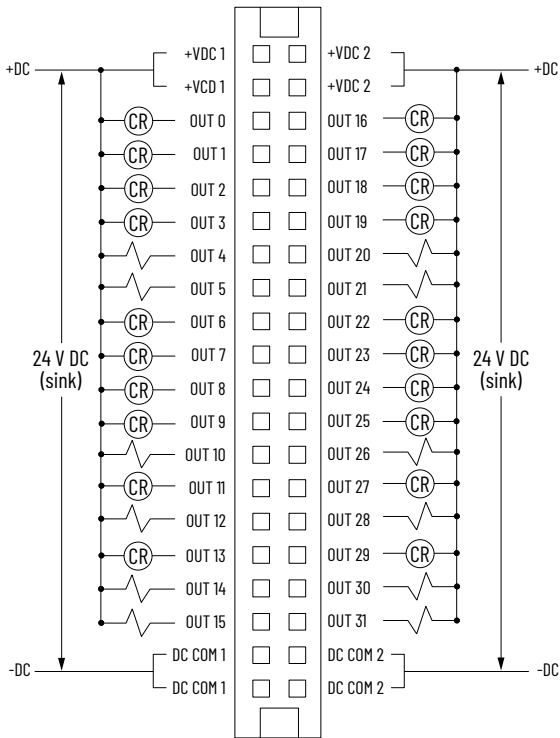
## 1769-0V16 Wiring



## 5069-0V16F-SC Wiring



## 1769-0V32T Wiring

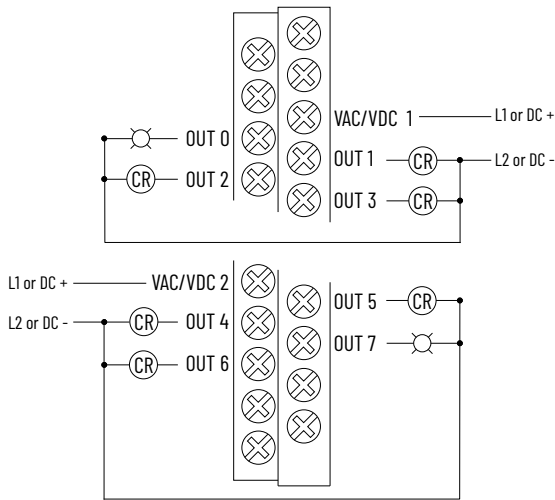


**IMPORTANT:**

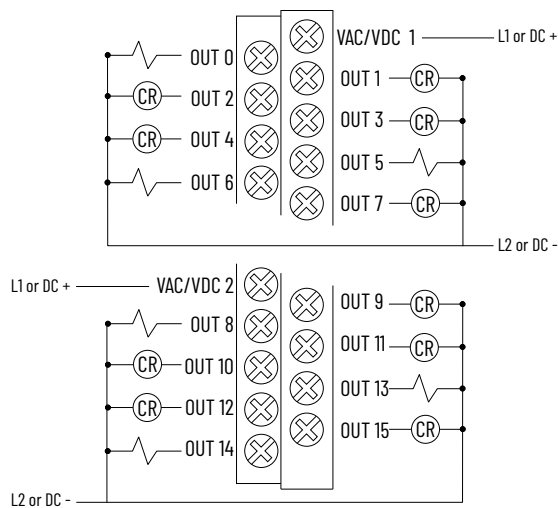
- The 5069-0V16F-SC module does not draw current from the SA power bus. Still, the module is a DC-type module, and you must install it on a DC SA power bus. To use this module in a system with AC SA power, see [Isolate SA Power on page 7](#).
- The LA+ and LA- connections supply field-side power to the modules.

# 1769-OW8, 1769-OW16 to 5069-OW16 Wiring Comparison

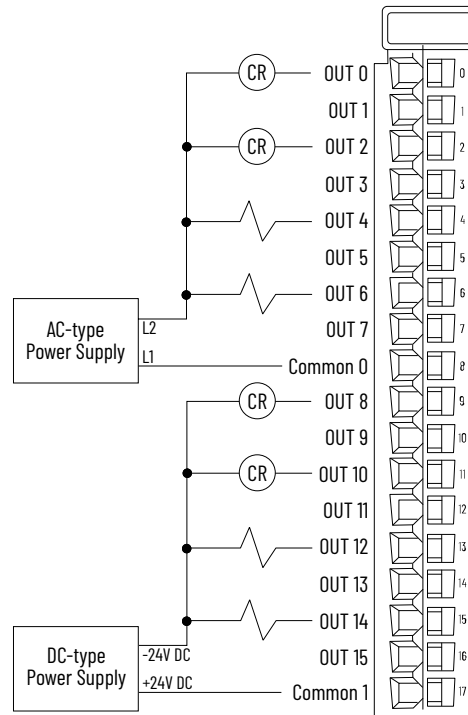
## 1769-OW8 Wiring



## 1769-OW16 Wiring



## 5069-OW16 Wiring

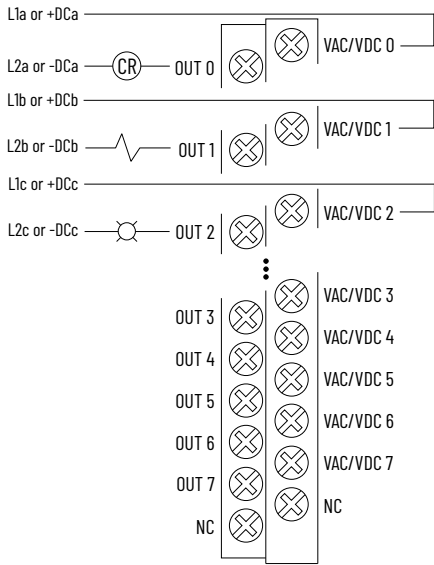


### IMPORTANT:

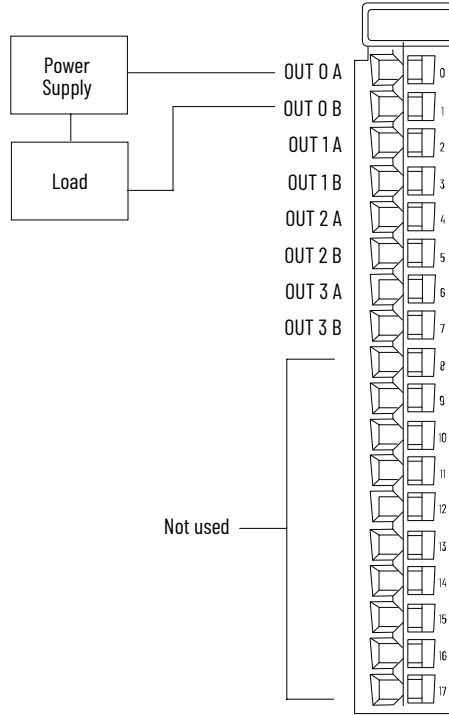
- The 5069-OW16 Series A and Series B modules require DC SA power. You must connect DC power to the device that supplies SA power to the module. To use this module in a system with AC SA power, see [Isolate SA Power on page 7](#).
  - The 5069-OW16 Series C module does not use SA power. That is, it does not draw current from the SA power bus. The module passes it through to the next Compact 5000 I/O module in the system.
  - You can connect AC-type devices, DC-type devices, or a combination of the two types.
  - The module has two commons, each is shared across a set of eight output channels.
    - Common 0 is shared across Outputs 0...7
    - Common 1 is shared across Outputs 8...15
- Do not connect devices of different power types to channels that share a common.

# 1769-0W8I to 5069-0W4I Wiring Comparison

## 1769-0W8I Wiring



## 5069-0W4I Wiring

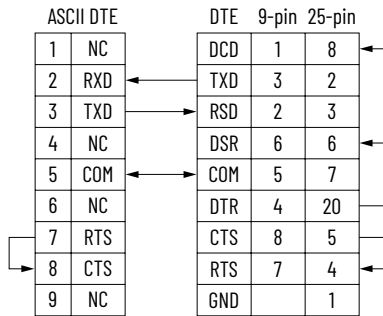


**IMPORTANT:**  
 The 5069-0W4I module does not draw current from the SA power bus. Still, the module is a DC-type module, and you must install it on a DC SA power bus. To use this module in a system with AC SA power, see [Isolate SA Power on page 7](#).

## 1769-ASCII to 5069-SERIAL Wiring Comparison

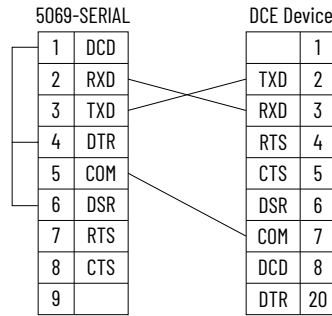
### 1769-ASCII RS-232 Wiring - Module to DTE Device

Hardware handshaking disabled.



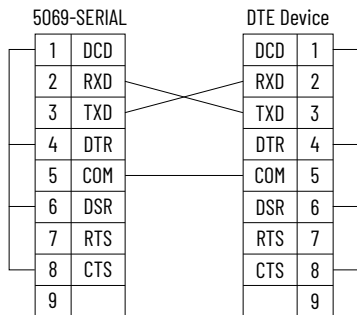
### 5069-SERIAL RS-232 Wiring - Module to DCE Device

With full-duplex communication.



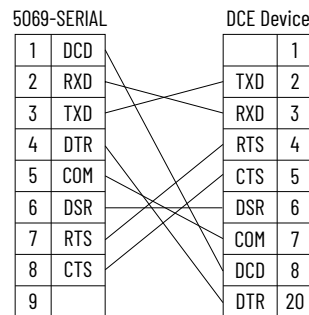
### 5069-SERIAL RS-232 Wiring - Module to DTE Device

Without hardware handshaking.



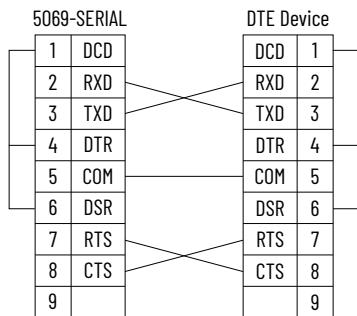
### 5069-SERIAL RS-232 Wiring - Module to DCE Device

With full-duplex or half-duplex communication.



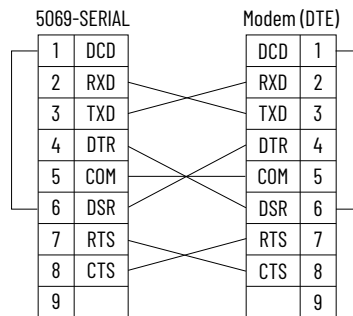
### 5069-SERIAL RS-232 Wiring - Module to DTE Device

With half-duplex communication.

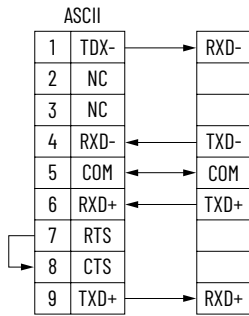


### 5069-SERIAL RS-232 Wiring - Module to DTE Device

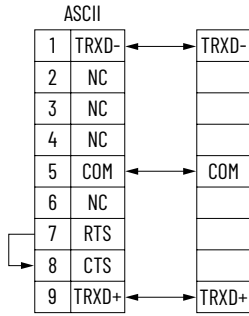
With full-duplex or half-duplex communication, or a null modem cable.



### 1769-ASCII RS-422 Wiring

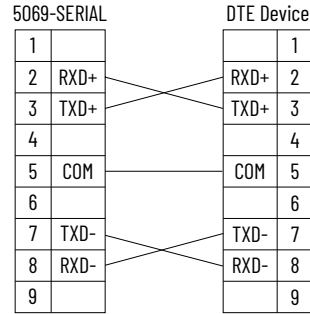


### 1769-ASCII RS-485 Wiring



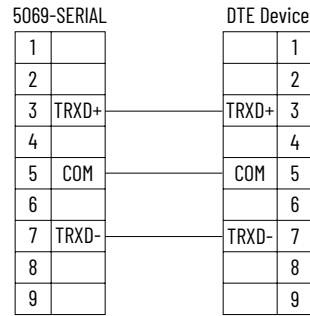
### 5069-SERIAL RS-422 Wiring

**IMPORTANT:**  
Place the termination resistor between RXD+ and RXD- to implement this connection.



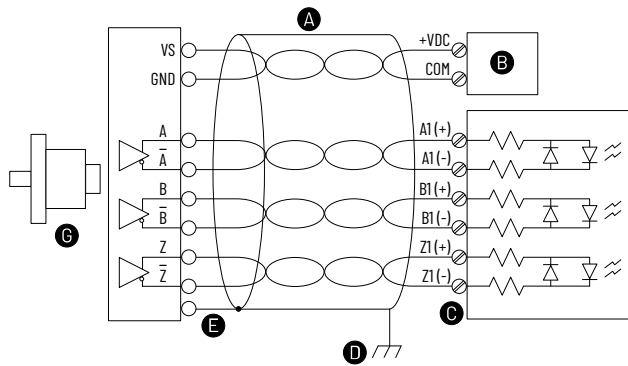
### 5069-SERIAL RS-485 Wiring

**IMPORTANT:**  
Place the termination resistor between TRXD+ and TRXD- to implement this connection.

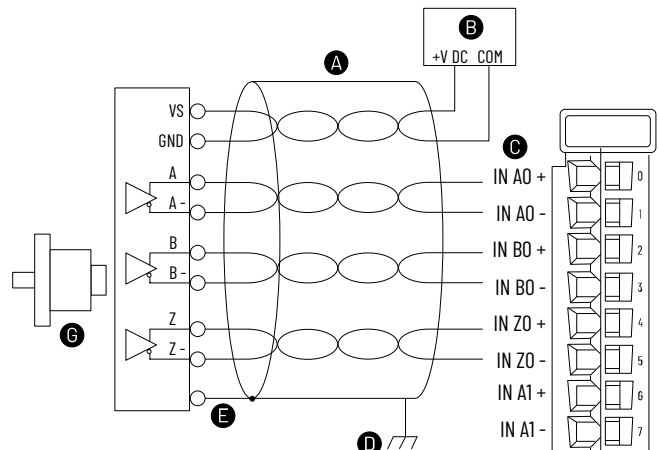


# 1769-HSC to 5069-HSC2X0B4 Wiring Comparison

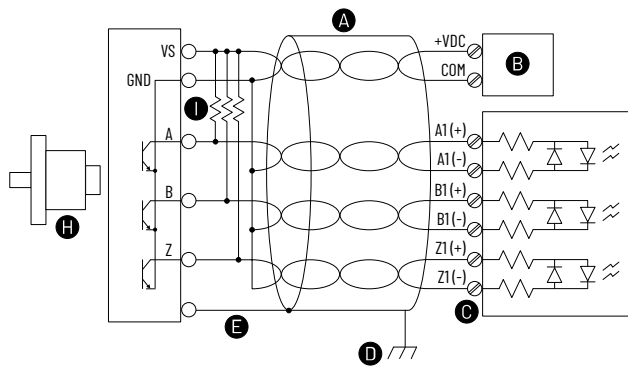
## 1769-HSC Differential Encoder Wiring



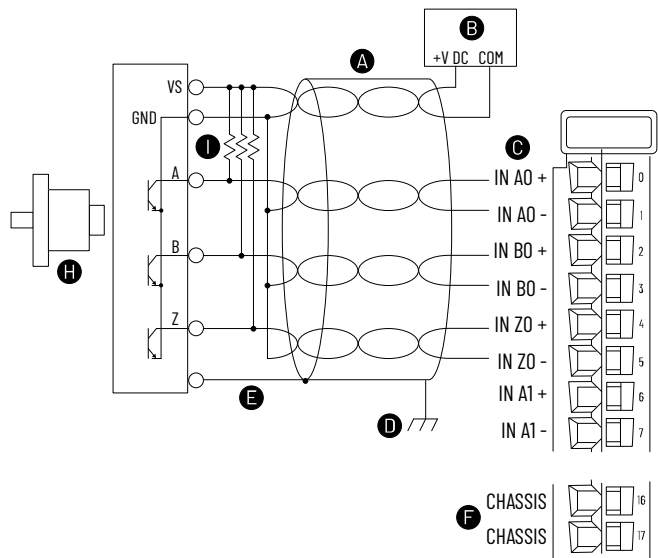
## 5069-HSC2X0B4 Differential Encoder Wiring



## 1769-HSC Single-Ended Encoder Wiring



## 5069-HSC2X0B4 Single-ended Encoder Wiring



### Resistor Information

External resistors are required if they are not internal to the encoder. The pull-up resistor (R) value depends on the power supply value. To calculate the maximum resistor value, use this formula:

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

where: R = maximum pull-up resistor value  
 VDC = power supply voltage  
 Vmin = 2.6V DC  
 min = 6.8 mA

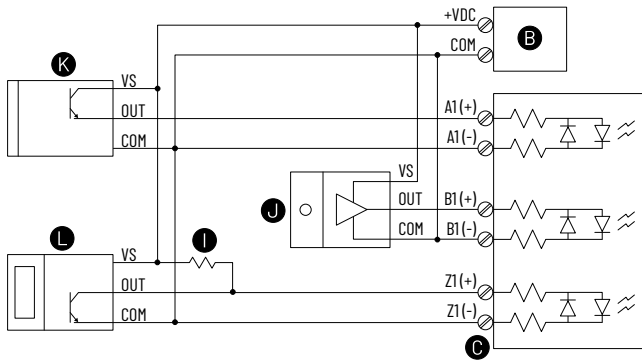
Power Supply Voltage	Pull-up Resistor Value Max (R) <sup>(1)</sup>	
	1769-HSC	5069-HSC2X0B4
5V DC	352 Ω	500 Ω
12V DC	1382 Ω	2250 Ω
24V DC	3147 Ω	5250 Ω

(1) Resistance values can change, dependent on your application. The minimum resistor value depends on the current-sinking capability of the encoder.

Item	Description
A	Cable - We recommend that you use a twisted-pair, individually shielded cable with a maximum length of 300 m (1000 ft). See the encoder manual for the proper cable type.
B	Power supply
C	Module inputs
D	Earth ground
E	Shield/housing connection - Connect only if housing is electronically isolated from the motor and ground.

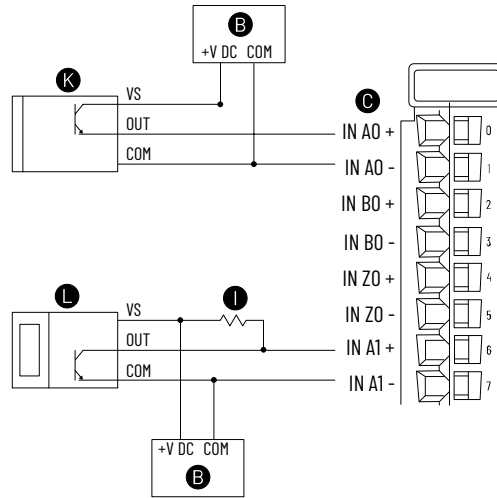
Item	Description
F	If the module is installed on a DIN rail that is grounded, you can connect the cable shield to either Chassis terminal instead of the Earth Ground.
G	Allen-Bradley® 845H Series differential encoder
H	Allen-Bradley 845H Series single-ended encoder
I	Resistor - See the <a href="#">Resistor Information</a> .

### 1769-HSC Discrete Device Wiring



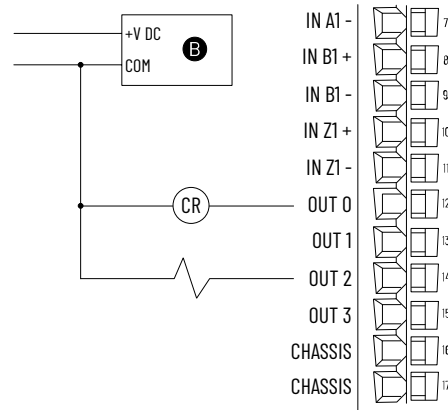
Item	Description
B	Power supply
C	Module inputs
I	Resistor - See the <a href="#">Resistor Information</a> .

### 5069-HSC Discrete Input Device Wiring



Item	Description
J	Solid-state switch
K	Proximity sensor
L	Photoelectric sensor with open collector sinking output

### 5069-HSC Discrete Output Device Wiring



**IMPORTANT:**

- The 5069-HSC2x0B4 module uses DC SA power. You must connect DC power to the device that supplies SA power to the module. See [Isolate SA Power on page 7](#).
- The 5069-HSC2x0B4 module outputs use a shared common. The outputs have a return through internal module circuitry to the SA (-) terminal on the SA power RTB. For more information, see page 6.

Surge Suppression	The module has built-in suppression that is sufficient for most applications. For high-noise applications, we recommend that you use a 1N4004 diode reverse-wired across the load for transistor outputs switching 24V DC inductive loads. For additional details, see the Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">I770-4.1</a> .
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## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at [rok.auto/literature](http://rok.auto/literature).

Resource	Description
CompactLogix and Compact GuardLogix Systems Selection Guide, publication <a href="#">1769-SG003</a>	Describes how to design and select components for your CompactLogix™ controller system.
CompactLogix 5380 and Compact GuardLogix Controllers User Manual, publication <a href="#">5069-UM001</a>	Describes how to use CompactLogix 5380 and Compact GuardLogix® 5380 controllers.
CompactLogix 5480 Controllers User Manual, publication <a href="#">5069-UM002</a>	Describes how to use CompactLogix 5480 controllers.
Compact 5000 I/O and Specialty Modules Specifications, publication <a href="#">5069-TD001</a>	Provides specifications, wiring diagrams, and functional block diagrams for Compact 5000™ I/O modules, EtherNet/IP™ adapters, and other specialty modules.
Compact 5000 I/O Digital Modules User Manual, publication <a href="#">5069-UM004</a>	Describes how to configure and operate Compact 5000 I/O digital and safety modules.
Compact 5000 I/O Analog Modules User Manual, publication <a href="#">5069-UM005</a>	Describes how to configure and operate Compact 5000 I/O analog and HART modules.
Compact 5000 I/O High-speed Counter Module User Manual, publication <a href="#">5069-UM006</a>	Describes how to configure and operate a Compact 5000 I/O high-speed counter module.
Replacement Guidelines: Logix 5000 Controllers Reference Manual, publication <a href="#">1756-RM100</a>	Describes how to replace a specific Logix controller with another Logix controller
1769 Compact I/O Modules Specifications, publication <a href="#">1769-TD006</a>	Provides specifications, wiring diagrams, and functional block diagrams for Compact I/O and specialty modules.
CompactLogix Communication Modules Specifications, publication <a href="#">1769-TD007</a>	Provides specifications for CompactLogix communication modules.
EtherNet/IP Network Devices User Manual, publication <a href="#">ENET-UM006</a>	Describes how to configure and use EtherNet/IP devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, publication <a href="#">ENET-RM002</a>	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
System Security Design Guidelines Reference Manual, publication <a href="#">SECURE-RM001</a>	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication <a href="#">IC-TD002</a>	Provides a quick reference tool for Allen-Bradley industrial automation controls and assemblies.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication <a href="#">SGI-1.1</a>	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, <a href="http://rok.auto/certifications">rok.auto/certifications</a>	Provides declarations of conformity, certificates, and other certification details.

# Rockwell Automation Support

Use these resources to access support information.

<b>Technical Support Center</b>	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	<a href="http://rok.auto/support">rok.auto/support</a>
<b>Local Technical Support Phone Numbers</b>	Locate the telephone number for your country.	<a href="http://rok.auto/phonesupport">rok.auto/phonesupport</a>
<b>Technical Documentation Center</b>	Quickly access and download technical specifications, installation instructions, and user manuals.	<a href="http://rok.auto/techdocs">rok.auto/techdocs</a>
<b>Literature Library</b>	Find installation instructions, manuals, brochures, and technical data publications.	<a href="http://rok.auto/literature">rok.auto/literature</a>
<b>Product Compatibility and Download Center (PCDC)</b>	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	<a href="http://rok.auto/pcdc">rok.auto/pcdc</a>

## Documentation Feedback

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Rockwell Automation maintains current product environmental compliance information on its website at [rok.auto/pec](http://rok.auto/pec).

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