Allen-Bradley

Compact 5000 I/O Modules and EtherNet/IP Adapters

Digital I/O Module Catalog Numbers 5069-IA16, 5069-IB16, 5069-IB16F, 5069-IB6F-3W, 5069-OA16, 5069-OB8, 5069-OB16, 5069-OB16F, 5069-OW4I, 5069-OW16, 5069-OX4I

Analog I/O Module Catalog Numbers 5069-IF8, 5069-IY4, 5069-OF4, 5069-OF8

High-speed Counter Module Catalog Number 5069-HSC2xOB4

Serial Module Catalog Number 5069-SERIAL

Field Potential Distributor Catalog Number 5069-FPD

Address Reserve Module Catalog Number 5069-ARM

EtherNet/IP Adapter Catalog Number 5069-AENTR, 5069-AEN2TR

The Compact 5000™ I/O architecture provides a wide range of input and output modules to span many applications, from high-speed digital to process control. The architecture uses Producer/Consumer technology that allows input information and output status to be shared among multiple Logix 5000™ controllers.

Compact 5000 I/O modules are used as local I/O modules in CompactLogix™ 5380 and Compact GuardLogix® 5380 controller systems or as remote I/O modules with CompactLogix 5380, Compact GuardLogix 5380 controllers, and some other Logix 5000 controllers. The modules are configured with the Studio 5000 Logix Designer® application.

The I/O modules require a removable terminal block (RTB) to connect field-side wiring. RTBs are not included with the I/O modules. You must order RTBs separately.

Summary of Changes

Change	Pages
Updated the Dimension specification for all Compact 5000 I/O modules. **IMPORTANT**: Compact 5000 I/O EtherNet/IP adapters remain unchanged from the last revision.	General Specifications table for each I/O module
Updated DIN rail specification for all modules and adapters	General Specifications table for each module
Updated Isolation voltage specification for all modules	General Specifications table for each module
Updated Voltage and Current Ratings specifications, including Module Power, Sensor/Actuator Power, and Local Actuator Power	11 22
Updated Pull-up Resistor values on 5069-HSC2X0B4 high-speed counter module wiring diagrams	79 80
Added information about the 5069-SERIAL serial module	87
Added minimum spacing requirements	114

Power Compact 5000 I/O Modules

There are different types of power that are used with Compact 5000 I/O modules.

Power Type	Description	Related Specifications	
		Name	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.	MOD Power	Level of MOD Power current that the module draws from the MOD Power bus
		MOD Power Passthrough, max	Maximum level of MOD Power current that the module can pass to the next module.
Sensor/ Actuator (SA) Power	Field-side power that some modules uses 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. You use 5069-FPD field potential distributors to establish new SA Power buses in a system. **IMPORTANT**: Remember the following: • If the system includes DC type modules and AC type modules, you must use a field potential distributor to install them on separate SA Power buses. • You cannot install AC type modules directly next to a Compact GuardLogix 5380 controller. You must first install a field potential distributor.	SA Power	Level of SA Power current that the module draws from the SA Power bus
		SA Power Passthrough, max	Maximum level of SA Power current that the module can pass to the next module.
Local Actuator (LA) Power	Field-side power that some Compact 5000 I/O modules use instead of SA power. Modules that use LA power **do not use SA power**. They only pass SA power to the next 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 module type. For example, you must install a 5069-OB8 module on an SA Power bus that includes DC type modules.	LA Power	Maximum level of LA Power current that you can apply to the module, by channel, group, or module.

For more information on how to MOD power, SA power, and LA power, see these publications:

- CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, publication 5069-UM001
- EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, publication ENET-UM004

Digital I/O Modules

I/O Type	Cat. No.	Pages
AC digital input	5069-IA16	4
DC digital input	5069-IB16 5069-IB16F 5069-IB6F-3W	9 9 14
AC digital output	5069-OA16	20
DC digital output	5069-OB8 5069-OB16 5069-OB16F	25 30 30
Relay output	5069-OW4I 5069-OW16 5069-OX4I	35 41 46

5069-IA16 Digital 16-point 120/240V AC Input Module

This figure shows a wiring diagram for the 5069-IA16 module.

5069-IA16 Wiring Diagram

Channel Connections

The diagram shows devices that are connected to channels 0, 2, 4, 6, 8, and 10. You are not restricted to using only those channels.

You can connect devices to any channel or combination of channels as needed.

SA Power

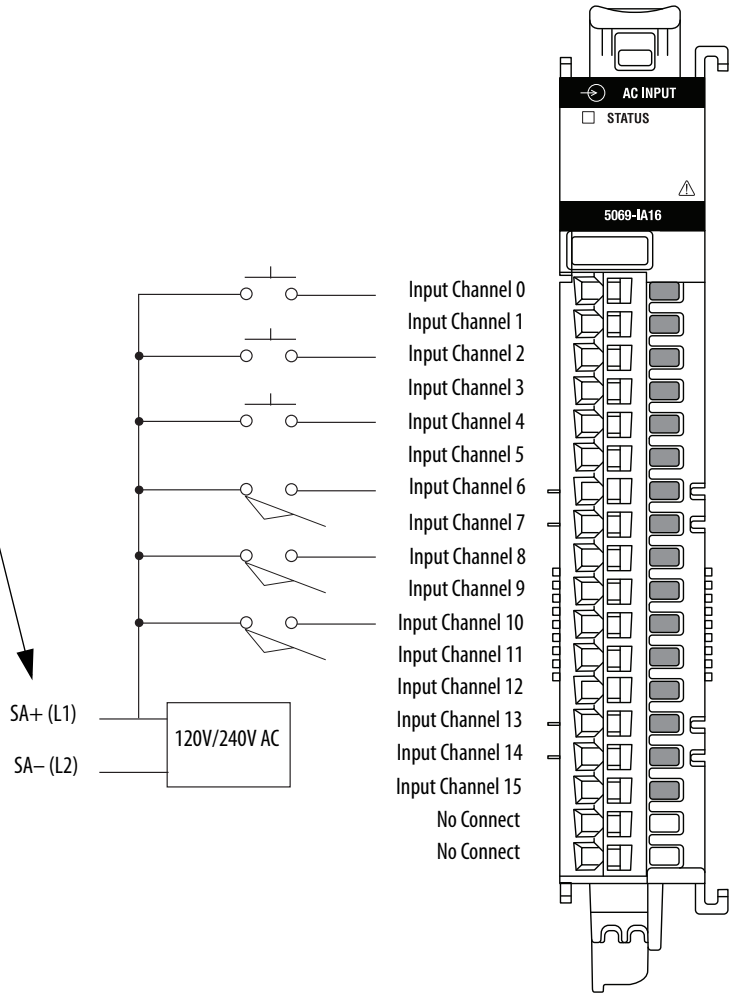
Connections to an external power supply that provides SA Power via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP adapter
- 5069-FPD field potential distributor

IMPORTANT: Remember the following:

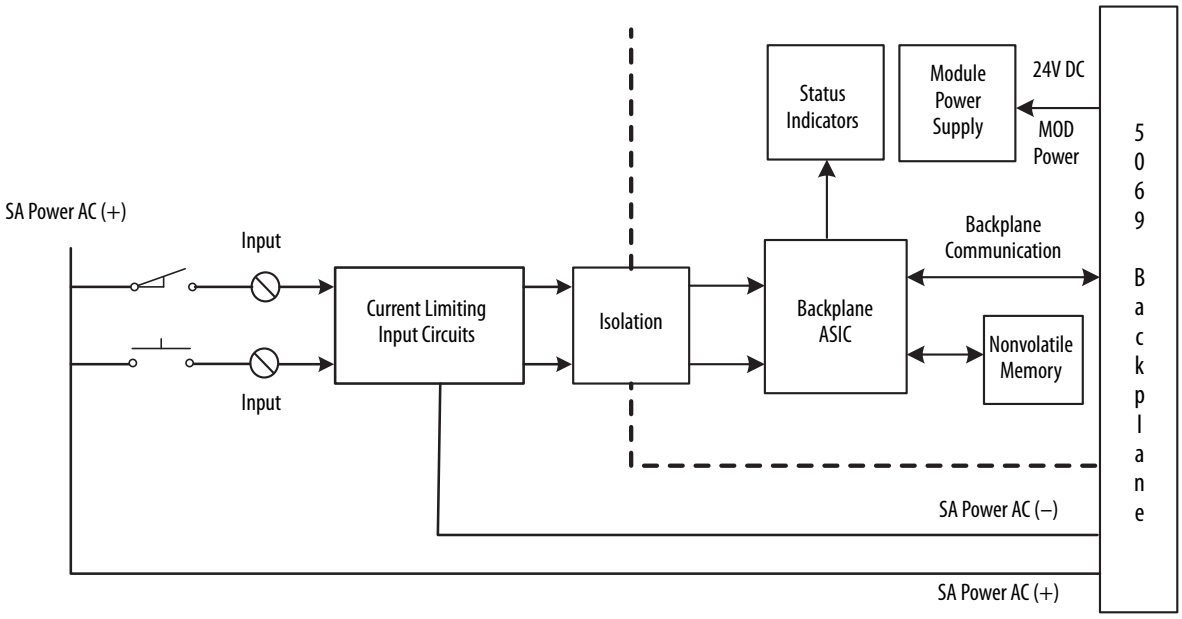
- The 5069-IA16 module uses AC SA power. You must connect AC power to the component, that is, CompactLogix 5380 controller, adapter, or field potential distributor, that provides SA Power to the module.
- If you install a **5069-IA16 module as a local I/O module in a Compact GuardLogix 5380 controller system**, you must install a field potential distributor that has AC power connected to it and install the 5069-IA16 module next to the field potential distributor.

  You cannot install modules that draw AC SA power next to a Compact GuardLogix 5380 controller. Compact GuardLogix 5380 controllers do not support AC power on their SA Power RTBs.
- 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.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA Power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-IA16 module.

5069-IA16 Functional Block Diagram



Technical Specifications - 5069-IA16

Attribute	5069-IA16
On-state voltage, min	79V AC
On-state voltage, nom	120/240V AC
On-state voltage, max	264V AC
Off-state voltage, max	40V AC
Input current per channel, max	15 mA @ 264V AC
On-state current, min	2 mA @ 79V AC 3 mA @ 164V AC
On-state current, nom	5 mA @ 120V AC/50 Hz 6 mA @ 120V AC/60 Hz 9 mA @ 240V AC/50 Hz 11 mA @ 240V AC/60 Hz
On-state current, max	15 mA @ 264V AC
Off-state current, max	2 mA
Input impedance, nom	24 kΩ @ 120V AC/50 Hz 20 kΩ @ 120V AC/60 Hz 27 kΩ @ 240V AC/50 Hz 22 kΩ @ 240V AC/60 Hz
Input impedance, min	17.6 kΩ @ 264V AC/63 Hz
Inrush current, max	600 mA
Input delay time	
Off to On	10 ms (typ) @ 0...60 °C (32…140 °F)
On to Off	10 ms (typ) @ 0...60 °C (32…140 °F)

Technical Specifications - 5069-IA16

Attribute	5069-IA16
Input filter times	
Off to On	Hardware delay: 10 ms (typ) + filter time User-selectable filter times: • 120V AC input - 1 ms • 240V AC input - 1 ms, 2 ms, 5 ms
On to Off	Hardware delay: 10 ms (typ) + filter time User-selectable filter times: • 120V AC input - 10 ms, 20 ms • 240V AC input - 5 ms, 10 ms, 20 ms
With the 5069-IA16 module, the Logix Designer application lets you choose multiple filter values, including values that are invalid for some input signals. For example, the only valid Off to On filter value when a 120V AC signal is connected to the module is 1 ms. However, you can choose 1 ms, 2 ms, or 5 ms. If you select an invalid input filter value, the module can read signal levels incorrectly. For more information, see the 5000 Series Digital I/O Modules in Logix 5000 Control Systems User Manual, publication 5000-UM004.	

General Specifications - 5069-IA16

Attribute	5069-IA16
Number of inputs	16 (One group of 16)
Voltage category	120/240V AC
Voltage and current ratings	
Input voltage range	79…264V AC
Input voltage frequency	47…63 Hz
MOD Power	75 mA @ 18…32V DC
MOD Power Passthrough, max[1]	9.55 A @ 18…32V DC
SA Power	240 mA @ 79…264V AC
SA Power Passthrough, max[2]	9.975 A @ 79…264V AC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw. The 5069-IA16 module complies to ATEX/IECEx when used at or below 125V AC.	
Power dissipation, max	3.5 W
Thermal dissipation, max	11.9 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type Type tested at 1800V AC for 60 s No isolation between individual channels
Module keying	Electronic keying via programming software
Indicators	1 green/red module status indicator 16 yellow/red I/O status indicators
Slot width	1
Dimensions (HxWxD)	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N·m (3.5 lb·in)
RTB keying	None
Wire category	2 - input ports 2 - power ports 1 wire per terminal for each signal port

General Specifications - 5069-IA16

Attribute	5069-IA16
Wire size	
5069-RTB18-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only.
5069-RTB18-SCREW connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation, single wire connection only.
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type rating	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4
IEC Input Compatibility	Type 1

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

Environmental Specifications - 5069-IA16

Attribute	5069-IA16
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4

Environmental Specifications - 5069-IA16

Attribute	5069-IA16
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±4 kV @ 5 kHz on signal ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Corrosion resistance classification	ISA S71.04 G2

Certifications - 5069-IA16

Certification[1]	5069-IA16
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: • EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-IB16 and 5069-IB16F Digital 16-point Sinking Input Modules

This figure shows a wiring diagram for the 5069-IB16 and 5069-IB16F modules.

5069-IB16 and 5069-IB16F Wiring Diagram

Channel Connections

The example shows devices connected to channels 0, 3, and 6. You are not restricted to using only those channels.

You can connect devices to any channel or combination of channels as needed.

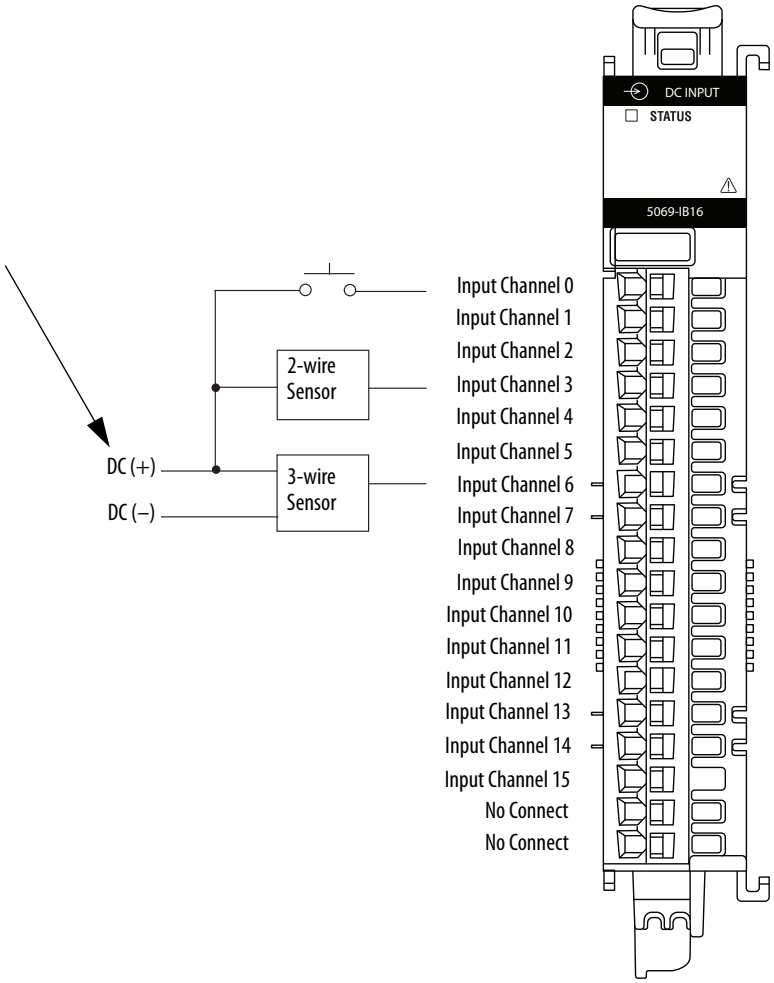
SA Power

Connections to an external power supply that provides SA power via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP Adapter
- 5069-FPD field potential distributor

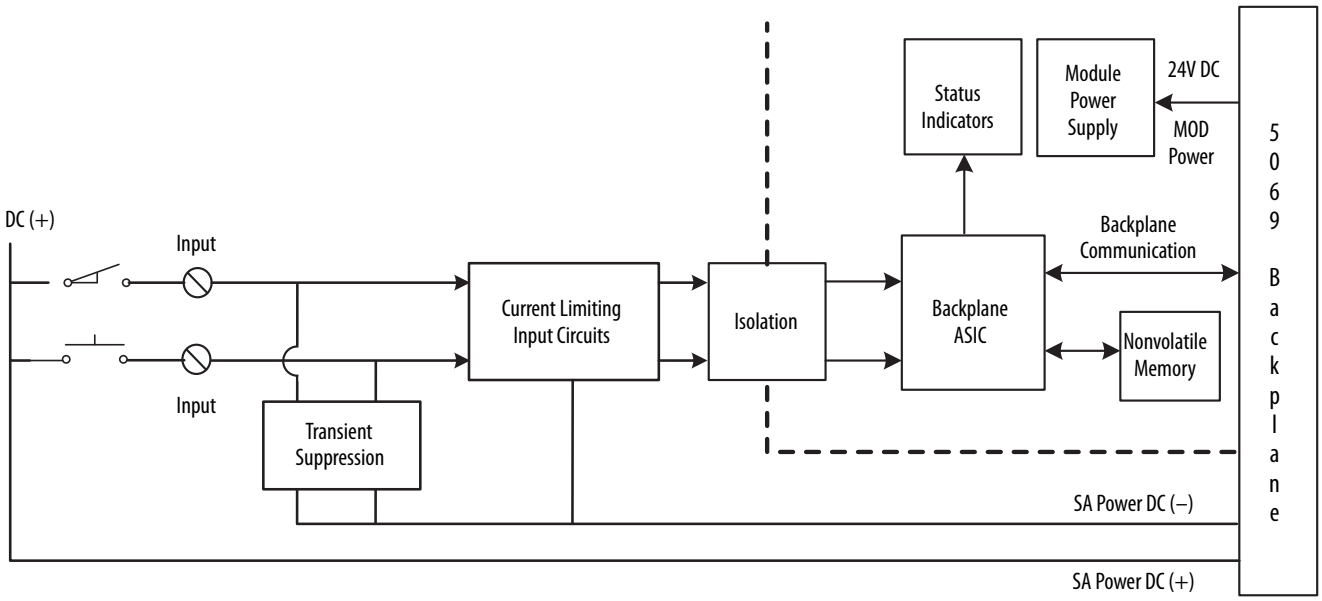
IMPORTANT: Remember the following:

- The 5069-IB16 and 5069-IB16F modules use DC SA power. You must connect DC power to the component, that is, controller, adapter, or field potential distributor, that provides SA Power to the modules.
- The 5069-IB16 and 5069-IB16F module inputs use a shared common. The inputs have a return through internal module circuitry to the SA (–) terminal on the SA Power RTB.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-IB16 and 5069-IB16F modules.

5069-IB16 and 5069-IB16F Functional Block Diagram



Technical Specifications - 5069-IB16 and 5069-IB16F

Attribute	5069-IB16	5069-IB16F
On-state voltage, min	10V DC	
On-state voltage, nom	24V DC	
On-state voltage, max	32V DC	
On-state current, min	4 mA @ 10V	
On-state current, nom	6 mA @ 24V DC	
On-state current, max	7.4 mA @ 32V DC	
Off-state voltage, max	5V DC	
Off-state current, max	1.5 mA	
Input impedance, min	1.33 kΩ	
Input impedance, nom	4.1 kΩ	
Input impedance, max	7.0 kΩ	
Inrush current, max	< 250 mA peak (decaying to, 37% in 22 ms, without activation)	
Input delay time (screw to backplane)		
Off to On	≤ 100 µs, ±10 µs @ 25 °C (77 °F)	≤ 10 µs, ±1 µs @ 25 °C (77 °F)
On to Off	≤ 100 µs, ±10 µs @ 25 °C (77 °F)	≤ 10 µs, ±1 µs @ 25 °C (77 °F)
Input drift over temperature span	±100 ns/°C (55.6 ns/°F) from 0…60 °C (32…140 °F)	< 10 ns/°C (5.56 ns/°F) from 0…60 °C (32…140 °F)
Input On to Off minimum pulse width	60 µs	6 µs
Input Off to On minimum pulse width	60 µs	6 µs

Technical Specifications - 5069-IB16 and 5069-IB16F

Attribute	5069-IB16	5069-IB16F
Input filter time		
Off to On	Hardware delay: 50 µs + filter time User-selectable filter time: 0…50 ms	Hardware delay: 2 µs + filter time User-selectable filter time: 0…50 ms
On to Off	Hardware delay: 50 µs + filter time User-selectable filter time: 0…50 ms	Hardware delay: 3 µs + filter time User-selectable filter time: 0…50 ms
Reverse polarity protection	Yes	
Overvoltage protection, max	36V (fuse protected)	
Pulse and period measurements	Not supported	±2 µs
Counter frequency	0 - f_{max} = 500 Hz (inv period 2 ms)	0 - f_{max} = 30 kHz (inv period 33.3 µs)
Frequency counter	0 - f_{max} = 500 Hz (inv period 2 ms)	0 - f_{max} = 30 kHz (inv period 33.3 µs)
Timestamp of inputs	Not supported	±10 µs accuracy 1 ns resolution
Overrides	Not supported	
Pulse latching	Not supported	Supported
Events	Not supported	Four events supported (triggered by any input or simple counters)
Pattern matching	Not supported	Supported
Extended counters	Not supported	

General Specifications - 5069-IB16 and 5069-IB16F

Attribute	5069-IB16	5069-IB16F
Inputs	16 Channels (1 group of 16), sinking	
Voltage category	12/24V DC Sink	
Voltage and current ratings		
Input ratings	4…7.4 mA per channel @ 10…32V DC	
MOD Power	75 mA @ 18…32V DC	
MOD Power Passthrough, max[1]	9.55 A @ 18…32V DC	
SA Power	200 mA @ 10…32V DC	
SA Power Passthrough, max[2]	9.95 A @ 10…32V DC	
Power dissipation, max	3.9 W	
Thermal dissipation, max	13.3 BTU/hr	
Isolation voltage	250V (continuous), Basic Insulation Type No isolation between SA Power and input ports No isolation between individual input ports	
Module keying	Electronic keying via programming software	
Indicators	1 green/red module status indicator 16 yellow/red I/O status indicators	
Slot width	1	
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)	
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.	

General Specifications - 5069-IB16 and 5069-IB16F

Attribute	5069-IB16	5069-IB16F
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.	
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N·m (3.5 lb·in)	
RTB keying	None	
Wire category(3)	2 - input ports 2 - power ports 1 wire per terminal for each signal port	
Wire size		
5069-RTB18-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only.	
5069-RTB18-SCREW connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation, single wire connection only.	
Insulation stripping length	5069-RTB18-SPRING connections: 10 mm (0.39 in.) 5069-RTB18-SCREW connections: 12 mm (0.47 in.)	
Weight, approx	175 g (0.39 lb)	
Enclosure type	None (open-style)	
North American temp code	T4	
ATEX/IECEx temp code	T4	
IECEx temp code	T4	

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-IB16 and 5069-IB16F

Attribute	5069-IB16, 5069-IB16F
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g

Environmental Specifications - 5069-IB16 and 5069-IB16F

Attribute	5069-IB16, 5069-IB16F
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on input ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on input ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications - 5069-IB16 and 5069-IB16F

Certification[1]	5069-IB16, 5069-IB16F
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-IB6F-3W Digital 3-wire Sinking Input Module

This figure shows a wiring diagram for the 5069-IB6F-3W module.

5069-IB6F-3W Wiring Diagram

Channel Connections

The diagram shows devices that are connected to channels 0 and 2. You are not restricted to using only those channels.

You can connect devices to any channel or combination of channels as needed.

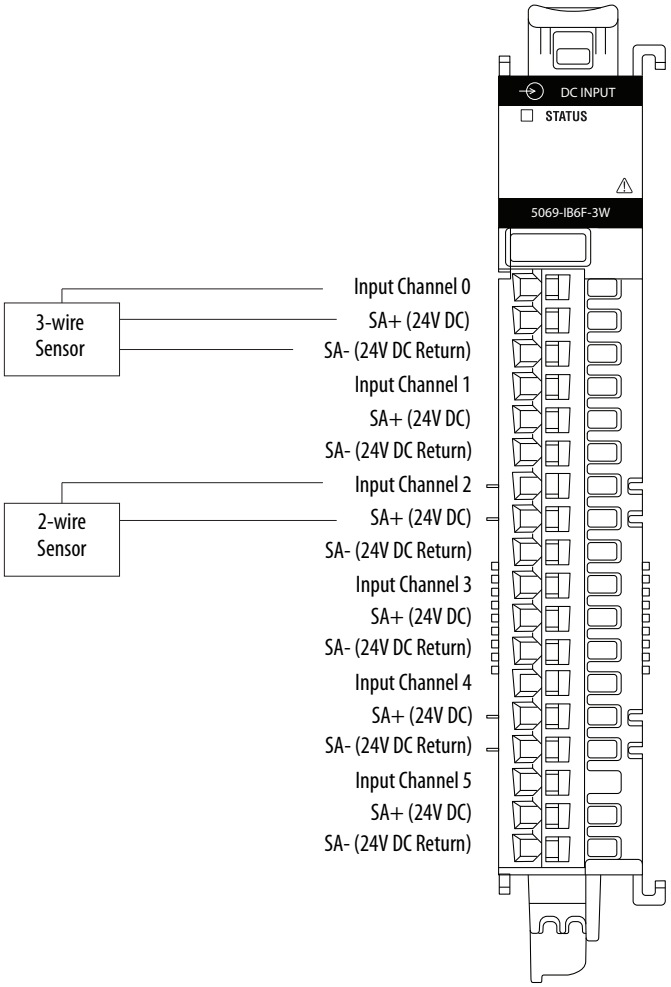
SA Power

Connections to an external power supply that provides SA power are made via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP Adapter
- 5069-FPD field potential distributor

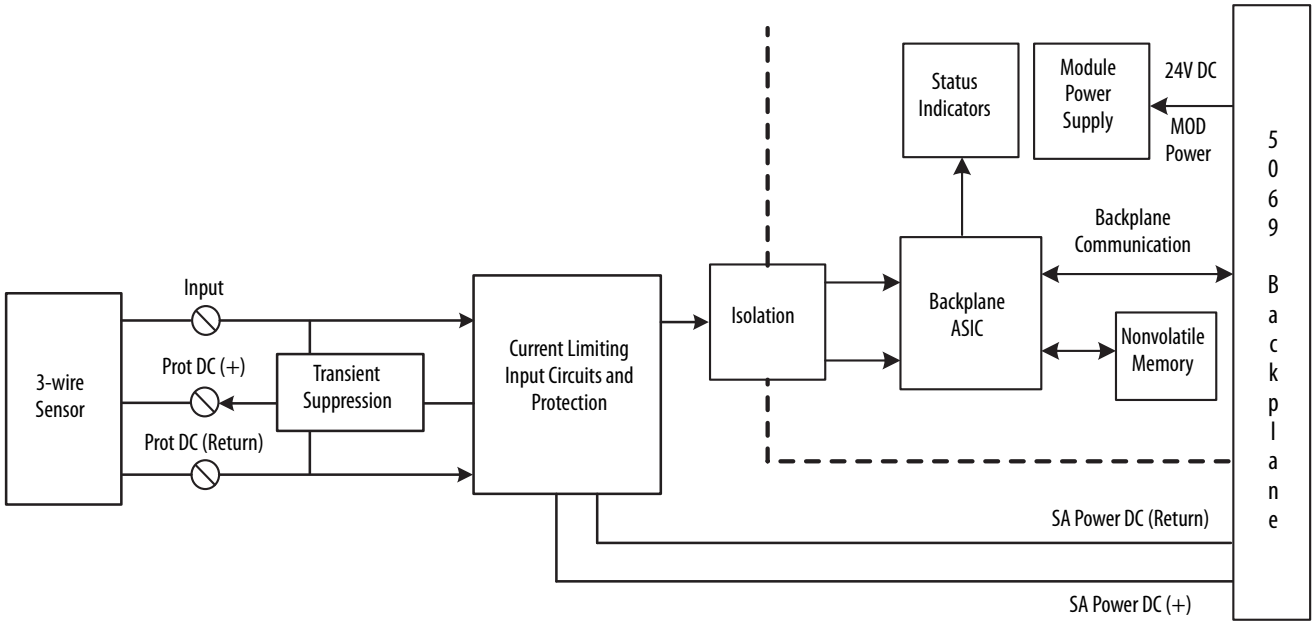
IMPORTANT: Remember the following:

- The 5069-IB6F-3W module uses DC SA power. You must connect DC power to the component, that is, controller, adapter, or field potential distributor, that provides SA Power to the module.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-IB6F-3W module.

5069-IB6F-3W Functional Block Diagram



Technical Specifications - 5069-IB6F-3W

Attribute	5069-IB6F-3W
On-state voltage, min	10V DC
On-state voltage, nom	24V DC
On-state voltage, max	32V DC
Off-state voltage, max	5V DC
On-state current, min	4 mA @ 10V DC
On-state current, nom	6 mA @ 24V DC
On-state current, max	7.4 mA @ 32V DC
Off-state current, max	1.5 mA
Input impedance, nom	4.1 kΩ
Input impedance, max	7.0 kΩ
Inrush current, max	< 250 mA peak (decaying to, 37% in 22 ms, without activation)
Input delay time (screw to backplane)	
Off to On	≤ 10 µs, ±1 µs @ 25 °C (77 °F)
On to Off	≤ 10 µs, ±1 µs @ 25 °C (77 °F)
Input drift over temperature span	±10 ns/°C (5.56 ns/°F) from 0…60 °C (32…140 °F)
Input On to Off minimum pulse width	6 µs
Input Off to On minimum pulse width	6 µs

Technical Specifications - 5069-IB6F-3W

Attribute	5069-IB6F-3W
Input filter time	
Off to On	Hardware delay: 2 µs + filter time User-selectable filter time: 0…50 ms
On to Off	Hardware delay: 3 µs + filter time User-selectable filter time: 0…50 ms
Reverse polarity protection	Yes
Overvoltage protection, max	36V (fuse protected)
Pulse width and period measurements	±2 µs
Simple counters Counter frequency	0 - f_{max} = 30 kHz (inv period 33.3 µs)
Frequency counter	0 - f_{max} = 30 kHz (inv period 33.3 µs)
Timestamp of inputs	±10 µs accuracy 1 ns resolution
Overrides	Not supported
Pulse latching	Supported
Events	4 events supported (triggered by any input or simple counters)
Pattern matching	Supported
Extended counters	Not supported

General Specifications - 5069-IB6F-3W

Attribute	5069-IB6F-3W
Inputs	6 Channels (1 group of 6), sinking
Voltage category	12/24V DC Sink
Voltage and current ratings	
Input ratings	4…7.4 mA per channel @ 10…32V DC
Output supply ratings	150 mA per channel @ 10…32V DC 900 mA per module @ 10…32V DC
MOD Power	75 mA @ 18V…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power	900 mA @ 10…32V DC
SA Power Passthrough, max(2)	9.95 A @ 10…32V DC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw.	
Power dissipation, max	2.4 W
Thermal dissipation, max	8.1 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type No isolation between SA Power and input ports No isolation between individual input ports
Module keying	Electronic, module keying, software configurable
Indicators	1 green/red module status indicator 6 yellow/red I/O status indicators
Slot width	1

General Specifications - 5069-IB6F-3W

Attribute	5069-IB6F-3W
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N•m (3.5 lb•in)
RTB keying	None
Wire category(3)	2 - input ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SPRING removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only.
5069-RTB18-SCREW removable terminal block	0.5…1.5 mm^2 (22…16 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.
Insulation stripping length	
5069-RTB18-SPRING removable terminal block	10 mm (0.39 in.)
5069-RTB18-SCREW removable terminal block	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type rating	None (Open - style)
North American temp code	T4
ATEX/IECEx temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-IB6F-3W

Attribute	5069-IB6F-3W
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max.	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharge 8 kV air discharge
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on input ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on input ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications - 5069-IB6F-3W

Certification[1]	5069-IB6F-3W
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-OA16 Digital 16-point 120/240V AC Output Module

This figure shows a wiring diagram for the 5069-OA16 module.

5069-OA16 Wiring Diagram

Channel Connections

The diagram shows devices that are connected to channels 0, 4, 8, and 12. You are not restricted to using only those channels.

You can connect devices to any channel or combination of channels as needed.

SA Power

Connections to an external power supply that provides SA Power via the SA Power RTB on one of the following:

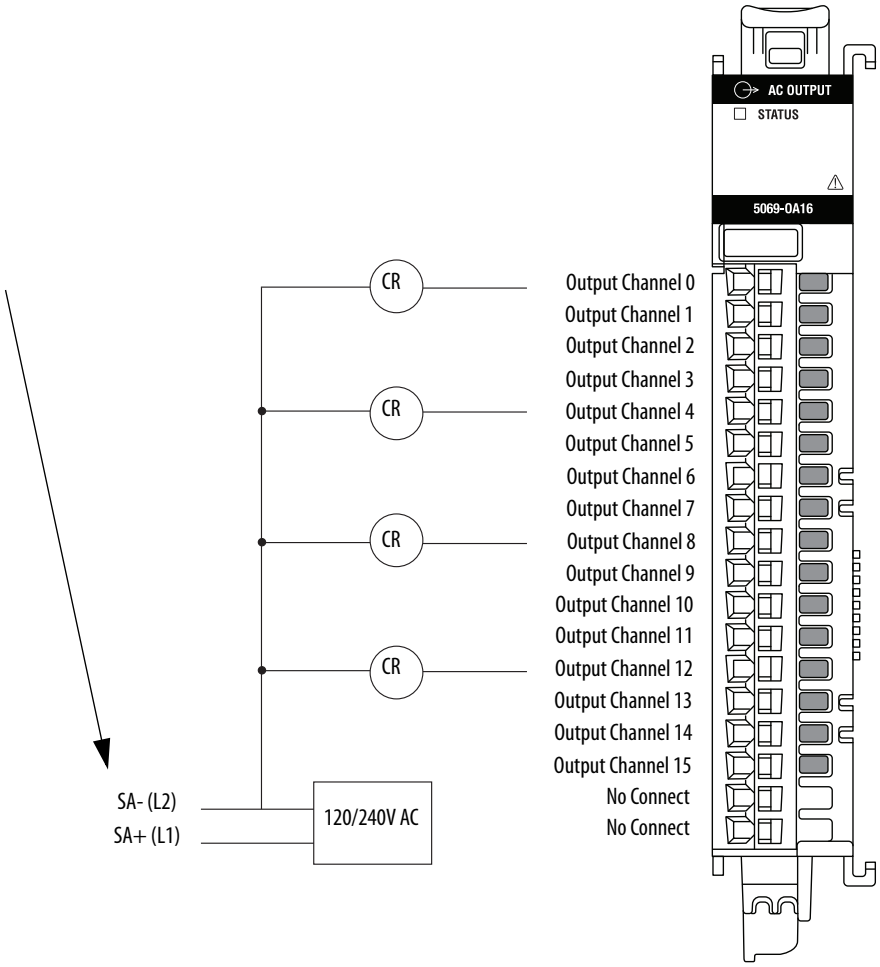
- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP adapter
- 5069-FPD field potential distributor

IMPORTANT: Remember the following:

- The 5069-OA16 module uses AC SA power. You must connect AC power to the component, that is, CompactLogix 5380 controller, adapter, or field potential distributor, that provides SA Power to the module.

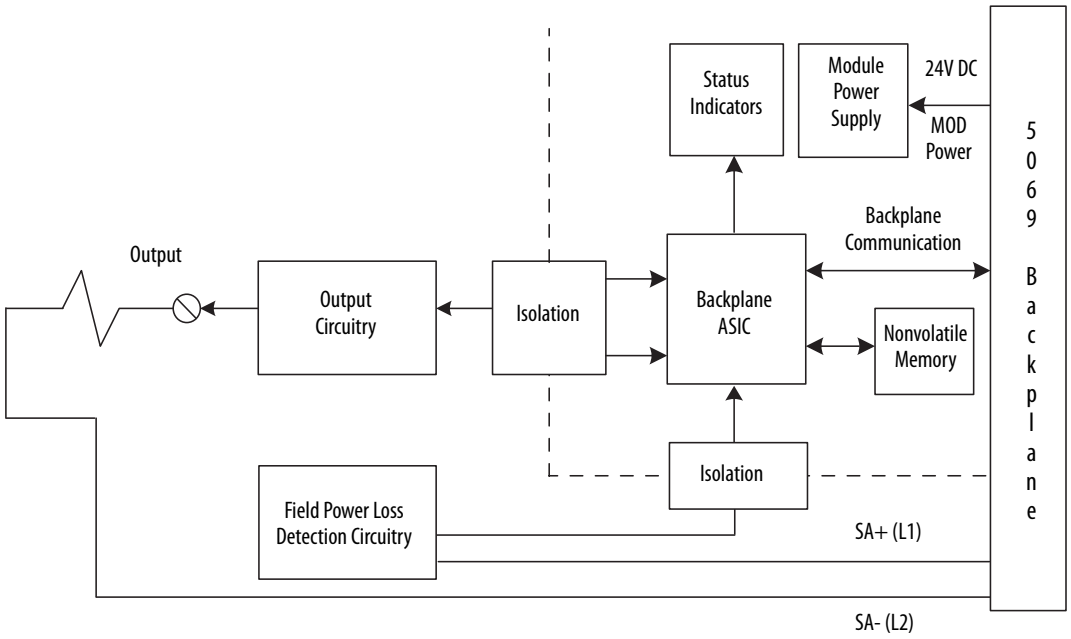
  If you install a **5069-OA16 module as a local I/O module in a Compact GuardLogix 5380 controller system**, you must install a field potential distributor that has AC power connected to it and install the 5069-OA16 module next to it.

  You cannot install modules that draw AC SA power next to a Compact GuardLogix 5380 controller. Compact GuardLogix 5380 controllers do not support AC power on their SA Power RTBs.
- The 5069-OA16 module outputs use a shared common. The outputs have a return through internal module circuitry to the SA (–) terminal on the SA Power RTB.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA Power buses.
- You use the 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-OA16 module.

5069-OA16 Functional Block Diagram



Technical Specifications - 5069-OA16

Attribute	5069-OA16
On-state voltage, min	85V AC
On-state voltage, nom	120/240V AC
On-state voltage, max	264V AC
On-state voltage drop, max	1.5V AC @ 0.5 A
Output current per channel, max	0.5 A
Output current per module, max	4 A
Off-state leakage current, max[1]	1 mA
Surge current per point	5 A max for 25 ms per point, repeatable every 2 s
Output delay time (backplane to screw)	
Off to On	1/2 cycle time (typ) @ 0...60 °C (32…140 °F)
On to Off	1/2 cycle time (typ) @ 0...60 °C (32…140 °F)
Field power loss detection	Yes
Open load detection diagnostics	Not supported
Output short circuit/overload/overtemp detection	Not supported
Output short circuit/overload protection	Not supported
Reverse polarity protection	Not supported
Overvoltage protections, max	Not supported
Scheduled outputs	Not supported
Pilot duty rating	Resistive/General Pilot Duty 0.5 A pilot duty
Output control in fault state per point	• Hold Last State • On • Off (default)

Technical Specifications - 5069-OA16

Attribute	5069-OA16
Output states in program mode per point	• Hold Last State • On • Off (default)
Output states in fault mode per point	• Hold Last State • On • Off (default)
Duration of fault mode per point	• 1 s • 2 s • 5 s • 10 s • Forever (default)

(1) Recommended Loading Resistor - To limit the effects of leakage current through solid-state outputs, you can connect a loading resistor in parallel with your load. For 120V AC operation, use a 15 KΩ, 2 W resistor. For 240V AC operation, use a 15 KΩ, 5 W resistor.

General Specifications - 5069-OA16

Attribute	5069-OA16
Number of outputs	16 (One group of 16)
Voltage category	120/240V AC
Voltage and current ratings	
Output voltage range	85…264V AC
Output voltage frequency	47…63 Hz
MOD Power	100 mA @ 18…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power	4 A @ 85…264V AC
SA Power Passthrough, max(2)	9.975 A @ 85…264V AC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw. The 5069-OA16 module complies to ATEX/IECEx when used at or below 125V AC.	
Power dissipation, max	3.4 W
Thermal dissipation, max	11.6 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type Type tested at 1800V AC for 60 s No isolation between individual channels
Module keying	Electronic keying via programming software
Indicators	1 green/red module status indicator 16 yellow/red I/O status indicators
Slot width	1
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.

General Specifications - 5069-OA16

Attribute	5069-OA16
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N·m (3.5 lb·in)
RTB keying	None
Wire category	2 - output ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SCREW connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation, single wire connection only.
5069-RTB18-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only.
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type rating	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

Environmental Specifications - 5069-OA16

Attribute	5069-OA16
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4

Environmental Specifications - 5069-OA16

Attribute	5069-OA16
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±4 kV @ 5 kHz on signal ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Corrosion resistance classification	ISA S71.04 G2

Certifications - 5069-OA16

Certification(1)	5069-OA16
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: • EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X When used at or below 125V DC or 30V DC
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-OB8 Digital 8-point 24V DC Output Module

This figure shows a wiring diagram for the 5069-OB8 module.

5069-OB8 Wiring Diagram

Channel Connections

The diagram shows devices that are connected to channels 0 and 3. You are not restricted to using only those channels.

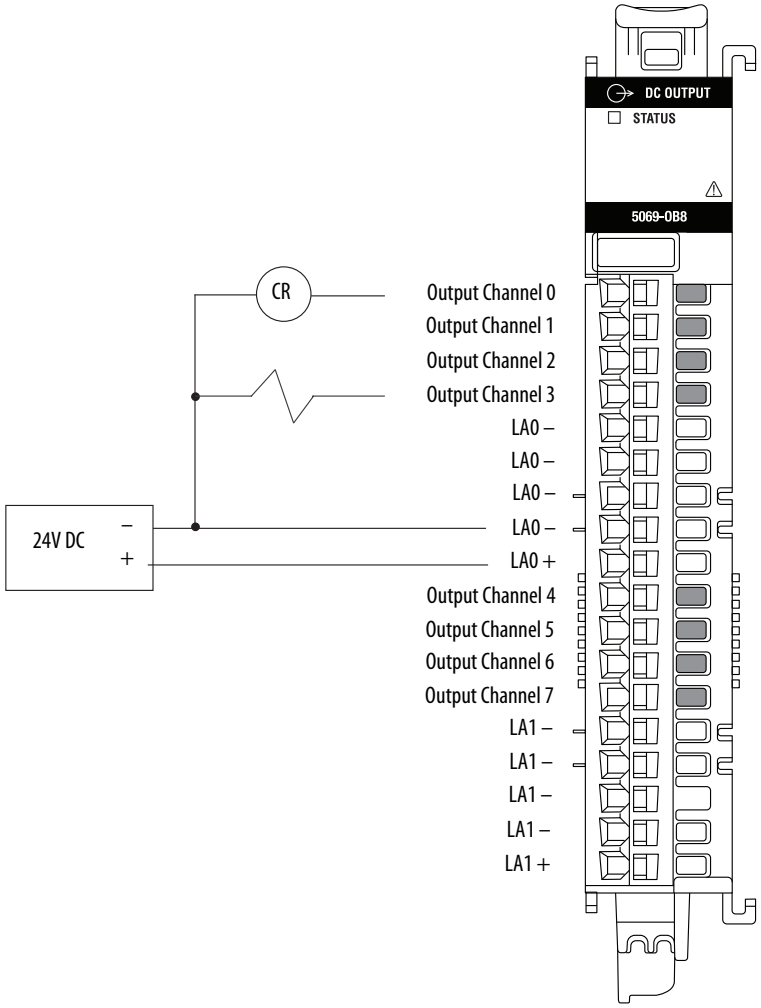
You can connect devices to any channel or combination of channels as needed.

LA Power

The Local Actuator (LA+ and LA –) connections are used to supply field-side power to the module.

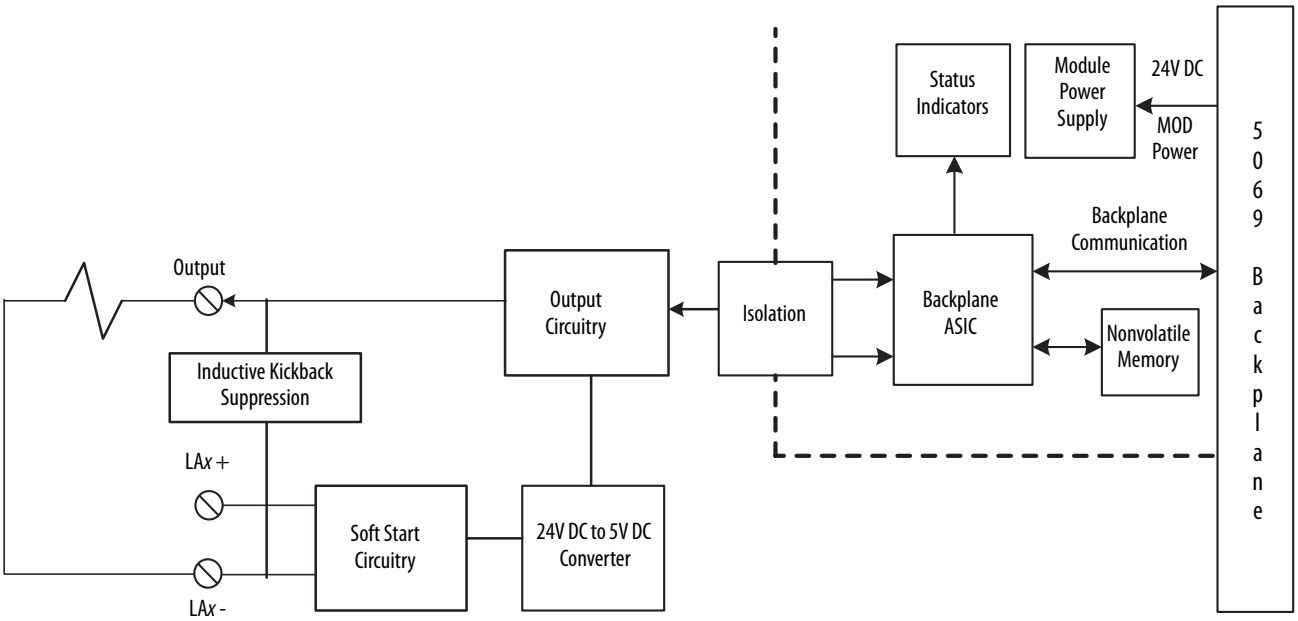
Output channels 0…3 use LA0 +/–, and output channels 4…7 use LA1 +/–.

- The 5069-OB8 module **does not draw current from the SA Power bus**. The module is a DC type module. Therefore, you must install it on an SA Power bus that uses DC power.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA Power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-OB8 module.

5069-OB8 Functional Block Diagram



Technical Specifications - 5069-OB8

Attribute	5069-OB8
On-state voltage, min(1)	10V DC
On-state voltage, nom(1)	24V DC
On-state voltage, max(1)	32V DC
On-state voltage drop, max(1)	0.25V DC
Off-state voltage, max(1)	< 10V DC
Off-state voltage, max(1)	5V DC
On-state current per channel, min(1)	1 mA
Off-state leakage current per point, max(2)	0.5 mA
Output current per channel, max	2 A
Output current per group, max	8 A
Output current per module, max	16 A
Surge current per point	4 A max for 10 ms per point, repeatable every 2 s
Output delay time (backplane to screw)	
Off to On	≤ 100 µs @ 25 °C (77 °F) @ 2 A
On to Off	≤ 100 µs @ 25 °C (77 °F) @ 2 A
Pulse width, min	≤ 200 µs T_{on} min + T_{off} min @ 2 A @ 25 °C (77 °F)
Output drift over temperature span	±100 ns/°C (55.6 n/°F) from 0…60 °C (32…140 °F) @ 2 A
Field power loss detection	Yes
Open load detection diagnostics	Yes (per channel diagnostics)
Output short circuit/overload/overtemp detection	Yes (per channel diagnostics)
Output short circuit/overload protection	Yes
Reverse voltage protection	Yes
Overvoltage protection, max	36V (fuse protected)

Technical Specifications - 5069-OB8

Attribute	5069-OB8
Pilot duty rating	Resistive/General Pilot Duty 2 A pilot duty
Output control in fault state per point	• Hold Last State • On • Off (default)
Output states in program mode per point	• Hold Last State • On • Off (default)
Output states in fault mode per point	• Hold Last State • On • Off (default)
Duration of fault mode per point	• 1 s • 2 s • 5 s • 10 s • Forever (default)

(1) Local Actuator (LA) Field Power related attributes.

(2) Recommended Loading Resistor - To limit the effects of leakage current through solid-state outputs, you can connect a loading resistor in parallel with your load. For 24V DC operation, use a 5.6 KΩ, 0.5 W resistor for transistor outputs.

General Specifications - 5069-OB8

Attribute	5069-OB8
Number of outputs	8 (Two groups of 4)
Voltage category	24V DC
Voltage and current ratings	
Output voltage range	10…32V DC
MOD Power	75 mA @ 18…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
LA Power	2 A per channel @ 10…32V DC 8 A per group @ 10…32V DC 16 A per module @ 10…32V DC
SA Power Passthrough, max(2)	9.95 A @ 10…32V DC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw.	
Power dissipation, max	3.2 W
Thermal dissipation, max	10.9 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type Type tested at 1800V AC for 60 s No isolation between LA power and output ports No isolation between individual output ports
Module keying	Electronic keying via programming software
Indicators	1 green/red module status indicator 8 yellow/red I/O status indicators
Slot width	1
Dimensions (HxWxD)	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.

General Specifications - 5069-OB8

Attribute	5069-OB8
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N·m (3.5 lb·in)
RTB keying	None
Wire category	2 - output ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only.
5069-RTB18-SCREW connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation, single wire connection only.
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N·m (3.5 lb·in)
Weight, approx	175 g (0.39 lb)
Enclosure type rating	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

Environmental Specifications - 5069-OB8

Attribute	5069-OB8
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz

Environmental Specifications - 5069-OB8

Attribute	5069-OB8
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±4 kV @ 5 kHz on signal ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Corrosion resistance classification	ISA S71.04 G2

Certifications - 5069-OB8

Certification[1]	5069-OB8
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-OB16 and 5069-OB16F Digital 16-point Sourcing Output Modules

This figure shows a wiring diagram for the 5069-OB16 and 5069-OB16F modules.

5069-OB16 and 5069-OB16F Wiring Diagram

Channel Connections

The diagram shows devices that are connected to channels 0, 2, 4, and 6. You are not restricted to using only those channels.

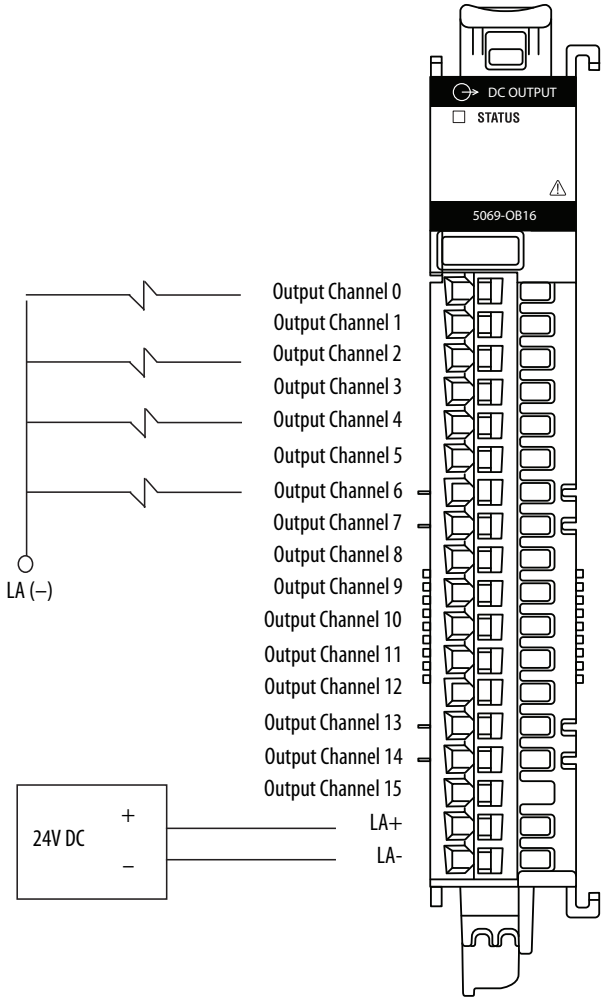
You can connect devices to any channel or combination of channels as needed.

LA Power

The Local Actuator (LA+ and LA –) connections are used to supply field-side power to the module.

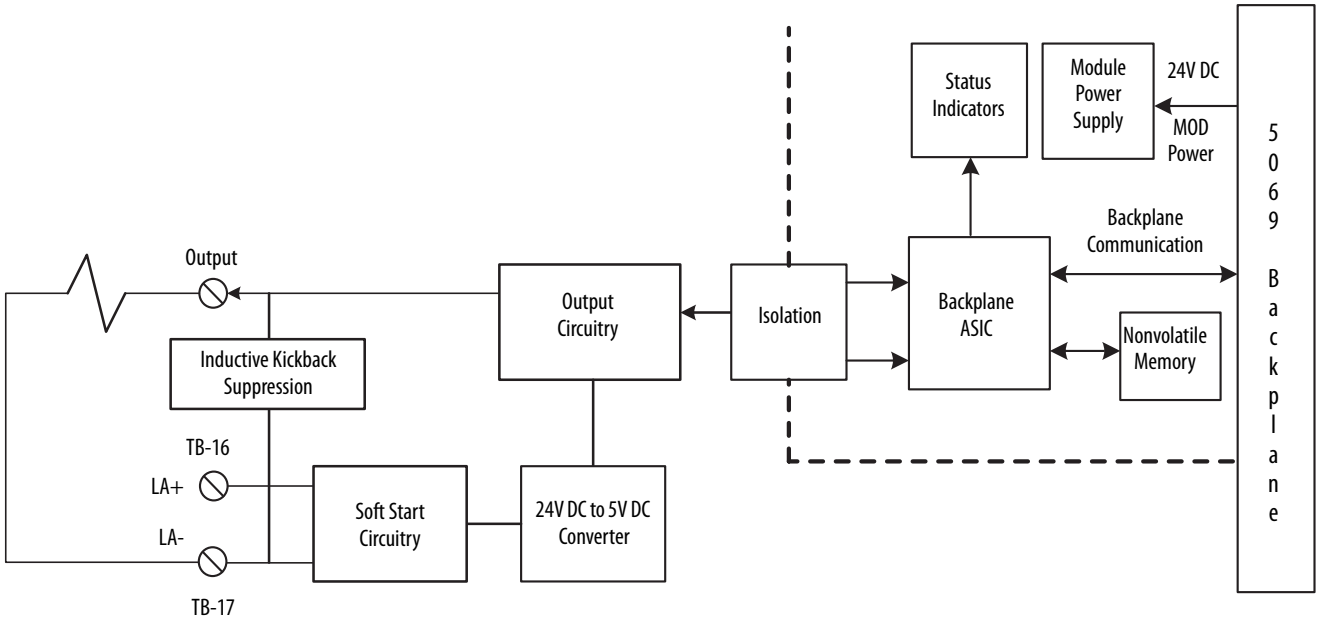
Output channels 0…3 use LA0 +/–, and output channels 4…7 use LA1 +/–.

- The 5069-OB16 and 5069-OB16F modules **do not draw current from the SA Power bus**. The modules are DC type modules. Therefore, you must install them on an SA Power bus that uses DC power.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA Power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-OB16 and 5069-OB16F modules.

5069-OB16 and 5069-OB16F Functional Block Diagram



Technical Specifications - 5069-OB16 and 5069-OB16F

Attribute	5069-OB16	5069-OB16F
On-state voltage, min(1)	10V DC	
On-state voltage, nom(1)	24V DC	
On-state voltage, max(1)	32V DC	
On-state voltage drop, max(1)	< 0.2V DC	
On-state current per channel, min(1)	1 mA	
Off-state voltage, max(1)	5V DC with 1 mA min load	
Off-state leakage current per point, max(2)	< 0.5 mA per point	
Output current rating	0.5 A resistive per channel @ 10…32V DC 8 A resistive per module @ 10…32V DC, max	
Surge current per point	1 A max for 10 ms per point, repeatable every 2 s	
Output delay time (backplane to screw)		
Off to On	≤ 100 µs, ±10 µs @ 25 °C (77 °F) @ 0.5 A	10 µs, ±1 µs @ 25 °C (77 °F) @ 0.5 A
On to Off	≤100 µs, ±10 µs @ 25 °C (77 °F) @ 0.5 A	10 µs, ±1 µs @ 25 °C (77 °F) @ 0.5 A
Pulse width, min	200 µs @ 0.5 A @ 25 °C (77 °F)	20 µs @ 0.5 A @ 25 °C (77 °F)
Output drift over temperature span	±100 ns/°C (55.6 ns/°F) from 0…60 °C (32…140 °F) @ 0.5 A	±10 ns/°C (5.56 ns/°F) from 0…60 °C (32…140 °F) @ 0.5 A
Open load detection diagnostics	Yes (per channel diagnostics)	
Output short circuit/overload/overtemp detection	Yes (per channel diagnostics)	
Output short circuit/overload protection	Yes	
Reverse voltage protection	Yes	
Overvoltage protection, max	36V (fuse protected)	
Pilot duty rating	0.5 A pilot duty rating per channel @ 10…32V DC	

Technical Specifications - 5069-OB16 and 5069-OB16F

Attribute	5069-OB16	5069-OB16F
Output control in fault state per point	• Hold Last State • On • Off (default)	
Output states in program mode per point	• Hold Last State • On • Off (default)	
Output states in fault mode per point	• Hold Last State • On • Off (default)	
Duration of fault mode per point	• 1 s • 2 s • 5 s • 10 s • Forever (default)	
Scheduled outputs	Not supported	±10 µs accuracy 1 ns resolution

(1) Local Actuator (LA) Field Power related attributes.

(2) Recommended Loading Resistor - To limit the effects of leakage current through solid-state outputs, you can connect a loading resistor in parallel with your load. For 24V DC operation, use a 5.6 KΩ, 0.5 W resistor for transistor operation.

General Specifications - 5069-OB16 and 5069-OB16F

Attribute	5069-OB16	5069-OB16F
Outputs	16 Channels (1 group of 16), sourcing	
Voltage category	12/24V DC source	
Voltage and current ratings		
MOD Power	75 mA @ 18…32V DC	
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC	
LA Power	0.5 A per channel @ 10…32V DC 8 A per module @ 10…32V DC	
SA Power Passthrough, max(2)	9.95 A @ 10…32V DC	
Do not exceed 10 A MOD or SA Power (Passthrough) current draw		
Power dissipation, max	3.25 W (16 channels @ 0.5 A)	
Thermal dissipation, max	11.09 BTU/hr	
Isolation voltage	250V (continuous), Basic Insulation Type No isolation between LA power and output ports No isolation between individual output ports	
Module keying	Electronic, module keying, software configurable	
Indicators	1 green/red module status indicator 16 yellow/red I/O status indicators	
Slot width	1	
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)	
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.	
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.	

General Specifications - 5069-OB16 and 5069-OB16F

Attribute	5069-OB16	5069-OB16F
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N•m (3.5 lb•in)	
RTB keying	None	
Wire category[3]	2 - output ports 2 - power ports 1 wire per terminal for each signal port	
Wire size		
5069-RTB18-SPRING removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation	
5069-RTB18-SCREW removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation	
Insulation stripping length		
5069-RTB18-SPRING connections	10 mm (0.39 in.)	
5069-RTB18-SCREW connections	12 mm (0.47 in.)	
Weight, approx	175 g (0.39 lb)	
Enclosure type	None (open - style)	
North American temp code	T4	
ATEX temp code	T4	
IECEx temp code	T4	

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-OB16 and 5069-OB16F

Attribute	5069-OB16, 5069-OB16F
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max.	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g

Environmental Specifications - 5069-OB16 and 5069-OB16F

Attribute	5069-OB16, 5069-OB16F
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on output ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on output ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD power port

Certifications - 5069-OB16 and 5069-OB16F

Certification[1]	5069-OB16, 5069-OB16F
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-OW4I Digital 4-point Isolated Relay Output Module

This figure shows a wiring diagram for the 5069-OW4I module.

5069-OW4I Wiring Diagram

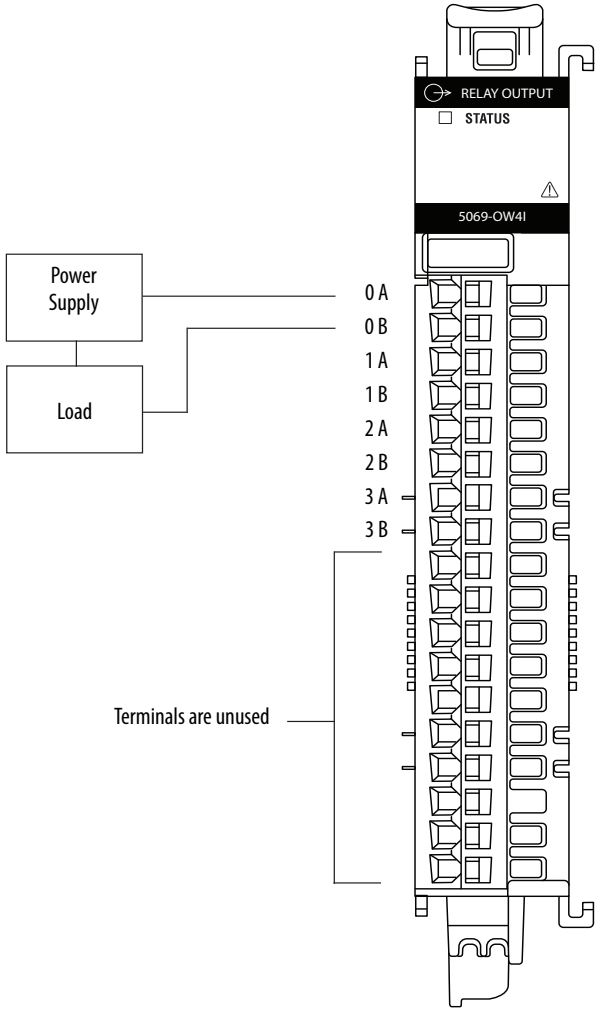
Channel Connections

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

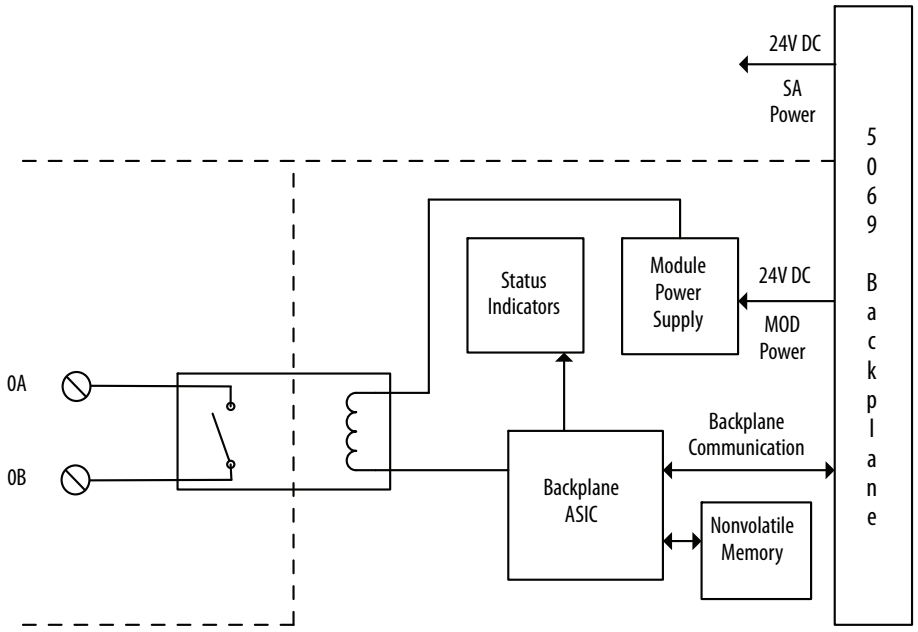
SA Power

- The 5069-OW4I module **does not draw current from the SA power bus**. The module is a DC type modules. Therefore, you must install it on an SA Power bus that uses DC power.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA Power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-OW4I module.

5069-OW4I Functional Block Diagram



Technical Specifications - 5069-OW4I

Attribute	5069-OW4I
Relay rating[1]	2 A resistive per channel @ 5…30V DC 2 A resistive per channel @ 5…264V AC, 50/60 Hz 2 A general use per channel @ 5…250V AC, 50/60 Hz 2 A @ 5…125V AC, ATEX/IECEx 8 A per module, max
Off-state leakage	0 mA (dry contact, no onboard snubbers)
Output current rating, max	2 A per channel 8 A per module
Output delay time, max	
Off to On	10 ms
On to Off	10 ms
Switching frequency	1 operation every 3 seconds (0.3 Hz at rated load)
Initial contact resistance, max	30 mΩ
Bounce time, mean	500 µs
Output control in fault state per point	• Hold last state • On • Off (default)
Output states in program mode per point	• Hold last state • On • Off (default)
Output states in fault mode per point	• Hold Last State • On • Off (default)

Technical Specifications - 5069-OW4I

Attribute	5069-OW4I
Duration of fault mode per point	• 1 s • 2 s • 5 s • 10 s • Forever (default)
Delay to fault	Supported
Fusing	Outputs are not fused.
Minimum load current	1 mA
Expected contact life	300K cycles resistive, 100K cycles inductive
Pilot duty rating	5…240V AC, 50/60 Hz, C300 pilot duty per channel 5…125V DC, R150 pilot duty per channel

(1) **Surge Suppression** - Connecting surge suppressors across your external inductive load extends the life of the module. For additional details, see the Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley® publication 1770-4.1.

Relay Contact Ratings - 5069-OW4I

Volts, max	Continuous Amps per Point, max	Amperes		Voltamperes		NEMA ICS 2-125
		Make	Break	Make	Break	
240V AC	2 A	7.5 A	0.75 A	1800VA	180VA	C300
125V DC	0.27 A(1)	0.22 A(2)		28VA		R150
24V DC	2.0 A	1.16 A(2)		28VA		-

(1) Calculated based on the Rockwell Automation® component derating guideline: 90% of rated contact current, that is, 0.3 A at 125V DC.

(2) For DC voltage applications, the make/break ampere rating for relay contacts is determined by dividing 28VA by the applied DC voltage. For example, 28VA/48V DC = 0.58 A.

General Specifications - 5069-OW4I

Attribute	5069-OW4I
Outputs	4 - Form A (normally open)
Voltage and current ratings	
Output voltage range	5…125V DC 5…264V AC
MOD Power	75 mA @ 18…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power Passthrough, max(2)	9.95 A @ 0…32V DC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw	
Power dissipation, max	2.3 W
Thermal dissipation, max	7.85 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type
Module keying	Electronic keying via programming software
Slot width	1
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.

General Specifications - 5069-OW4I

Attribute	5069-OW4I
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N•m (3.5 lb•in)
RTB keying	None
Indicators	1 green/red module status indicator 4 yellow/red I/O status indicators
Wire category[3]	1 - relay ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SPRING removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation Use minimum 18 AWG, 105 °C (221 °F) rated wire for load connections to relay output modules.
5069-RTB18-SCREW removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation Use minimum 18 AWG, 105 °C (221 °F) rated wire for load connections to relay output modules.
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-OW4I

Attribute	5069-OW4I
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±4 kV @ 5 kHz on relay ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on relay ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications - 5069-0W4I

Certification[1]	5069-0W4I
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA nC IIC T4 Gc • DEMKO 15 ATEX 1484X When used at or below 125V DC or 30V DC
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA nC IIC T4 Gc • IECEx UL 15.0055X When used at or below 125V DC or 30V DC
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-OW16 Digital 16-point Relay Output Module

This figure shows a wiring diagram for the 5069-OW16 module.

5069-OW16 Wiring Diagram

Channel Connections

The example shows devices connected to channels 0, 2, 4, and 6. You are not restricted to using only those channels.

You can connect devices to any channel or combination of channels as needed.

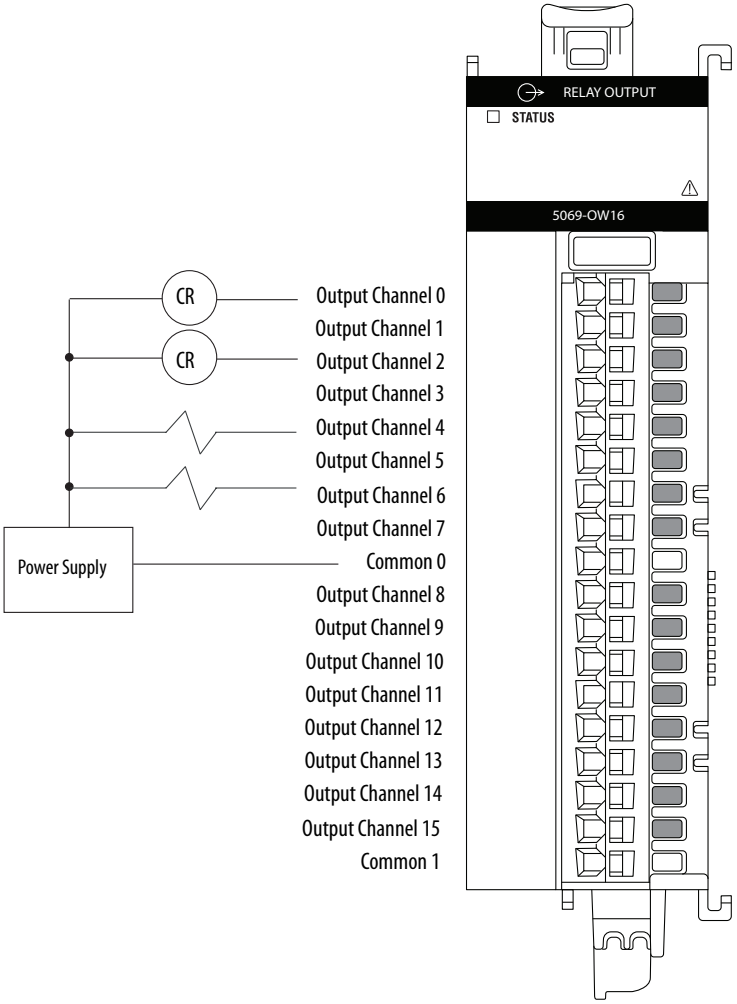
SA Power

Connections to an external power supply that provides SA power are made via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP Adapter
- 5069-FPD field potential distributor

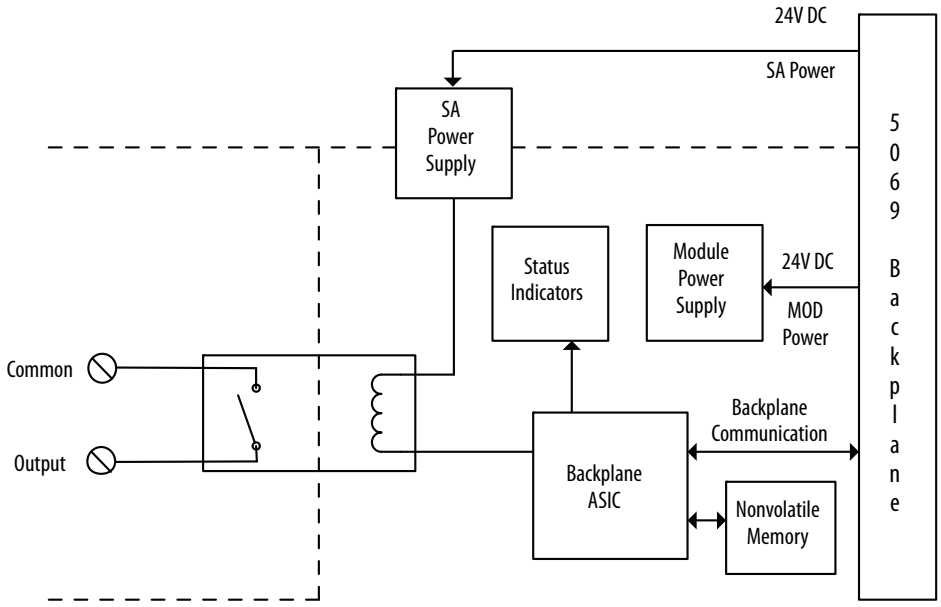
IMPORTANT: Remember the following:

- The 5069-OW16 module uses DC SA power. You must connect DC power to the component, that is, controller, adapter, or field potential distributor, that provides SA Power to the module.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-OW16 module.

5069-0W16 Functional Block Diagram



Technical Specifications - 5069-0W16

Attribute	5069-0W16
Relay ratings	2 A resistive per channel @ 5…30V DC 2 A resistive per channel @ 5…264V AC, 50/60 Hz 2 A general use per channel @ 5…250V AC, 50/60 Hz 2 A @ 5…125V AC, ATEX/IECEx
Off-state leakage current per point, max	0 mA (dry contact, no onboard snubbers)
Output current per group, max	8 A
Output current per module, max	16 A
Output delay time, max	
Off to On	10 ms
On to Off	10 ms
Switching frequency	1 operation every 3 seconds (0.3 Hz at rated load)
Initial contact resistance, max	30 mΩ
Bounce time, mean	500 µs
Delay to fault	Supported
Fusing	Outputs are not fused
Minimum load current	1 mA
Expected contact life	300K cycles resistive, 100K cycles inductive
Pilot duty rating	5…240V AC, 50/60 Hz, C300 pilot duty per channel 5…125V DC, R150 pilot duty per channel
Output control in fault state per point	• Hold Last State • On • Off (default)
Output states in program mode per point	• Hold Last State • On • Off (default)

Technical Specifications - 5069-OW16

Attribute	5069-OW16
Output states in fault mode per point	• Hold Last State • On • Off (default)
Duration of fault mode per point	• 1 • 2 • 5 • 10 s • Forever (default)

Relay Contact Ratings - 5069-OW16

Volts, max	Continuous Amps per Point, max	Amperes		Voltamperes		NEMA ICS 2-125
		Make	Break	Make	Break	
240V AC	2 A	7.5 A	0.75 A	1800VA	180VA	C300
125V DC	0.27 A[1]	0.22 A[2]		28VA		R150
24V DC	2.0 A	1.16 A[2]		28VA		-

(1) Calculated based on the Rockwell Automation component derating guideline: 90% of rated contact current, that is, 0.3 A at 125V DC.

(2) For DC voltage applications, the make/break ampere rating for relay contacts is determined by dividing 28VA by the applied DC voltage. For example, 28VA/48V DC = 0.58 A.

General Specifications - 5069-OW16

Attribute	5069-OW16
Outputs	16 (Two groups of 8) - Form A (normally open)
Voltage and current ratings	
Output voltage range	5…125V DC 5…264V AC
MOD Power	75 mA @ 18…32V DC
MOD Power Passthrough, max[1]	9.55 A @ 18…32V DC
SA Power	150 mA @ 18…32V DC
SA Power Passthrough, max[2]	9.95 A @ 18…32V DC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw. The 5069-OW16 module complies with ATEX/IECEx when used at or below 125V AC or 30V DC.	
Power dissipation, max	3.0 W
Thermal dissipation, max	10.2 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type Type tested at 1800V AC for 60 s No isolation between individual channels
Module keying	Electronic keying via programming software
Indicators	1 green/red module status indicator 16 yellow/red I/O status indicators
Slot width	1.5
Dimensions (HxWxD), approx	144.57 x 36 x 105.42 mm (5.69 x 1.42 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.

General Specifications - 5069-OW16

Attribute	5069-OW16
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N·m (3.5 lb·in)
RTB keying	None
Wire category	1 - relay ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only. Use minimum 18 AWG, 105 °C (221 °F) rated wire for load connections to relay output modules.
5069-RTB18-SCREW connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation, single wire connection only. Use minimum 18 AWG, 105 °C (221 °F) rated wire for load connections to relay output modules.
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Weight, approx	240 g (0.53 lb.)
Enclosure type rating	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

Environmental Specifications - 5069-OW16

Attribute	5069-OW16
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz

Environmental Specifications - 5069-0W16

Attribute	5069-0W16
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on relay ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on relay ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Corrosion resistance classification	ISA S71.04 G2

Certifications - 5069-0W16

Certification[1]	5069-0W16
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: • EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA nC IIC T4 Gc • DEMKO 15 ATEX 1484X When used at or below 125V DC or 30V DC
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA nC IIC T4 Gc • IECEx UL 15.0055X When used at or below 125V DC or 30V DC
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-OX4I Digital 4-point Isolated Normally-open/Normally-closed Output Module

This figure shows a wiring diagram for the 5069-OX4I module.

5069-OX4I Wiring Diagram

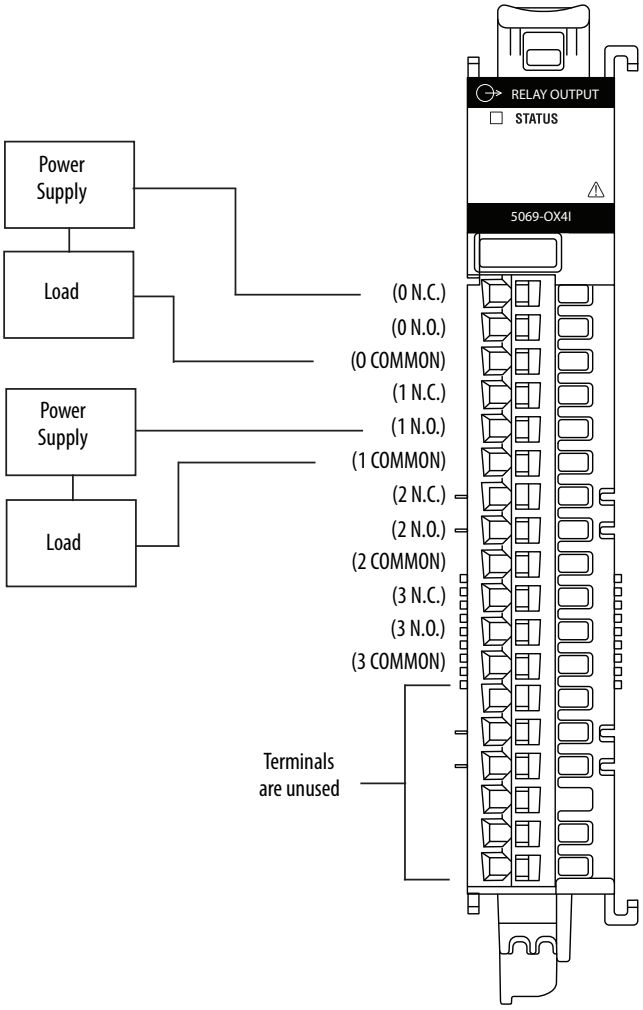
Channel Connections

The diagram shows devices connected to channels 0 and 1. You are not restricted to using only those channels.

You can connect devices to any channel or combination of channels as needed.

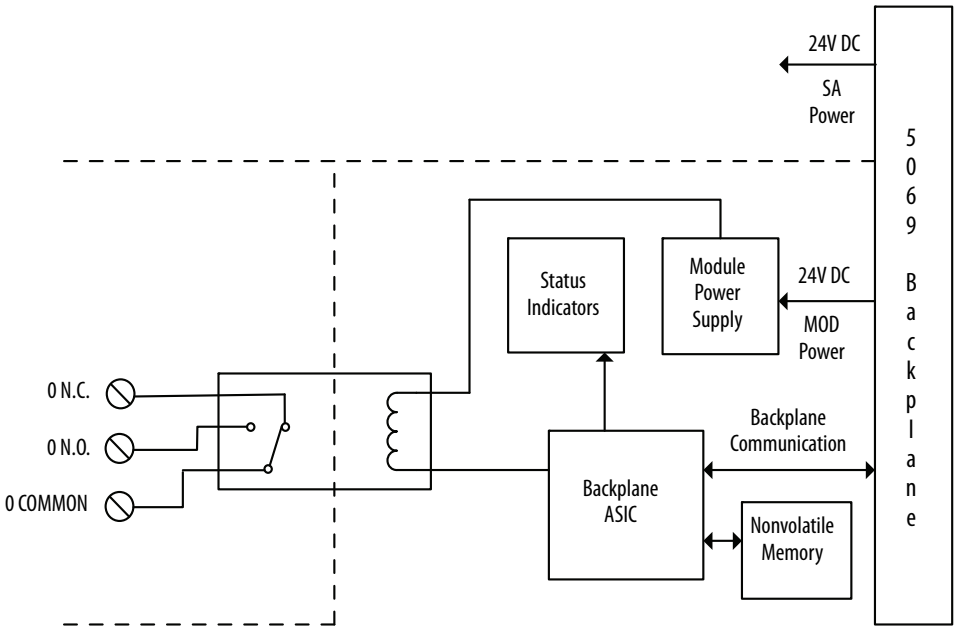
SA Power

- The 5069-OX4I module **does not draw current from the SA power bus**. The module is a DC type modules. Therefore, you must install it on an SA Power bus that uses DC power.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA Power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a functional block diagram for the 5069-OX4I module.

5069-OX4I Functional Block Diagram



Technical Specifications - 5069-OX4I

Attribute	5069-OX4I
Contact current rating[1]	2 A resistive per channel @ 5…30V DC 2 A resistive per channel @ 5…264V AC, 50/60 Hz 2 A general use per channel @ 5…250V AC, 50/60 Hz 2 A @ 5…125V AC, ATEX/IECEx 8 A per module, max
Off-state leakage	0 mA (dry contact, no onboard snubbers)
Output current rating	2 A per channel 8 A per module, max
Output delay time, max Off to On On to Off	 15 ms 15 ms
Switching frequency	1 operation every 3 seconds (.3 Hz at rated load)
Initial contact resistance, max	30 mΩ
Bounce time, mean	500 µs
Output control in fault state per point	• Hold last state • On • Off (default)
Output states in program mode per point	• Hold last state • On • Off (default)
Output states in fault mode per point	• Hold Last State • On • Off (default)
Duration of fault mode per point	• 1 s • 2 s • 5 s • 10 s • Forever (default)

Technical Specifications - 5069-0X4I

Attribute	5069-0X4I
Delay to fault	Supported
Fusing	Outputs are not fused.
Minimum load current	10 mA
Expected contact life	300K cycles resistive, 100K cycles inductive
Pilot duty rating	5…240V AC, 50/60 Hz, C300 pilot duty per channel 5…125V DC, R150 pilot duty per channel

(1) **Surge Suppression** - Connecting surge suppressors across your external inductive load extends the life of the module. For additional details, see the Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.

Relay Contact Ratings - 5069-0X4I

Volts, max	Continuous Amps per Point, max	Amperes		Voltamperes		NEMA ICS 2-125
		Make	Break	Make	Break	
240V AC	2 A	7.5 A	0.75 A	1800VA	180VA	C300
125V DC	0.225 A(1)	0.22 A(2)		28VA		R150
24V DC	2.0 A	1.16 A(2)		28VA		-

(1) Calculated based on the Rockwell Automation component derating guideline: 90% of rated contact current, that is, 0.25 A at 125V DC.

(2) For DC voltage applications, the make/break ampere rating for relay contacts is determined by dividing 28VA by the applied DC voltage. For example, 28VA/48V DC = 0.58 A.

General Specifications - 5069-0X4I

Attribute	5069-0X4I
Outputs	4 - Form C (SPDT)
Voltage and current ratings	
Output voltage range	5…125V DC 5…264V AC
MOD Power	75 mA @ 18…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power Passthrough, max(2)	9.95 A @ 0…32V DC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw	
Power dissipation, max	2.6 W
Thermal dissipation, max	8.88 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type
Module keying	Electronic keying via programming software
Slot width	1
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N•m (3.5 lb•in)

General Specifications - 5069-OX4I

Attribute	5069-OX4I
RTB keying	None
Indicators	1 green/red module status indicator 4 yellow/red I/O status indicators
Wire category[3]	1 - relay ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SPRING removable terminal block	0.5…1.5 mm² (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation Use minimum 18 AWG, 105 °C (221 °F) rated wire for load connections to relay output modules.
5069-RTB18-SCREW removable terminal block	0.5…1.5 mm² (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation Use minimum 18 AWG, 105 °C (221 °F) rated wire for load connections to relay output modules.
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-OX4I

Attribute	5069-OX4I
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat):	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g

Environmental Specifications - 5069-OX4I

Attribute	5069-OX4I
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±4 kV @ 5 kHz on relay ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±1 kV line-line (DM) and ±2 kV line-earth (CM) on relay ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications - 5069-OX4I

Certification[1]	5069-OX4I
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA nC IIC T4 Gc • DEMKO 15 ATEX 1484X When used at or below 125V DC or 30V DC
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA nC IIC T4 Gc • IECEx UL 15.0055X When used at or below 125V DC or 30V DC
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

Analog I/O Modules

I/O Type	Cat. No.	Page
Analog input	5069-IY4 5069-IF8	51 63
Analog output	5069-OF4 5069-OF8	69

5069-IY4 Analog Input Module

This figure shows a wiring diagram for the 5069-IY4 module when used in current mode.

5069-IY4 Wiring Diagram - Current Mode

Channel Connections

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

Place additional loop devices, for example, strip chart recorders, at either **A** location in the current loop.

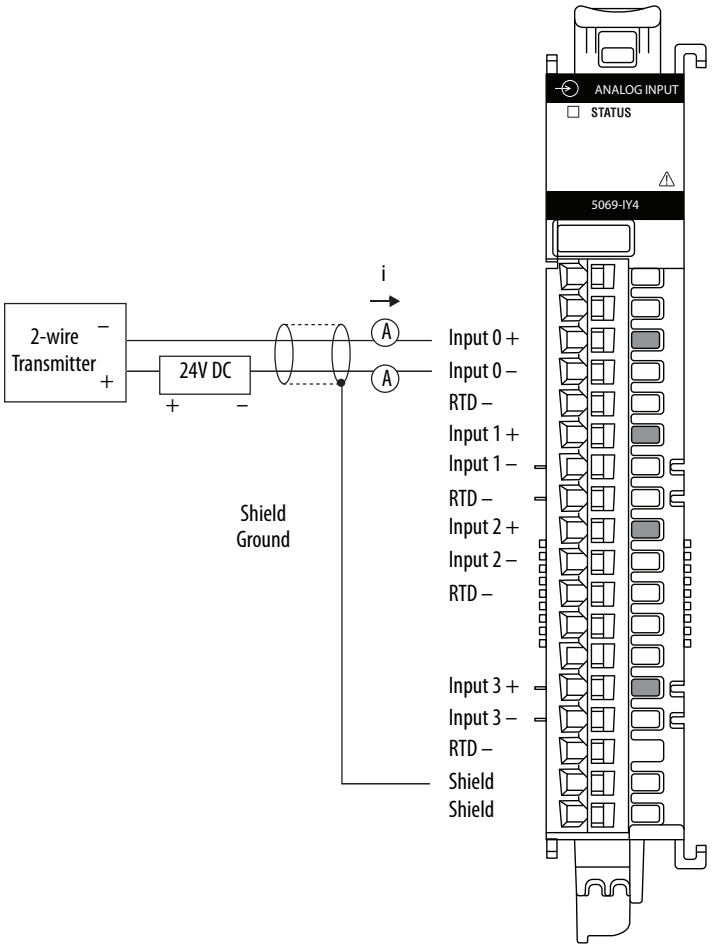
SA Power

Connections to an external power supply that provides SA power are made via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP Adapter
- 5069-FPD field potential distributor

IMPORTANT: Remember the following:

- The 5069-IY4 module uses DC SA power. You must connect DC power to the component, that is, controller, adapter, or field potential distributor, that provides SA Power to the modules.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a wiring diagram for the 5069-IY4 module when used in voltage mode.

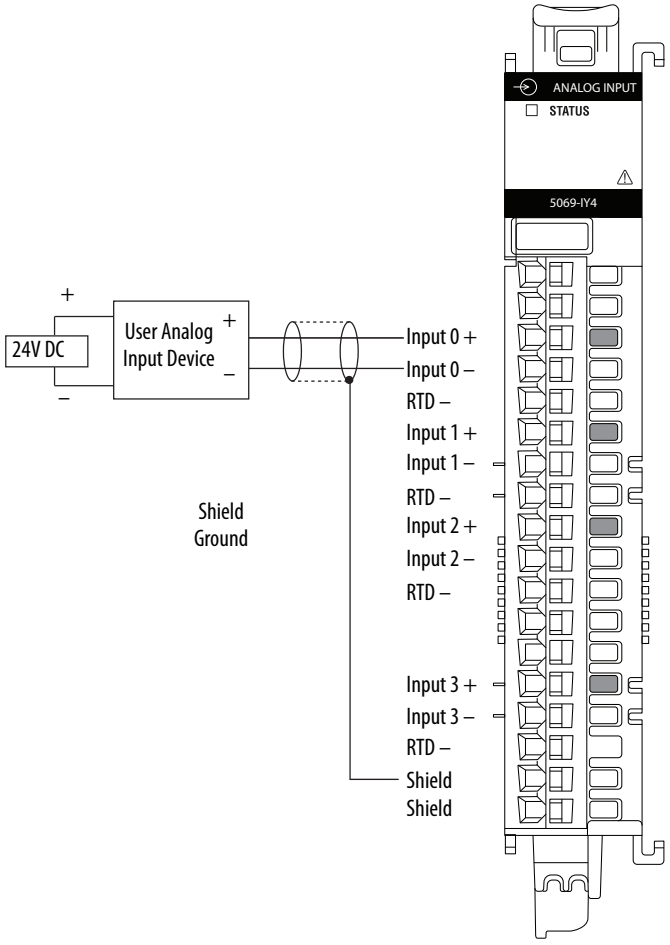
5069-IY4 Wiring Diagram - Voltage Mode

Channel Connections

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

Place additional loop devices, for example, strip chart recorders, at either **A** location in the current loop.



This figure shows a wiring diagram for the 5069-IY4 module when used in 3-wire RTD mode.

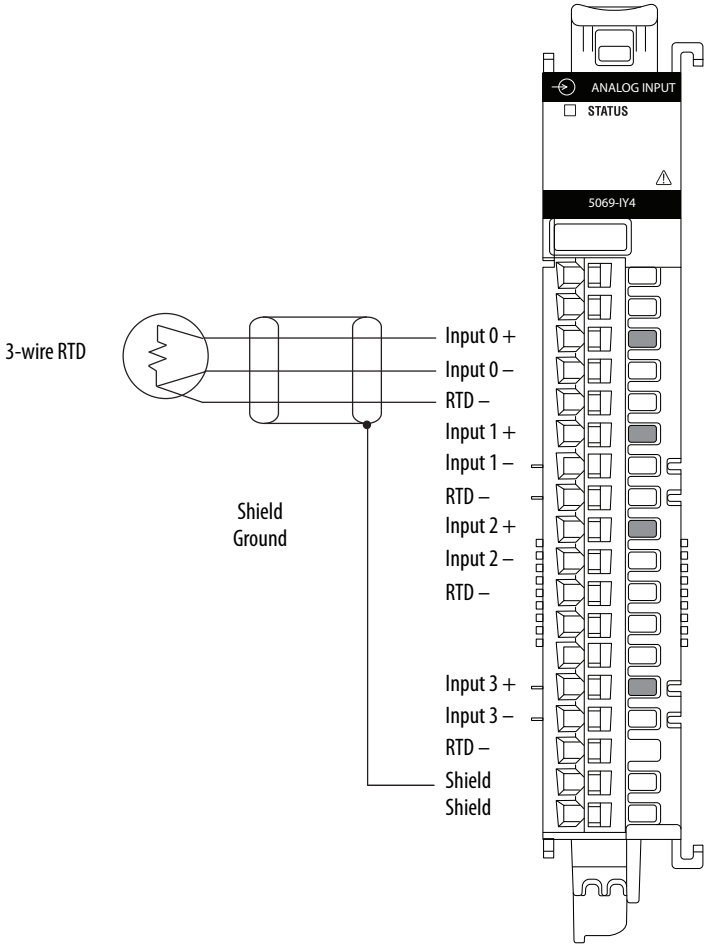
5069-IY4 Wiring Diagram - 3-wire RTD

Channel Connections

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

Place additional loop devices, for example, strip chart recorders, at either **A** location in the current loop.



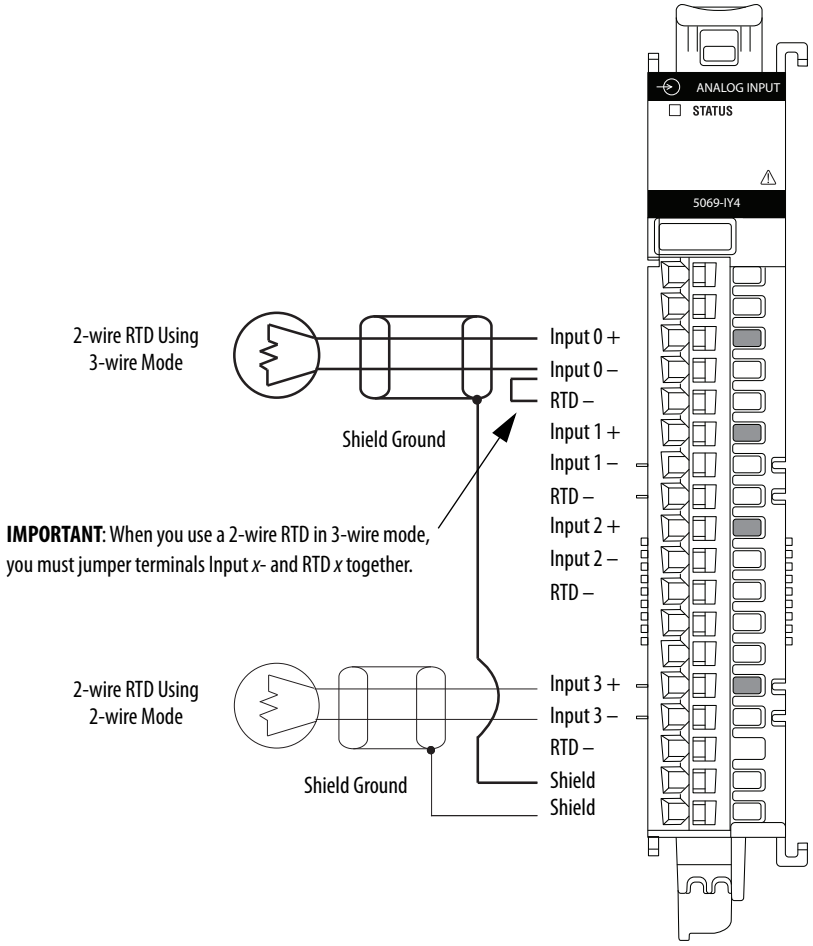
This figure shows a wiring diagram for the 5069-IY4 module when used in 2-wire RTD mode.

5069-IY4 Wiring Diagram - 2-wire RTD

Channel Connections

The diagram shows a device that is connected to channel 0 and channel 3. You are not restricted to using only these channels.

You can connect devices to any channel or combination of channels as needed.



This figure shows a wiring diagram for the 5069-IY4 module when used in thermocouple mode.

5069-IY4 Wiring Diagram - Thermocouple Input

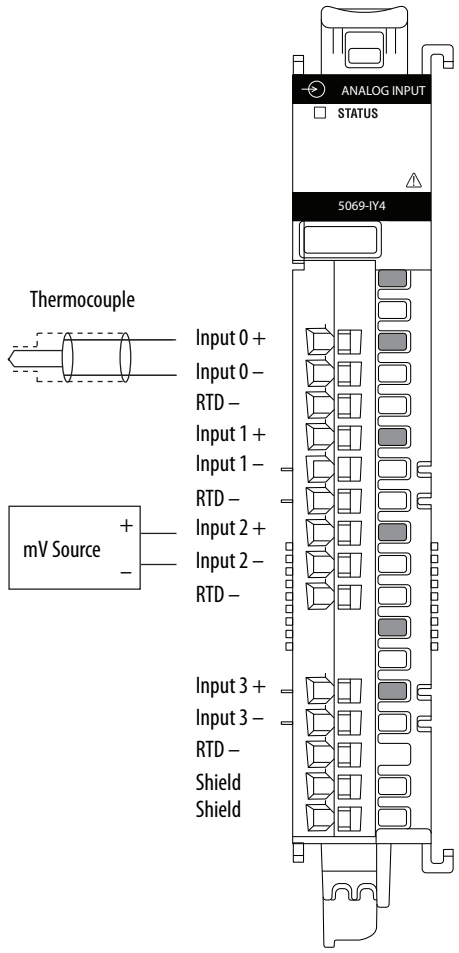
Channel Connections

The diagram shows a device that is connected to channel 0 and channel 2. You are not restricted to using only these channels.

You can connect devices to any channel or combination of channels as needed.

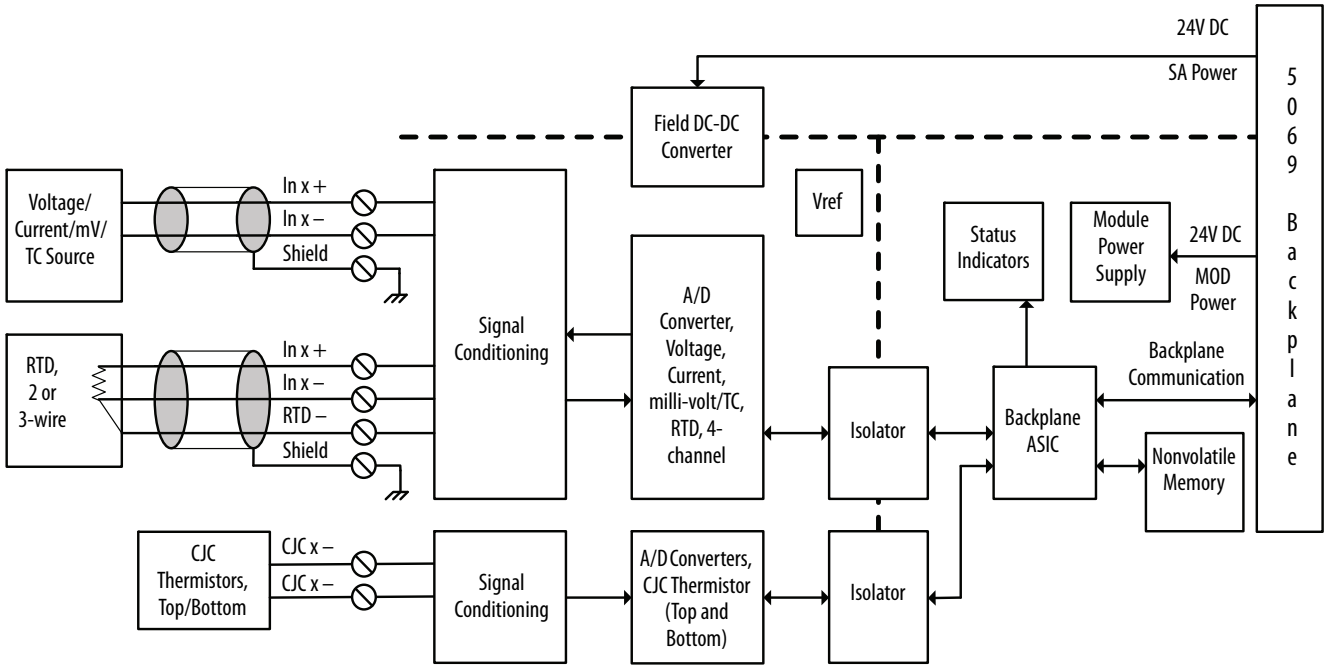
IMPORTANT: When you use the 5069-IY4 analog input module in Thermocouple mode, you must use one of these CJC type RTBs:

- 5069-RTB14CJC-SPRING (shown)
- 5069-RTB14CJC-SCREW



This figure shows a functional block diagram for the 5069-IY4 module.

5069-IY4 Functional Block Diagram



Technical Specifications - 5069-IY4

Attribute	5069-IY4
Inputs	4 differential
Input range, voltage	±10V 0…10V 0…5V
Input range, current	0…20 mA 4…20 mA
Input range, resistive	1…500 Ω 2…1000 Ω 4…2000 Ω 8…4000 Ω
Input type, RTD	100, 200, 500, 1000 Ω platinum, alpha=385 100, 200, 500, 1000 Ω platinum, alpha=3916 120 Ω nickel, alpha=672 100, 120, 200, 500 Ω nickel, alpha=618 10 Ω copper 427
Input range, thermocouple / millivolt	± 100 mV
Input type, thermocouple	B, C, D, E, J, K, L (TXK/XK), N, R, S, T
Input impedance	Voltage: >1 MΩ Current: 90 Ω typical, 70…110 Ω range RTD: >1 MΩ Thermocouple/millivolt: >1 MΩ
Common mode voltage (channel to channel)	±10V

Technical Specifications - 5069-IY4

Attribute	5069-IY4
Module conversion method	Sigma-Delta, One 24-bit multiplexed ADC
Resolution, voltage[1] (16 bits at 10 Hz notch filter)	±10.5V: <320 µV/count (15 bits plus sign bipolar) 0…10.5V: <160 µV/count (16 bits unipolar) 0…5.25V: <80 µ/V count (16 bits unipolar)
Resolution, current[1] (16 bits at 10 Hz notch filter)	0…21 mA: <0.32 µA/count (16 bits) 3.6…21 mA: <0.27 µA/count (16 bits)
Resolution, RTD[1] (16 bits at 10 Hz notch filter) 3 Wire mode	< 7.9 mΩ/cnt in 1…500 Ω mode < 15.8 mΩ/cnt in 2…1000 Ω mode < 31.7 mΩ/cnt in 4…2000 Ω mode < 63.4 mΩ/cnt in 8…4000 Ω mode
Resolution, thermocouple / millivolt[1] (16 bits at 10 Hz notch filter)	< 3.1 µV/cnt in ±100 mV mode
RTD excitation current	600 µA, 3 wire mode 100 µA, 2 wire mode
Wire impedance (3-wire RTD mode only)	25 Ω maximum for specified accuracy
RTD sensor types/temperature range: (Each sensor type in a cell supports all temperature ranges in the corresponding column to the right.)	
100, 200, 500, 1000 Ohm PT 385	-200…+870 °C -328…+1598 °F 73…1143 °K 132…2058 °R
100, 200, 500, 1000 Ohm PT 3916	-200…+630 °C -328…+1166 °F 73…903 °K 132…1626 °R
10 Ohm CU 247	-200…+260 °C -328…+500 °F 73…533 °K 132…960 °R
120 Ohm NI 672	-80…+320 °C -112…+608 °F 193…593 °K 348…1068 °R
100, 120, 200, 500 Ohm NI 618	-60…+250 °C -76…+482 °F 213…523 °K 384…942 °R

Technical Specifications - 5069-IY4

Attribute	5069-IY4
Thermocouple type/temperature range	
Thermocouple Type B	21…1820 °C 68…3308 °F 293…2093 °K 528…3768 °R
Thermocouple Type C	0…2320 °C 32…4208 °F 273…2593 °K 492…4668 °R
Thermocouple Type D	0…2320 °C 32…4208 °F 273…2593 °K 492…4668 °R
Thermocouple Type E	-270…+1000 °C -454…+1832 °F 3…1273 °K 6…2292 °R
Thermocouple Type J	-210…+1200 °C -346…+2192 °F 63…1473 °K 114…2652 °R
Thermocouple Type K	-270…+1372 °C -454…+2502 °F 3…1645 °K 6…2961 °R
Thermocouple Type N	-270…+1300 °C -454…+2372 °F 3…1573 °K 6…2832 °R
Thermocouple Type R	-50…+1768 °C -58…+3215 °F 223…2041 °K 402…3674 °R
Thermocouple Type S	-50…+1768 °C -58…+3215 °F 223…2041 °K 402…3674 °R
Thermocouple Type T	-270…+400 °C -454…+752 °F 3…673 °K 6…1212 °R
Thermocouple Type TXK/XK (L)	-200…+800 °C -328…+1472 °F 73…1073 °K 132…1932 °R
Thermocouple linearization	ITS-90

Technical Specifications - 5069-IY4

Attribute	5069-IY4
CJC inputs (for thermocouple mode use only)	Two CJC sensors 2 thermistors embedded in 5069-RTB14CJC-(SCREW or SPRING) RTB -or- 2 thermistors wired to 5069-RTB18-(SCREW or SPRING) RTB Thermistor type: Measurement Specialties, Inc. 10K3A1A
Local CJC sensor accuracy	± 0.3 °C
Remote CJC sensor accuracy (Based on specified thermistor)	± 0.3 °C
Calibrated accuracy at 25 °C	Voltage 0.100% full scale Current 0.100% full scale RTD 0.100% full scale Thermocouple/millivolt 0.100% full scale
Accuracy drift with temperature	Voltage 0.200% full scale Current 0.300% full scale RTD 0.200% full scale Thermocouple/millivolt 0.200% full scale
Input Total Unadjusted Error (TUE)[(2)] (Over full temperature range)	Voltage 0.300% Full Scale Current 0.400% Full Scale RTD 0.300% Full Scale Thermocouple/millivolt 0.300% Full Scale
Scan time • Per channel • Per group (channel group 0…3)	 625 µs 2.5 ms
Notch filter at minimum RPI (0.2 ms, 1 channel enabled)	62.5 kHz
Minimum notch filter frequency at RPI of 2.5 ms	10 kHz
Step response time to 63% of value (Notch filter 10 kHz)	7.5 ms
Input notch filter (Hz) selections	5, 10 (50/60 default), 15, 20, 50, 60, 100, 200, 500, 1000, 2500, 5000, 10000, 15625, 25000, 31250, 62500
Input anti-aliasing filter cutoff frequency, typical	500 Hz
Input digital filter	First Order Lag, 0 ms (Default)…32,767 ms (32.767 s)
HART handheld compliance:	Add an external 250 Ω resistor into the current loop for HART transmitter compliance.
Overvoltage protection, max	Voltage, current, RTD, and thermocouple/mV modes: ± 30V DC
Overcurrent protection, max	Current mode: ± 30 mA
Data value during overload condition	Full scale, overrange flag, Data uncertain / data bad
Open circuit detection time, nom	Voltage: + full scale, < 2 s Current: 4…20 mA range, < 2 s RTD: < 2 s Thermocouple / millivolt: + full scale, < 10 s
Onboard data alarming	Yes

Technical Specifications - 5069-IY4

Attribute	5069-IY4
Scaling to engineering units	Yes
Real-time channel sampling	Yes
Data format	IEEE 32-bit floating point

(1) Notch filter dependent.
(2) Includes offset, gain, non-linearity, and repeatability error terms.

General Specifications - 5069-IY4

Attribute	5069-IY4
Voltage and current ratings	
MOD Power	75 mA @ 18…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power	100 mA @ 18…32V DC
SA Power Passthrough, max(2)	9.95 A @ 18…32V DC
Do n ot exceed 10 A MOD or SA Power (Passthrough) current draw	
Power dissipation, max	Voltage mode: 1.8 W Current mode: 2.1 W RTD mode: 2.1 W Thermocouple / millivolt mode: 1.8 W
Thermal dissipation, max	Voltage mode: 6.1 BTU/hr Current mode: 7.2 BTU/hr RTD mode: 7.2 BTU/hr Thermocouple/millivolt: 6.1 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type 50V Functional Isolation between SA Power and input ports No isolation between individual input ports
Calibration methods	Factory calibrated User-performed (optional)
Module keying	Electronic keying via programming software
Indicators	1 green/red module status indicator 4 yellow/red I/O status indicators 2 yellow/red CJC status indicators
Slot width	1
Common mode noise rejection ratio	130 dB @ 50/60 Hz
Normal mode noise rejection ratio	65 dB @ 50/60 Hz, notch filter dependent
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	One of these RTB types. • 5069-RTB18-SCREW • 5069-RTB18-SPRING • 5069-RTB14CJC-SCREW (Thermocouple mode) • 5069-RTB14CJC-SPRING (Thermocouple mode) **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.

General Specifications - 5069-IY4

Attribute	5069-IY4
RTB torque (5069-RTB18-SCREW, 5069-RTB14CJC-SCREW)	0.4 N•m (3.5 lb•in)
RTB keying	None
Wire category(3)	2 - shielded input ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SPRING and 5069-RTB14CJC-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only.
5069-RTB18-SCREW and 5069-RTB14CJC-SCREW connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation, single wire connection only.
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Enclosure type	None (open-style)
Weight, approx	175 g (0.39 lb)
North American temperature code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-IY4

Attribute	5069-IY4
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz

Environmental Specifications - 5069-IY4

Attribute	5069-IY4
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on shielded input ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±2 kV line-earth (CM) on shielded input ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications - 5069-IY4

Certification[1]	5069-IY4
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-IF8 Analog 8-channel Current/Voltage Input Module

This figure shows a wiring diagram for the 5069-IF8 module when used in current mode.

5069-IF8 Wiring Diagram - Current Mode

Channel Connections

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

IMPORTANT: Place additional loop devices, for example, strip chart recorders, at either **A** location in the current loop.

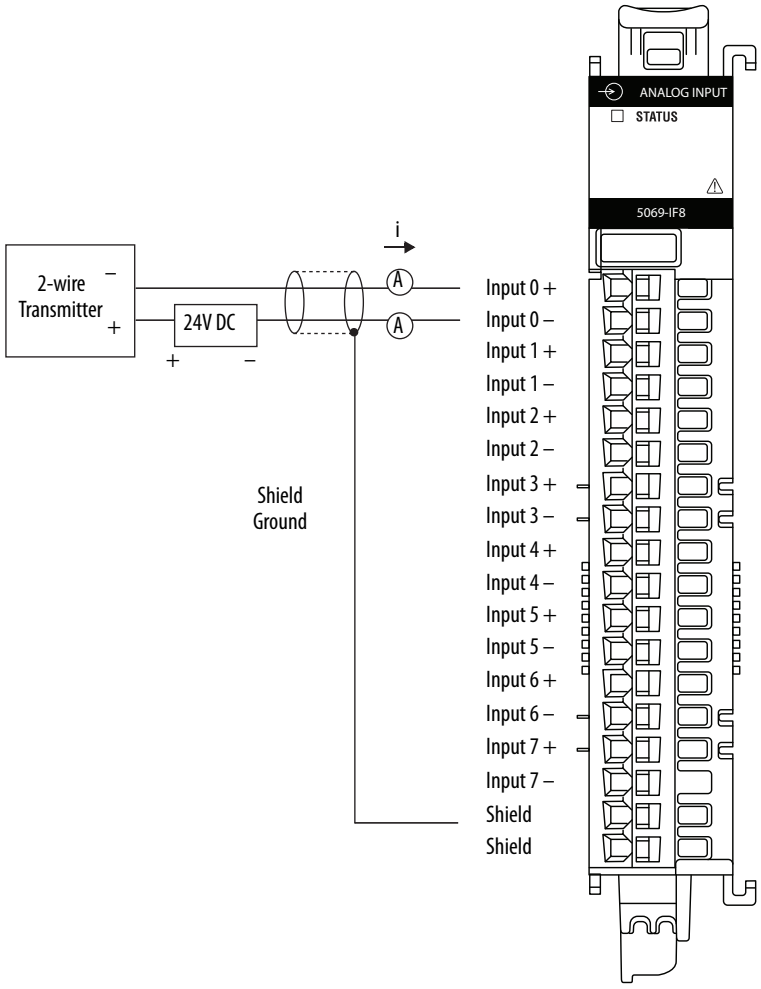
SA Power

Connections to an external power supply that provides SA power are made via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP Adapter
- 5069-FPD field potential distributor

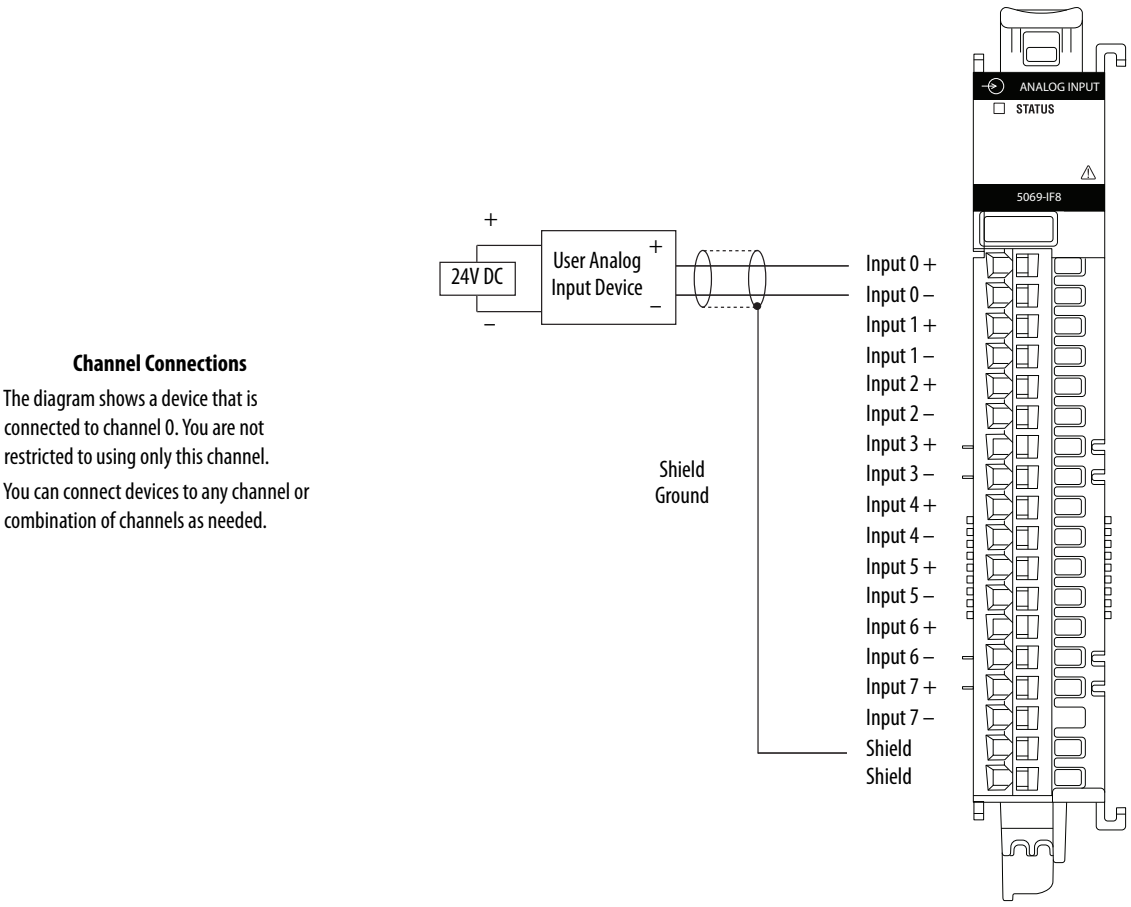
IMPORTANT: Remember the following:

- The 5069-IF8 module uses DC SA power. You must connect DC power to the component, that is, controller, adapter, or field potential distributor, that provides SA Power to the modules.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a wiring diagram for the 5069-IF8 module when used in voltage mode.

5069-IF8 Wiring Diagram - Voltage Mode



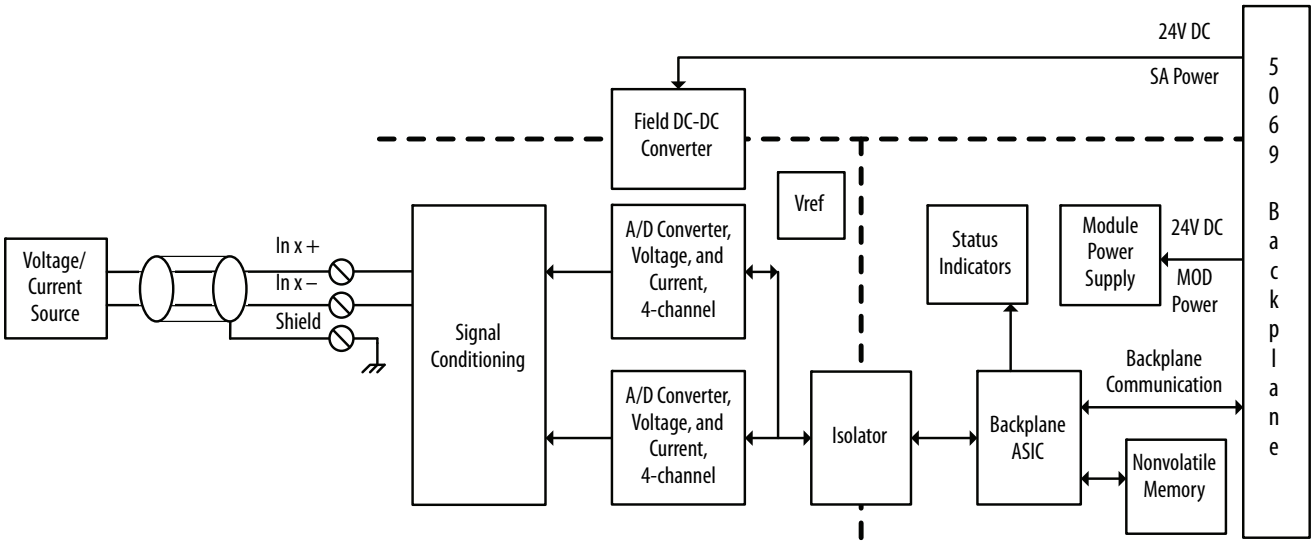
Channel Connections

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

This figure shows a functional block diagram for the 5069-IF8 module.

5069-IF8 Functional Block Diagram



Technical Specifications - 5069-IF8

Attribute	5069-IF8
Inputs	8 differential
Input range, voltage	±10V 0…10V 0…5V
Input range, current	0…20 mA 4…20 mA
Input impedance	Voltage: >1 MΩ Current: 90 Ω typical, 70…110 Ω range
Common mode voltage (channel to channel)	±10V
Module conversion method	Sigma-Delta, Two 24-bit multiplexed ADC
Resolution, voltage(1) (16 bits at 10 Hz notch filter)	±10.5V: <320 µV/count (15 bits plus sign bipolar) 0…10.5V: <160 µV/count (16 bits unipolar) 0…5.25V: <80 µ/V count (16 bits unipolar)
Resolution, current(1) (16 bits at 10 Hz notch filter)	0…21 mA: <0.32 µA/count (16 bits) 3.6…21 mA: <0.27 µA/count (16 bits)
Calibrated accuracy at 25 °C	Voltage 0.10% full scale Current 0.10% full scale
Accuracy drift with temperature	Voltage 0.20% full scale Current 0.30% full scale
Input Total Unadjusted Error (TUE)(2) (Over full temperature range)	Voltage 0.30% full scale Current 0.40% full scale
Scan Time Per channel Per group (channel group 0…3 or channel group 4…7)	 625 µs 2.5 ms
Notch filter at minimum RPI (0.2 ms, 1 channel enabled)	 62.5 kHz
Minimum notch filter frequency at RPI of 2.5 ms	10 kHz
Step response time to 63% of value (Notch filter 10 kHz)	7.5 ms
Input notch filter (Hz) selections	5, 10 (50/60 Default), 15, 20, 50, 60, 100, 200, 500, 1000, 2500, 5000, 10000, 15625, 25000, 31250, 62500
Input anti-aliasing filter cutoff frequency, nom	500 Hz
Input digital filter	First order lag, 0 ms (Default)…32,767 ms (32.767 s)
HART handheld compliance	Add an external 250 Ω resistor into the current loop for HART transmitter compliance.
Overvoltage protection, max	Voltage and Current modes: ± 30V DC
Overcurrent protection, max	Current mode: ±30 mA
Data value during overload condition	Full scale, overrange flag, Data uncertain / data bad

Technical Specifications - 5069-IF8

Attribute	5069-IF8
Open circuit detection time	Voltage: + full scale, < 2 s Current: 4…20 mA range, <2 s
Onboard data alarming	Yes
Scaling to engineering units	Yes
Real-time channel sampling	Yes
Data format	IEEE 32-bit floating point

(1) Notch filter dependent.
(2) Includes offset, gain, non-linearity, and repeatability error terms.

General Specifications - 5069-IF8

Attribute	5069-IF8
Voltage and current ratings	
MOD Power	75 mA @ 18…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power	100 mA @ 18…32V DC
SA Power Passthrough, max(2)	9.95 A @ 18…32V DC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw.	
Power dissipation, max	Voltage mode: 2.1 W Current mode: 2.4 W
Thermal dissipation, max	Voltage mode: 7.2 BTU/hr Current mode: 8.2 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type 50V Functional Isolation between SA power and input ports No isolation between individual Input ports
Calibration methods	Factory calibrated User-performed (optional)
Module keying	Electronic keying via programming software
Indicators	1 green/red module status indicator 8 yellow/red I/O status indicator
Slot width	1
Common mode noise rejection ratio	130 dB @ 50/60 Hz
Normal mode noise rejection ratio	65 dB @ 50/60 Hz, notch filter dependent
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N•m (3.5 lb•in)
RTB keying	None

General Specifications - 5069-IF8

Attribute	5069-IF8
Wire category[3]	2 - shielded input ports 2 - power ports 1 wire per terminal for each signal port
Wire size	
5069-RTB18-SPRING removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation
5069-RTB18-SCREW removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type	None (open-style)
North American temperature code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-IF8

Attribute	5069-IF8
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges

Environmental Specifications - 5069-IF8

Attribute	5069-IF8
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 880% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on shielded input ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±2 kV line-earth (CM) on shielded input ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications - 5069-IF8

Certification[1]	5069-IF8
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-OF4 and 5069-OF8 Analog Current/Voltage Output Modules

This figure shows a wiring diagram for the 5069-OF4 module when used in current mode.

5069-OF4 Wiring Diagram - Current Mode

Channel Connecti\ons

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

IMPORTANT: Place more loop devices, for example, strip chart recorders, at either **A** location in the current loop.

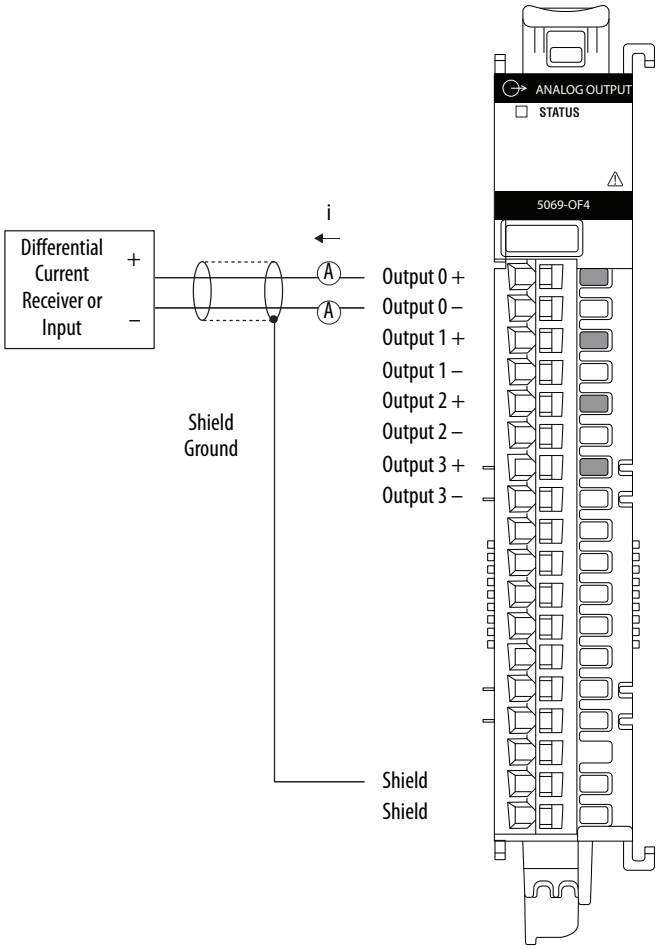
SA Power

Connections to an external power supply that provides SA power are made via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP Adapter
- 5069-FPD field potential distributor

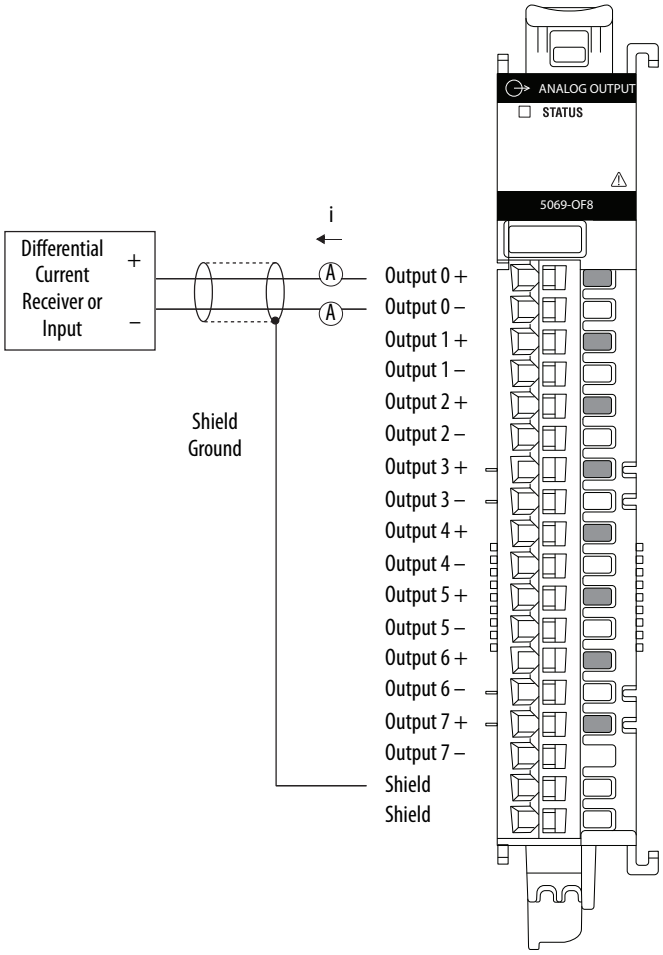
IMPORTANT: Remember the following:

- The 5069-OF4 module uses DC SA power. You must connect DC power to the component, that is, controller, adapter, or field potential distributor, that provides SA Power to the modules.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



This figure shows a wiring diagram for the 5069-OF8 module when used in current mode.

5069-OF8 Wiring Diagram - Current Mode



Channel Connecti\ons

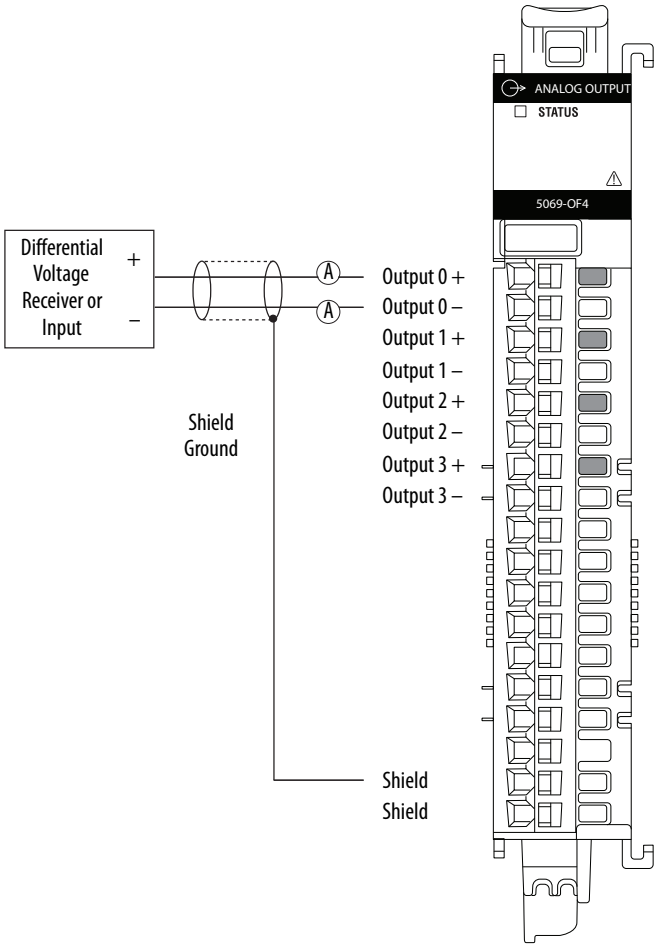
The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

IMPORTANT: Place more loop devices, for example, strip chart recorders, at either **A** location in the current loop.

This figure shows a wiring diagram for the 5069-OF4 module when used in voltage mode.

5069-OF4 Wiring Diagram - Voltage Mode



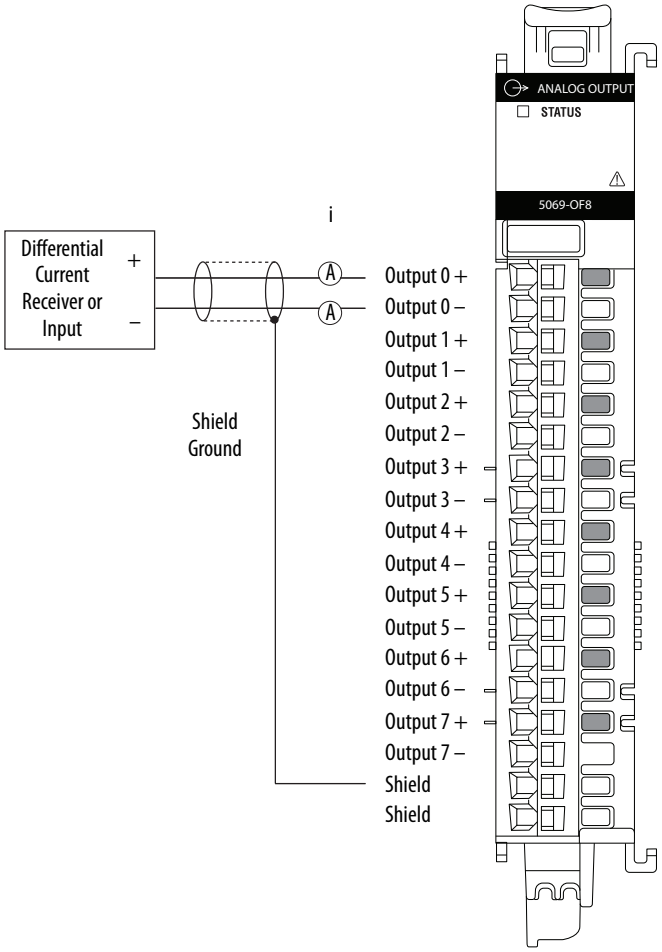
Channel Connecti\ons

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

This figure shows a wiring diagram for the 5069-OF8 module when used in voltage mode.

5069-OF8 Wiring Diagram - Voltage Mode



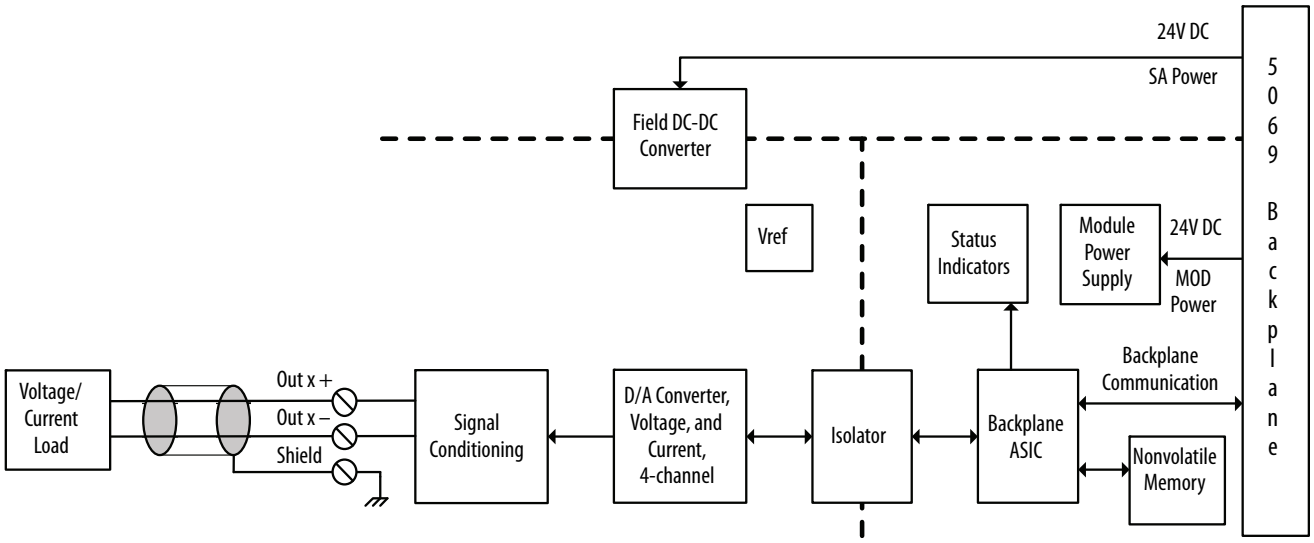
Channel Connecti\ons

The diagram shows a device that is connected to channel 0. You are not restricted to using only this channel.

You can connect devices to any channel or combination of channels as needed.

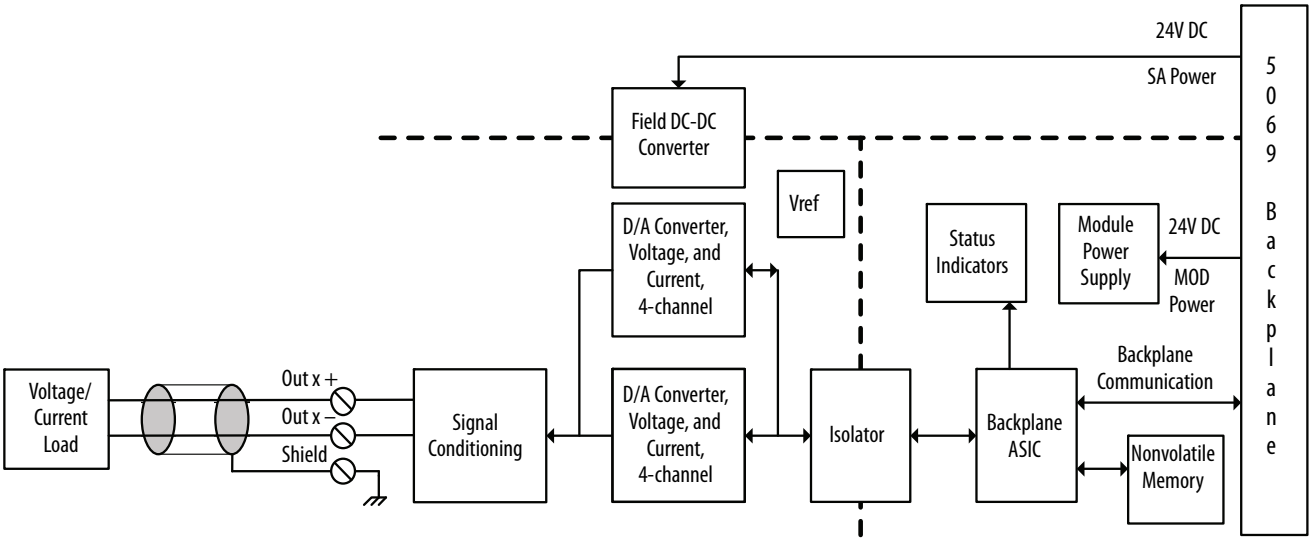
This figure shows a functional block diagram for the 5069-OF4 module.

5069-OF4 Functional Block Diagram



This figure shows a functional block diagram for the 5069-OF8 module.

5069-OF8 Functional Block Diagram



Technical Specifications - 5069-OF4, 5069-OF8

Attribute	5069-OF4	5069-OF8
Outputs	4 voltage or current	8 voltage or current
Output range, voltage	± 10V 0…10V 0…5V	
Output range, current	0…20 mA 4…20 mA	
Resolution	16 bits across ± 10.5V - 320 µV/bit 16 bits across 10.5V - 160 µV/bit 16 bits across 5.25V - 80 µV/bit 16 bits across 21 mA - 320 nA/bit	
Drive capability	Voltage - 1000 Ω min Current - 500 Ω max	
Capacitive load, max (voltage mode only)	1 µF	
Inductive load, max (current mode only)	1 mH	
Open circuit detection	Current mode only	
Short circuit detection	Voltage mode only – output electronically limited to 16 mA or less	
Data format	IEEE 32-bit floating point	
Module conversion method	R-Ladder DAC, monotonicity with no missing codes	
Conversion time per channel	25 µs	
Scan time • Per group 0…3 (OF4/OF8) • Per group 0…7 (OF8 only)	 1.0 ms 2.0 ms	
Step response time to 63% of value	Voltage mode – 18 µs max Current mode – 1 ms max	
Overvoltage protection, max	± 32V DC	
Repeatability	0.05%	
Calibrated accuracy at 25 °C (77 °F)	Voltage - 0.10% full scale Current - 0.10% full scale	
Accuracy drift with temperature	Voltage - 0.30% full scale Current - 0.50% full scale	

General Specifications - 5069-OF4, 5069-OF8

Attribute	5069-OF4	5069-OF8
Voltage and current ratings		
Analog output ratings	+/–10V DC, 0…20 mA per channel	
MOD Power	75 mA @ 18…32V DC	
MOD Power Passthrough, max[1]	9.55 A @ 18…32V DC	
SA Power	150 mA @ 18…32V DC	250 mA @ 18…32V DC
SA Power Passthrough, max[2]	9.95 A @ 18…32V DC	
Power dissipation, max	3.3 W	5.3 W
Thermal dissipation, max	11.3 BTU/hr	18.1 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type 50V Functional Isolation between SA power and output ports No isolation between individual output ports	
Calibration methods	Factory Calibrated User-performed (optional)	
Module keying	Electronic keying via programming software	
Indicators	1 green/red module status indicator 4 yellow/red I/O status indicators	1 green/red module status indicator 8 yellow/red I/O status indicators
Slot width	1	
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)	
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.	
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.	
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N•m (3.5 lb•in)	
RTB keying	None	
Wire category[3]	2 - shielded input ports 2 - power ports 1 wire per terminal for each signal port	
Wire size		
5069-RTB18-SPRING removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation	
5069-RTB18-SCREW removable terminal block	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation	
Insulation stripping length		
5069-RTB18-SPRING connections	10 mm (0.39 in.)	
5069-RTB18-SCREW connections	12 mm (0.47 in.)	

General Specifications - 5069-OF4, 5069-OF8

Attribute	5069-OF4	5069-OF8
Weight, approx	175 g (0.39 lb)	
Enclosure type	None (open-style)	
North American temp code	T4	
ATEX temp code	T4	
IECEx temp code	T4	

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-OF4, 5069-OF8

Attribute	5069-OF4, 5069-OF8
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…200 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz

Environmental Specifications - 5069-OF4, 5069-OF8

Attribute	5069-OF4, 5069-OF8
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on shielded output ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±2 kV line-earth (CM) on shielded output ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications - 5069-OF4, 5069-OF8

Certification(1)	5069-OF4, 5069-OF8
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-HSC2xOB4 High-speed Counter Module

This figure shows a wiring diagram for the 5069-HSC2xOB4 module connected to a differential encoder.

5069-HSC2xOB4 Wiring Diagram - Differential Encoder

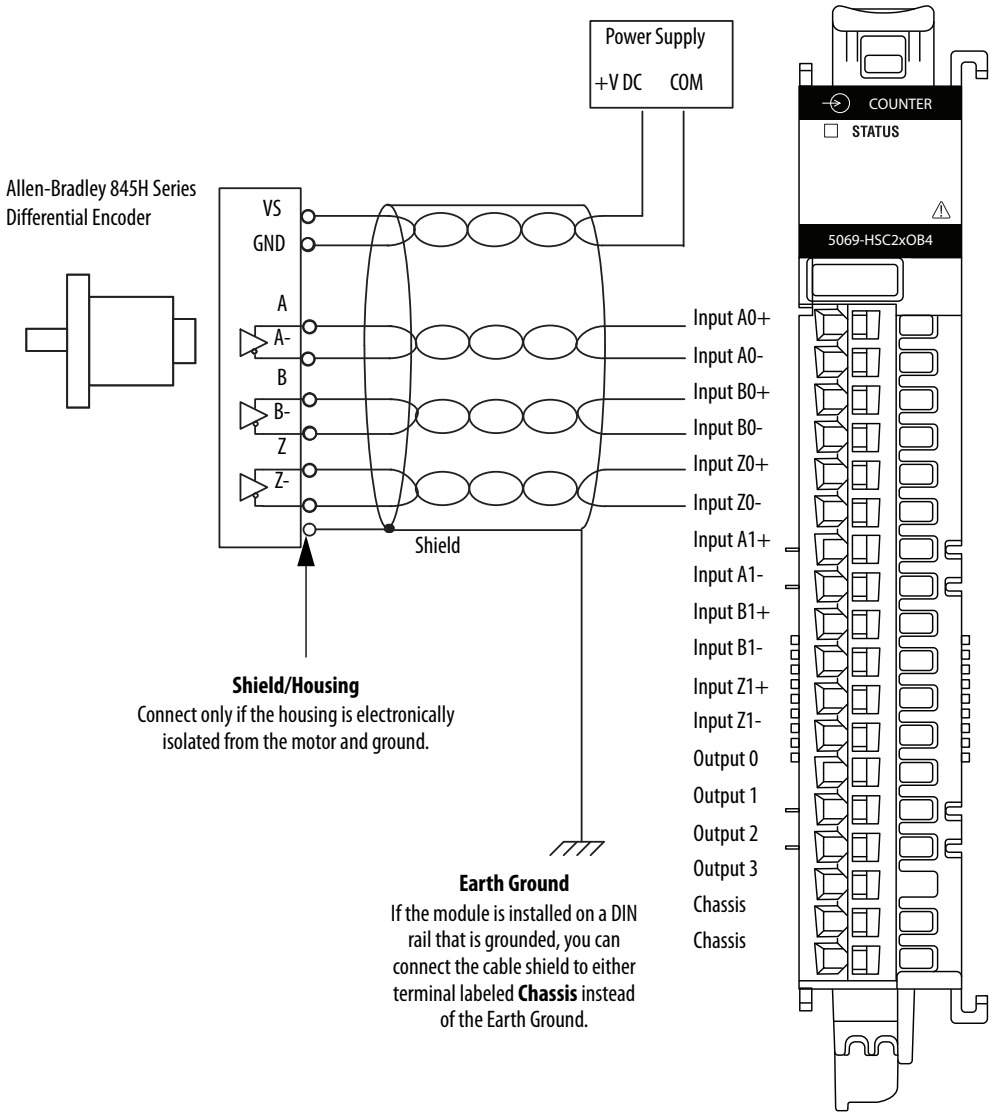
Channel Connections

The diagram shows connections to channel 0. You are not restricted to using only that channel.

You can connect to any channel or combination of channels as needed.

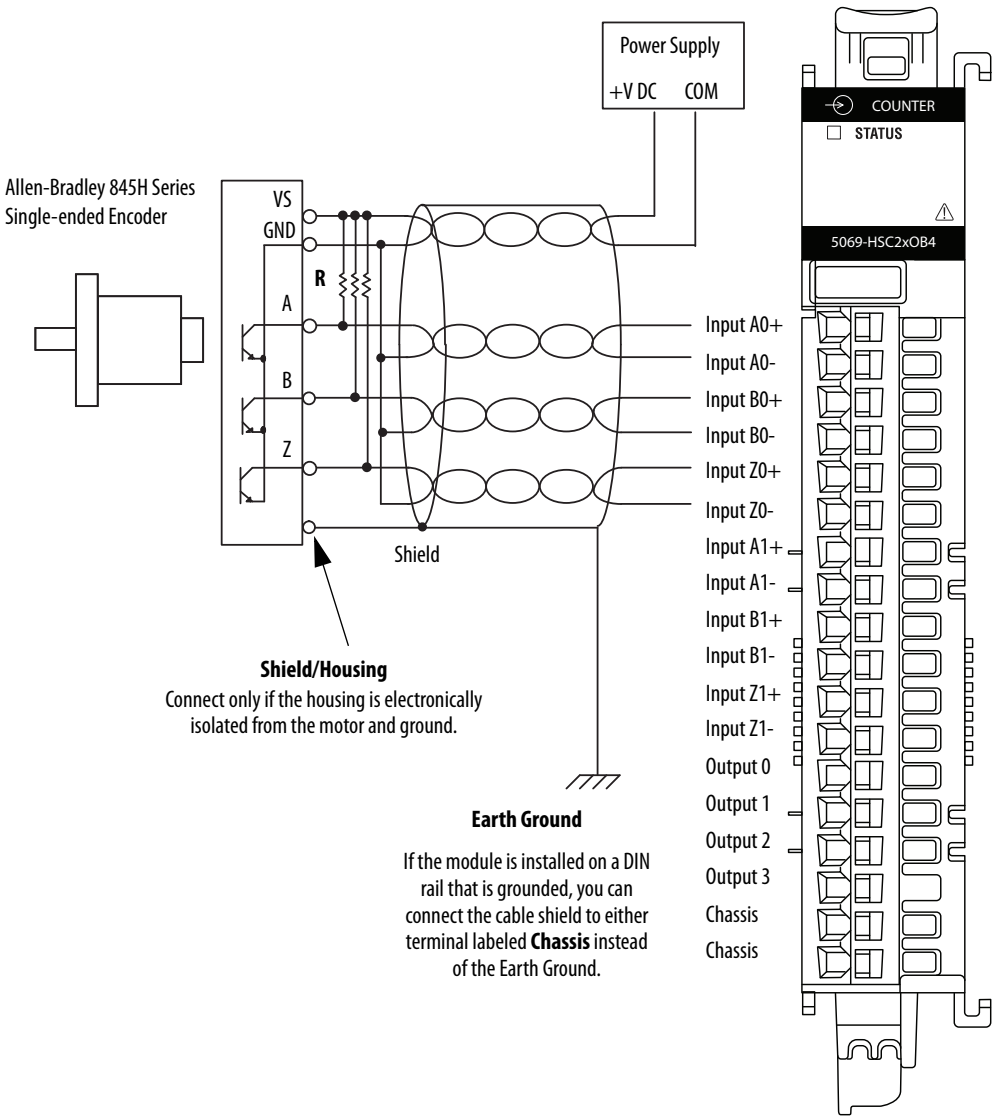
IMPORTANT: We recommend that you use twisted-pair, individually shielded cable with a maximum length of 300 m (1000 ft) when connecting a differential encoder.

For more information on the cable type to use, see the encoder documentation.



This figure shows a wiring diagram for the 5069-HSC2xOB4 module connected to a single-ended encoder.

5069-HSC2xOB4 Wiring Diagram - Single-ended Encoder



Channel Connections

The diagram shows connections to channel 0. You are not restricted to using only that channel.

You can connect to any channel or combination of channels as needed.

IMPORTANT: We recommend that you use twisted-pair, individually shielded cable with a maximum length of 300 m (1000 ft) when connecting a single-ended encoder.

For more information on the cable type to use, see the encoder documentation.

IMPORTANT: External resistors, as indicated in the **R** location, are required if they are not internal to the encoder. The pull-up resistor (R) value depends on the power supply value. The following table shows the maximum resistor values for typical supply voltages. To calculate the maximum resistor value, use this formula:

$$R = \frac{VDC - Vmin}{Imin}$$

Where:

R = Maximum pull-up resistor value

VDC = Power supply voltage

Vmin = 3.0V DC

Imin = 4.0 mA

Power Supply Voltage (V DC)	Pull-up Resistor Value (R), Max(1)
5	500 Ω
12	2250 Ω
24	5250 Ω

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

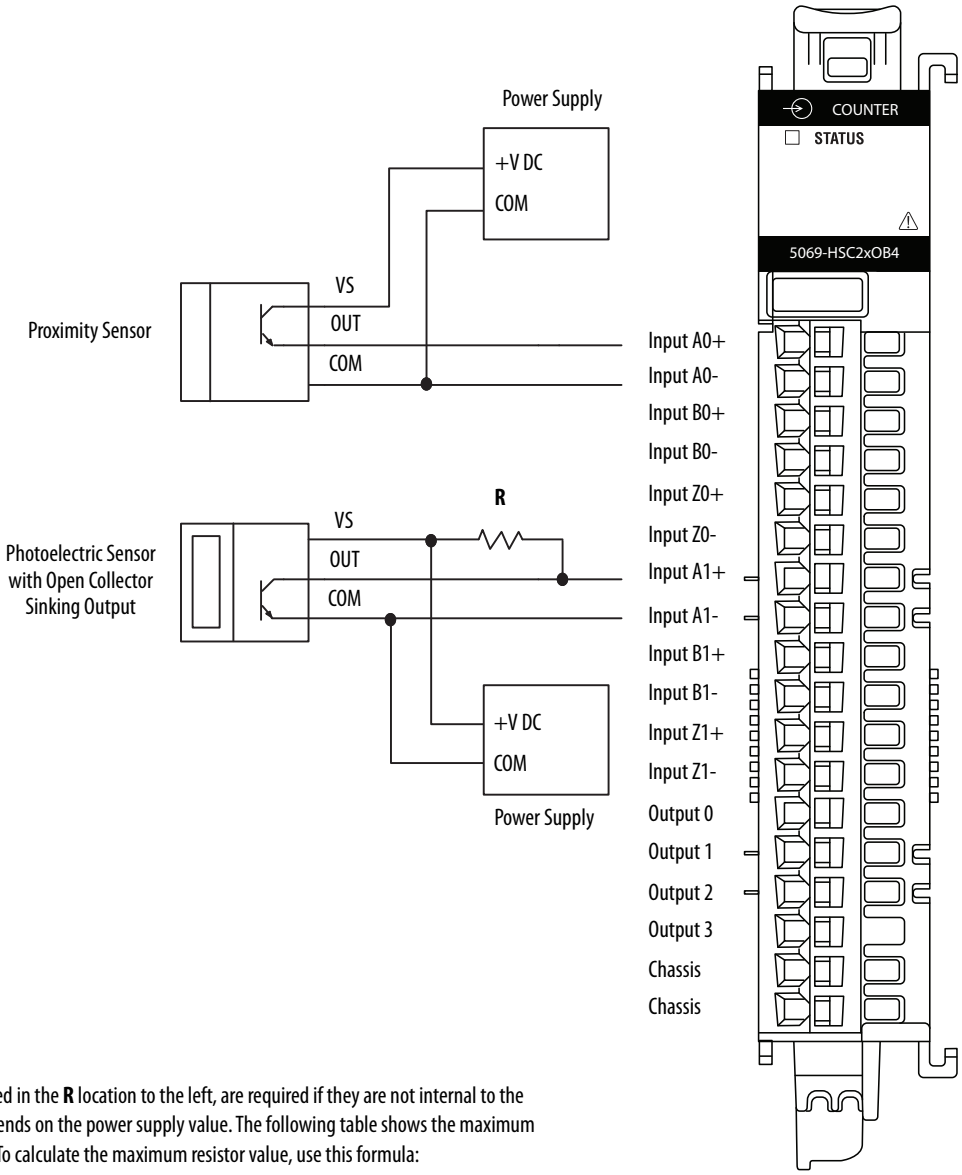
This figure shows a wiring diagram for the 5069-HSC2xOB4 module connected to a discrete input device.

5069-HSC2xOB4 Wiring Diagram - Discrete Input Devices

Channel Connections

The diagram shows connections to input channels 0 and 1. You are not restricted to using only those input channels.

You can connect to any input channel or combination of input channels as needed.



IMPORTANT: External resistors, as indicated in the **R** location to the left, are required if they are not internal to the encoder. The pull-up resistor (R) value depends on the power supply value. The following table shows the maximum resistor values for typical supply voltages. To calculate the maximum resistor value, use this formula:

$$R = \frac{VDC - Vmin}{Imin}$$

Where:

R = Maximum pull-up resistor value

VDC = Power supply voltage

Vmin = 3.0V DC

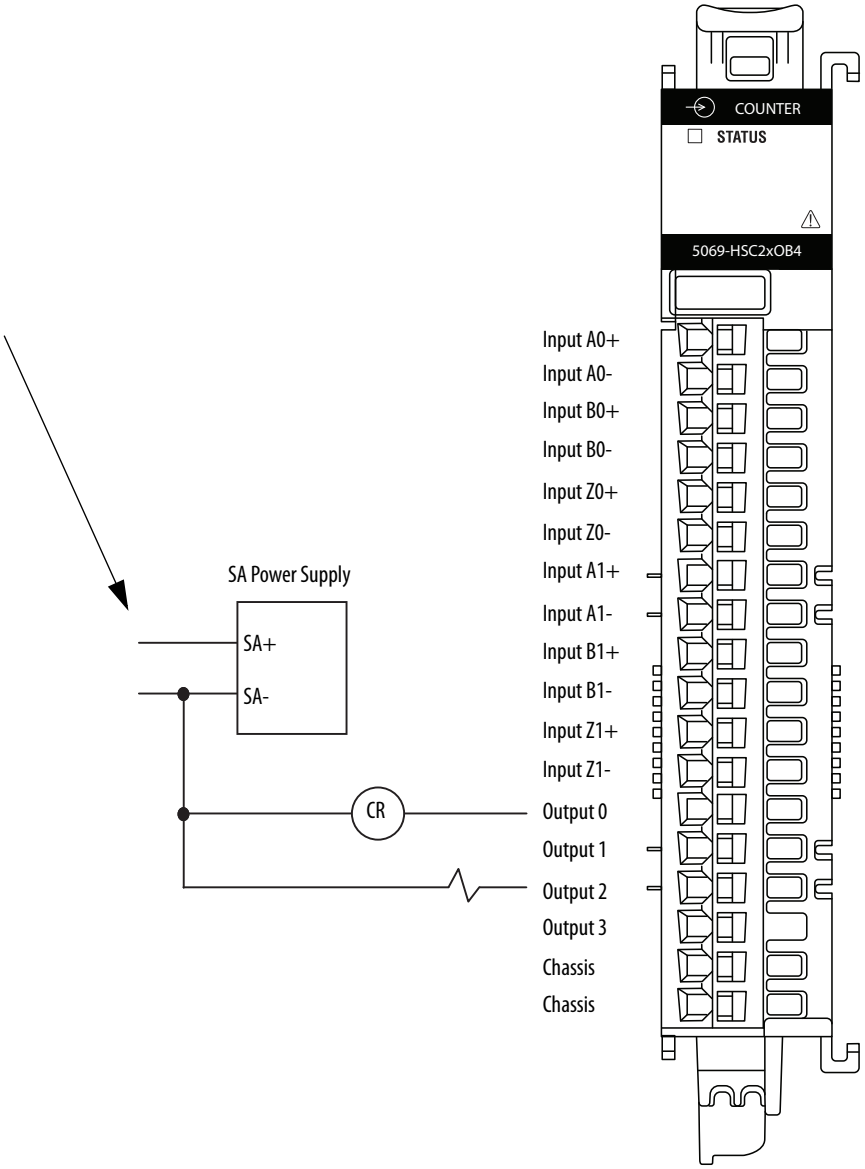
Imin = 4.0 mA

Power Supply Voltage (V DC)	Pull-up Resistor Value (R), Max(1)
5	500 Ω
12	2250 Ω
24	5250 Ω

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

This figure shows a wiring diagram for the 5069-HSC2xOB4 module connected to a discrete output device.

5069-HSC2xOB4 Wiring Diagram - Discrete Output Devices



Channel Connections

The diagram shows connections to output channels 0 and 2. You are not restricted to using only those output channels.

You can connect to any output channel or combination of output channels as needed.

SA Power

Connections to an external power supply that provides SA power via the SA Power RTB on one of the following:

- CompactLogix 5380 controller
- Compact GuardLogix 5380 controller
- 5069-AENTR or 5069-AEN2TR EtherNet/IP Adapter
- 5069-FPD field potential distributor

IMPORTANT: Remember the following:

- The 5069-HSC2xOB4 module uses DC SA power. You must connect DC power to the component, that is, controller, adapter, or field potential distributor, that provides SA Power to the module.
- The 5069-HSC2xOB4 module outputs use a shared common. The outputs have a return through internal module circuitry to the SA (–) terminal on the SA Power RTB.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.

Recommended 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.

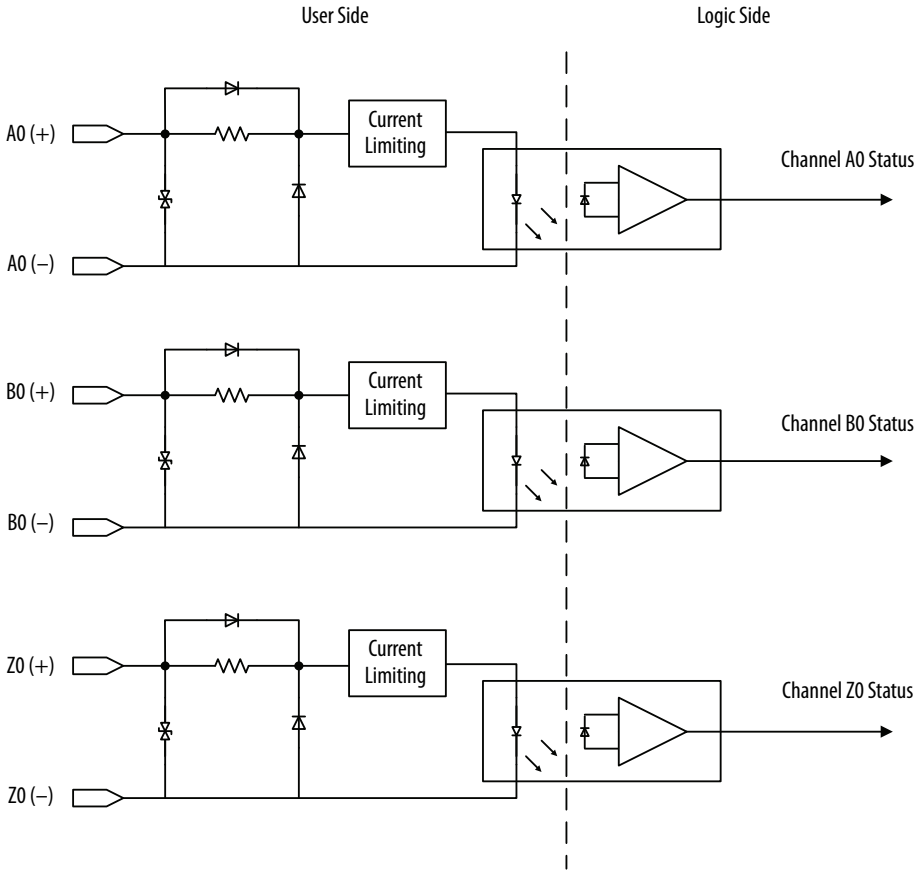
For additional details, see the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

This figure shows functional block diagrams for the 5069-HSC2xOB4 module inputs and outputs.

5069-HSC2xOB4 Functional Block Diagram

Module Inputs

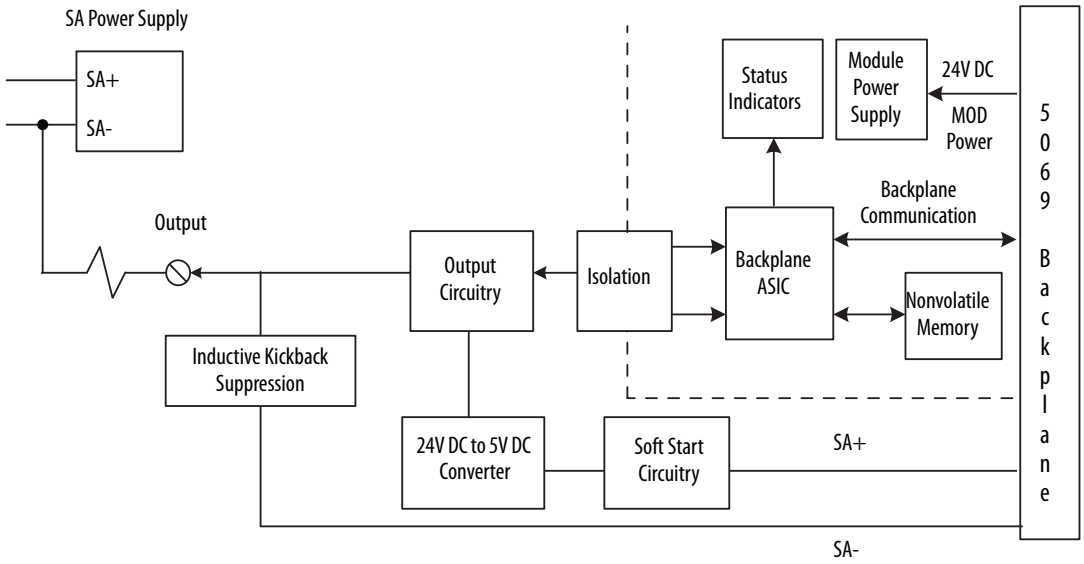
This graphic shows the diagram for Counter 0. Counter 1 uses the same design.



Module Outputs

Connections to external power supply that provides SA Power.

For more information, see page 81.



Technical Specifications - 5069-HSC2x0B4

Attribute	5069-HSC2x0B4
Input current, max	8 mA
On-state voltage, min	3V DC
On-state voltage, nom	24V DC
On-state voltage, max	32V DC
On-state voltage drop, max	< 0.3V DC
On-state current, min	4 mA
Off-state voltage, max	1.5V
Off-state current, max	1 mA
Output voltage range	10…32V DC
On-state output current, min	1 mA per channel 4 mA per module
Pulse width, min	125 ns
Pulse separation, min	100 ns
Open load detection diagnostics	Yes (per channel diagnostics)
Output short circuit/overload/overtemp detection	Yes (per channel diagnostics)
Output short circuit/overload protection	Yes
Reverse voltage protection	32V DC
Overvoltage protection, max	36V (fuse protected)
Pilot duty	Yes (Make current electronically limited/protected @ 3.6 A)
Output control in fault state per point	• Hold last state • On • Off (default)
Output states in program mode per point	• Hold last state • On • Off (default)
Output states in fault mode per point	• Hold Last State • On • Off (default)
Duration of fault mode per point	• 1 s • 2 s • 5 s • 10 s • Forever (default)

General Specifications - 5069-HSC2x0B4

Attribute	5069-HSC2x0B4
Inputs	2 quadrature (ABZ) differential inputs
Outputs	4 Channels (1 group of 4), sourcing
Voltage category	12/24V DC source
Voltage and current ratings	
Counter input ratings	4 mA @ 3…32V DC
MOD Power	50 mA @ 18…32V DC
MOD Power Passthrough, max[1]	9.55 A @ 18…32V DC
SA Power	3 A @ 18…32V DC
SA Power Passthrough, max[2]	9.95 A @ 10…32V DC
Do not exceed 10 A MOD or SA Power (Passthrough) current draw	
Power dissipation, max	3 W
Thermal dissipation, max	10.2 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type No isolation between SA Power and I/O ports No isolation between individual I/O ports Type tested at 1500V AC for 60 s
Module keying	Electronic keying via programming software
Indicators	1 green/red module status indicator 10 yellow/red I/O status indicator
Slot width	1
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. • You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	One of these RTB types. • 5069-RTB18-SPRING RTB • 5069-RTB18-SCREW RTB **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O modules. We recommend that you order only the RTB type that your system requires.
RTB keying	None
RTB torque (5069-RTB18-SCREW RTB only)	0.4 N•m (3.5 lb•in)
Wiring category[3]	2 - on shielded output ports 2 - on output power ports 2 - on shielded counter ports

General Specifications - 5069-HSC2x0B4

Attribute	5069-HSC2x0B4
Wire size	
5069-RTB18-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation
5069-RTB18-SCREW connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 3.5 mm (0.14 in.) max diameter including insulation
Insulation stripping length	
5069-RTB18-SPRING connections	10 mm (0.39 in.)
5069-RTB18-SCREW connections	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-HSC2x0B4

Attribute	5069-HSC2x0B4
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95 % noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges

Environmental Specifications - 5069-HSC2x0B4

Attribute	5069-HSC2x0B4
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±2 kV @ 5 kHz on shielded output ports ±2 kV @ 5 kHz on shielded counter ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±2 kV line-earth (CM) on shielded output ports ±2 kV line-earth (CM) on shielded counter ports
Conducted RF immunity IEC 61000-4-6	10Vrms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Voltage variation IEC 61000-4-29:	10 ms interruption on MOD Power port

Certifications - 5069-HSC2x0B4

Certification[1]	5069-HSC2x0B4
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection “n” • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1455X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection “n” • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0007X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

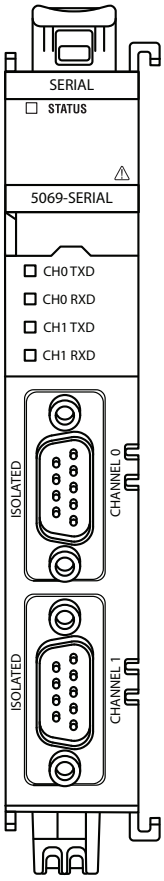
(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-SERIAL Serial Module

This figure shows the 5069-SERIAL serial module.

SA Power

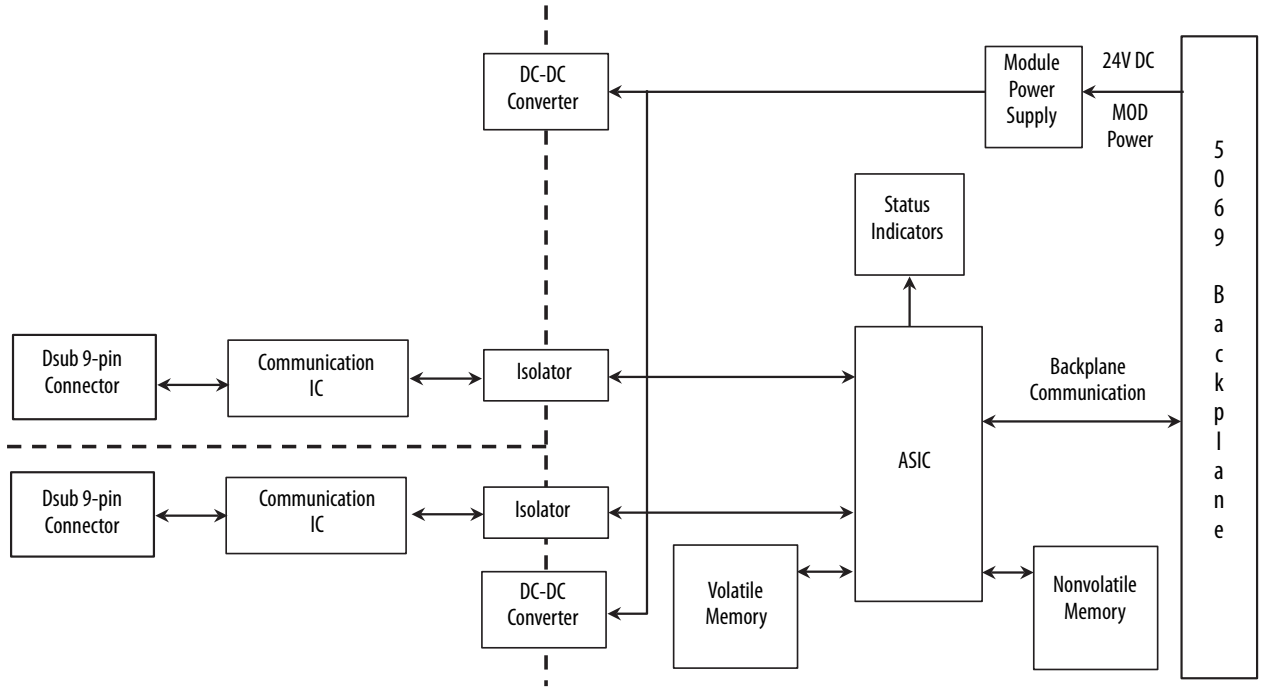
- The 5069-SERIAL module **does not draw current from the SA power bus**. The module is a DC type modules. Therefore, you must install it on an SA Power bus that uses DC power.
- If you install modules in a system that use AC SA power and DC SA power, you must install them on separate SA Power buses.
- You use a 5069-FPD field potential distributor to establish a new SA Power bus in a system. SA Power buses are isolated from each other. To keep the modules on separate SA Power buses, 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, that is, the first SA Power bus.
  2. Install the 5069-FPD field potential distributor to establish a second SA Power bus.
  3. Install the modules that use the other type of SA power, for example AC, on the second SA Power bus.



Channel 0 Communication Port

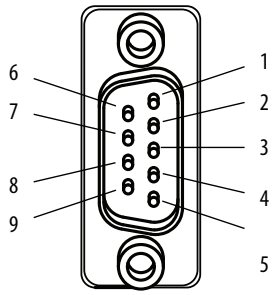
Channel 1 Communication Port

5069-SERIAL Functional Block Diagram



RS-232 Wiring Examples

Pins - RS-232C



Pin	RS-232C	Input (i)/Output (o)[1]	Wiring	
			No Handshaking	Handshaking
1	Data Carrier Detect (DCD)	(i)	-	-
2	Receive Data (RXD)	(i)	A[2]	A
3	Transmit Data (TXD)	(o)	A	A
4	Data Terminal Ready (DTR)	(o)	B[3]	B
5	Common (COM)	-	A	A
6	Data Set Ready (DSR)	(i)	-	-
7	Request To Send (RTS)	(o)	B	A
8	Clear To Send (CTS)	(i)	-	A
9	-	-	-	-

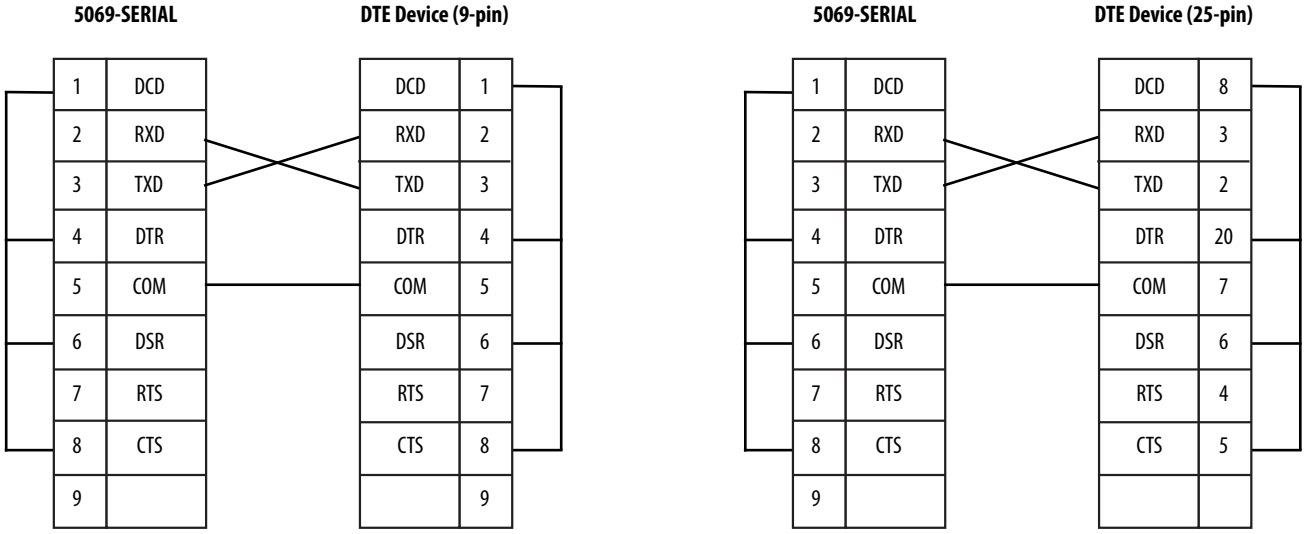
(1) From 5069-SERIAL

(2) A = Changing singal level (Active/Inactive)

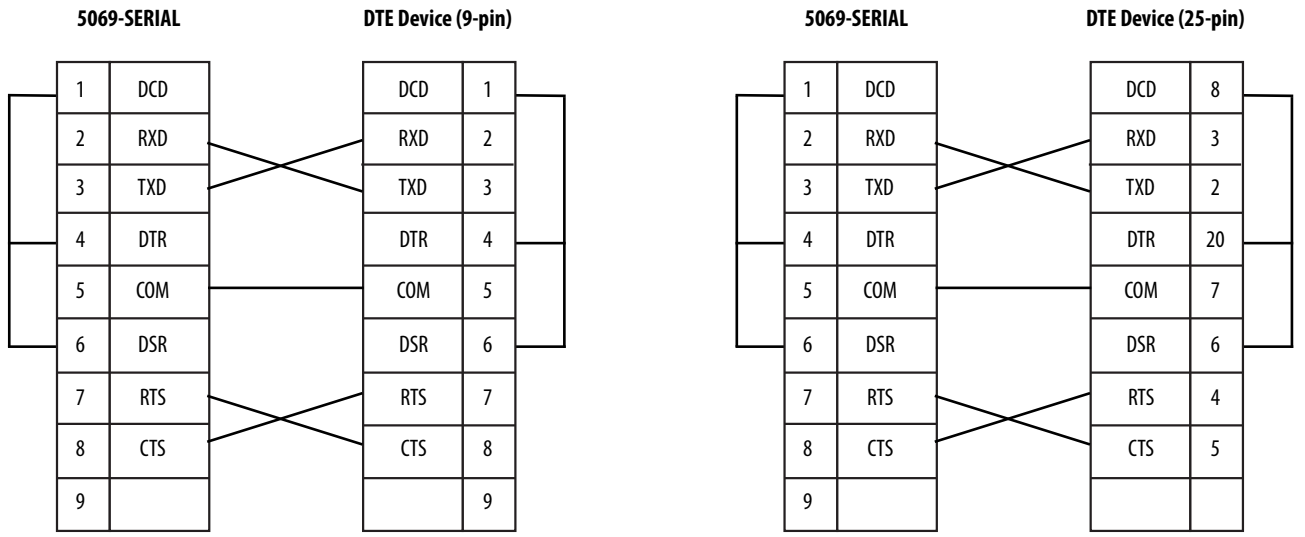
(3) B = Fixing signal level (Active/Inactive)

The following graphics show RS-232 wiring.

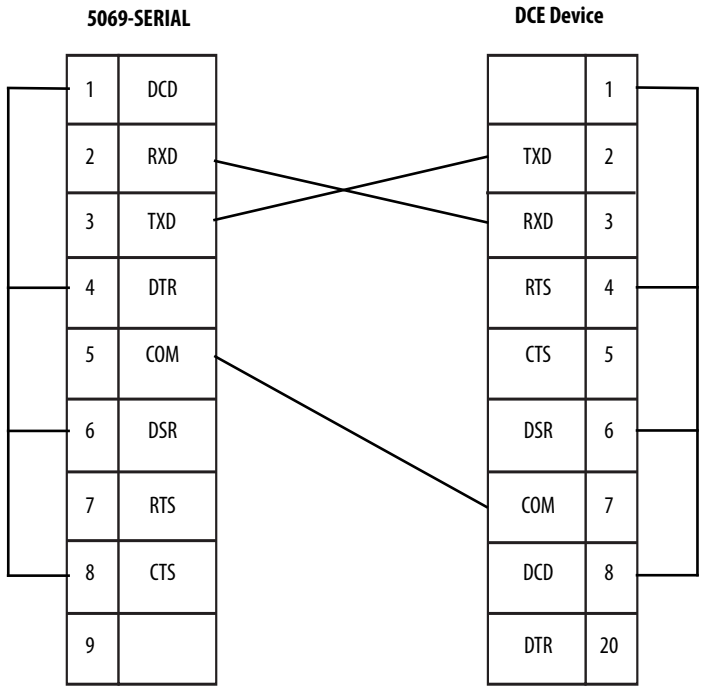
5069-SERIAL to DTE Device (9-pin or 25-pin) without Hardware Handshaking



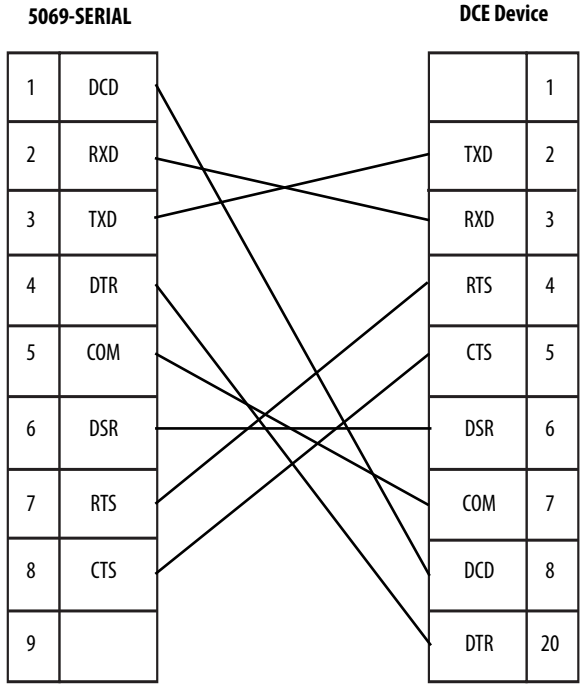
5069-SERIAL to DTE Device (9-pin or 25-pin) with "Half-duplex"



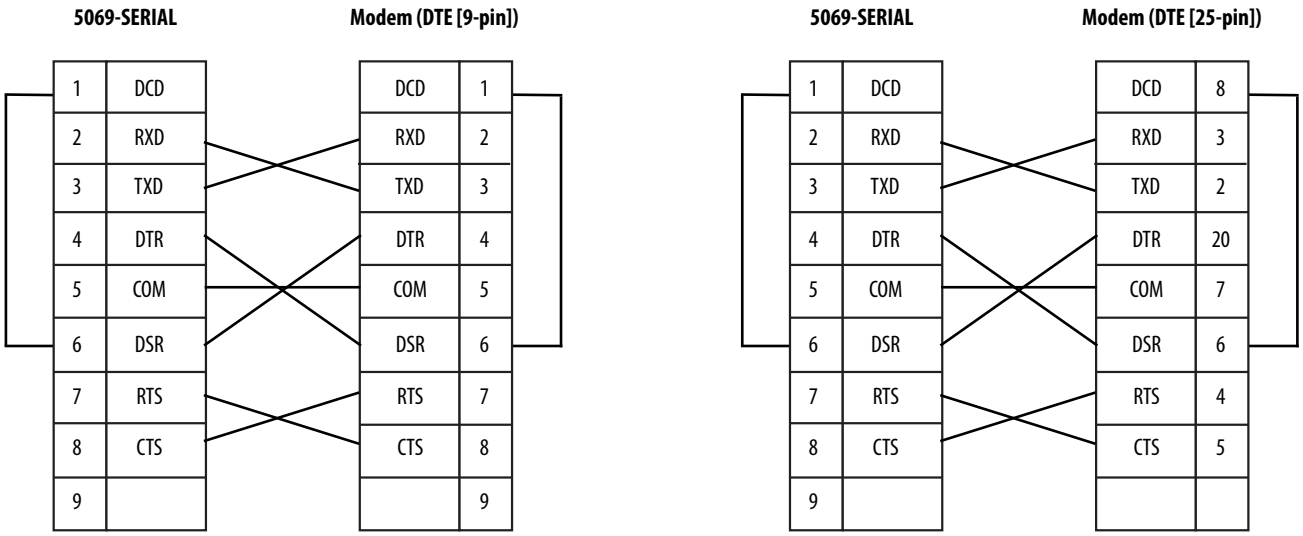
5069-SERIAL to DCE Device with "Full-duplex"



5069-SERIAL to DCE Device (Modem) with "Full or Half-duplex"

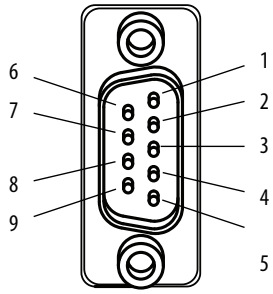


5069-SERIAL to DTE Device (9-pin or 25-pin) with "Full or Half-duplex" or Null Modem



RS-422 Wiring Example

Pins - RS-422



Pin	RS-422	Input (i)/Output (o)[1]	Wiring
1	-	-	-
2	Receive Data + (RXD+)	(i)	A[2]
3	Transmit Data + (TXD+)	(o)	A
4	-	-	B
5	Common (COM)	-	A
6	-	-	-
7	Transmit Data - (TXD-)	(o)	A
8	Receive Data - (RXD-)	(i)	A
9	-	-	-

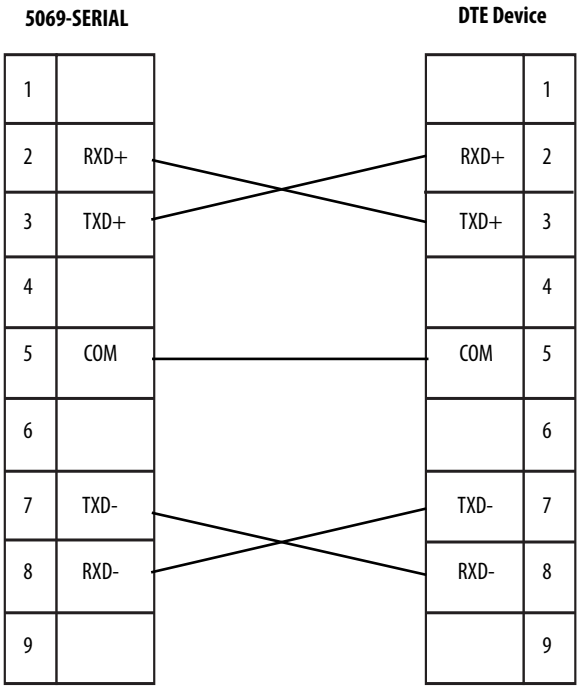
(1) From 5069-SERIAL

(2) A = Changing singal level (Active/Inactive)

The following graphic shows RS-422 wiring.

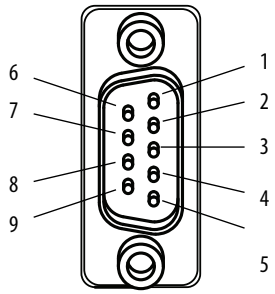
5069-SERIAL RS-422 Wiring

IMPORTANT Place the termination resistor between RxD+ and RxD- to implement this wiring.



RS-485 Wiring Example

Pins - RS-485



Pin	RS-485	Input (i)/Output (o)[1]	Wiring
1	-	-	-
2	-	-	-
3	Transmit/Receive Data + (TRXD+)	(i/o)	A[2]
4	-	-	-
5	Common (COM)	-	A
6	-	-	-
7	Transmit/Receive Data - (TRXD-)	(i/o)	A
8	-	-	-
9	-	-	-

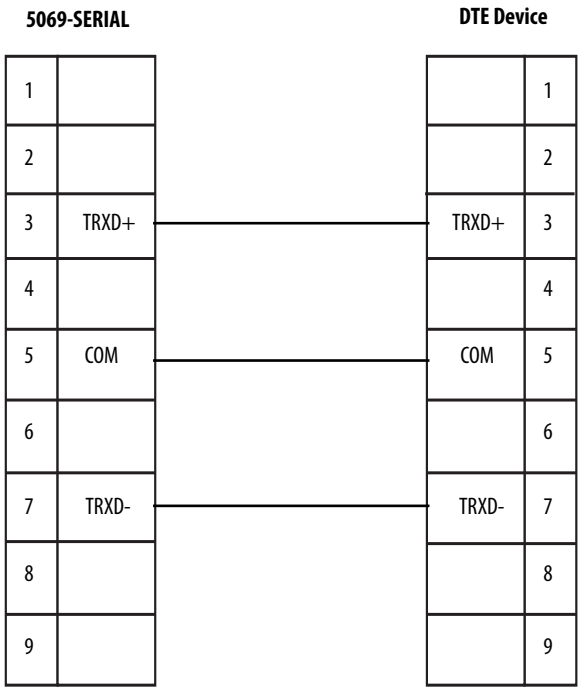
(1) From 5069-SERIAL

(2) A = Changing singal level (Active/Inactive)

The following graphic shows RS-485 wiring.

5069-SERIAL RS-485 Wiring

IMPORTANT Place the termination resister between TRXD+ and TRXD- to implement this wiring.



Technical Specifications - 5069-SERIAL

Attribute	5069-SERIAL
Operating modes	• Generic ASCII • Modbus RTU • Modbus ASCII
Inputs	• 2 full-duplex (RS-232, RS-422) • 2 half-duplex (RS-485)
Serial input voltage signal	• 3…25V DC regarding signal ground (SG) 0, Asserted, ON, Space, Active • -3…-25V DC regarding signal ground (SG) 1, Disasserted, OFF, Mark, Inactive
Voltage and current ratings	
MOD Power	100 mA @ 18…32V DC
MOD Power Passthrough, max	9.55 A @ 18…32V DC(3)
SA Power Passthrough, max	9.95 A @ 0…32V DC(4)
Do not exceed 10 A MOD or SA Power (Passthrough) current draw	
Power dissipation, max	2.8 W
Thermal dissipation, max	9.6 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type, SA and MOD Power to Backplane 250V (continuous), Basic Insulation Type, Backplane to Communication Channels 250V (continuous), Basic Insulation Type, Backplane to Chassis Ground 250V (continuous), Basic Insulation Type, Between Communication Channels 250V (continuous), Basic Insulation Type, SA to MOD Power 250V (continuous), Basic Insulation Type, Communication Channels to Chassis Ground 250V (continuous), Basic Insulation Type, SA and MOD Power to Chassis Ground 250V (continuous), Reinforced Insulation Type, SA and MOD Power to Communication Channels Basic Insulation Type tested at 2100V DC for 60 s Reinforced Insulation Type tested at 4200V DC for 60 s
Transmit transaction ID	0…255
Handshaking	RTS/CTS hardware handshake always enabled. RTS/CTS can be controlled by the user.
Module keying	None
Indicators	1 green/red module status indicator 1 transmit data (TXD) and 1 receive data (RXD) yellow/red status indicator per channel
Slot width	1
Dimensions (HxWxD), approx	137.85 x 22 x 105.42 mm (5.43 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB keying	None
Serial port connectors	Two DB-9 male with pins
Wire category(1), (2)	2 - power ports 2 - communication ports

Technical Specifications - 5069-SERIAL

Attribute	5069-SERIAL
Weight, approx	175 g (0.39 lb.)
Enclosure type	None (open-style)
Corrosion resistance classification	ISA S71.04 G2
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

(2) Use this Conductor Category information for planning conductor routing as described in the appropriate System Level Installation Manual

(3) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(4) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

Environmental Specifications - 5069-SERIAL

Attribute	5069-SERIAL
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C < Ta < 60 °C (32 °F < Ta < 140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 10V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on communication ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±2 kV line-earth (CM) on communication ports
Conducted RF immunity IEC 61000-4-6	10Vrms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz

Certifications - 5069-SERIAL

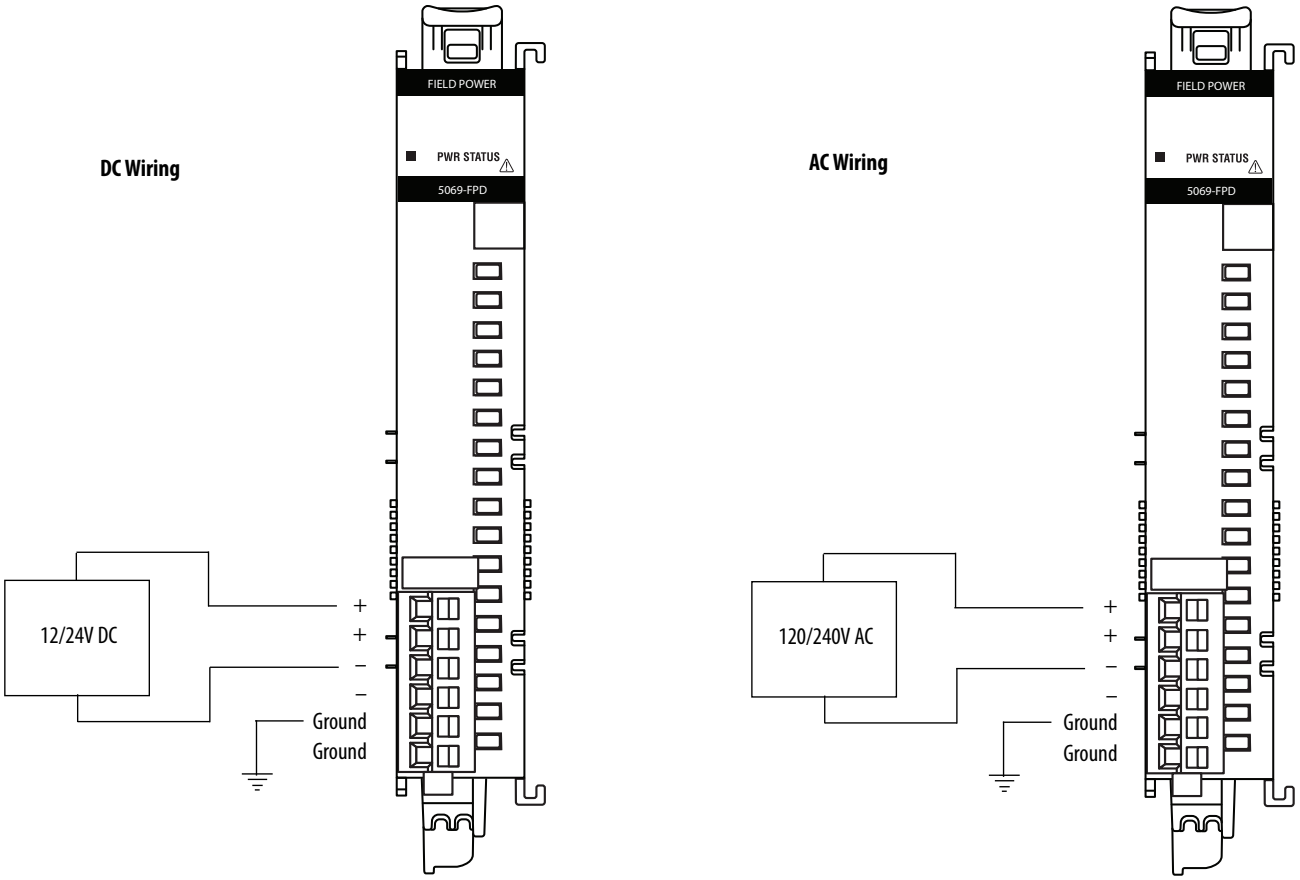
Certifications[1]	5069-SERIAL
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E322657. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: • EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4X Gc • DEMKO15ATEX1484X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4X Gc • IECEx UL 15.0055X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: • Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-FPD Field Potential Distributor

This figure shows wiring diagrams for the 5069-FPD field potential distributor connected to a discrete input device.

5069-FPD Wiring Diagrams



Technical Specifications - 5069-FPD

Attribute	5069-FPD
Voltage and current ratings	
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power	10 mA @ 0…32V DC 25 mA @ 0…240V AC, 47…63 Hz ATEX/IECEX, 125V AC, max
SA Power Passthrough, max(2)	9.99 A @ 0…32V DC 9.975 A @ 0…240V AC, 47…63 Hz ATEX/IECEX, 125V AC, max
Do not exceed 10 A MOD or SA Power (Passthrough) current draw	
Power dissipation, max	4.0 W
Thermal dissipation, max	13.6 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type Type tested at 1500V AC for 60 s
Module keying	None
Indicators	1 green module status indicator
Slot width	1
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
RTB	5069-RTB6-SCREW 5069-RTB6-SPRING
RTB torque (5069-RTB4-SCREW RTB only)	0.4 N•m (3.5 in•lb)
RTB keying	None
Wire category(3)	2 - on power ports
Wire size	
5069-RTB6-SPRING connections	0.5…1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only.
5069-RTB6-SCREW connections	0.5…1.5 mm^2 (22…16 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.
Insulation stripping length	
5069-RTB6-SPRING connections	10 mm (0.039 in.)
5069-RTB6-SCREW connections	12 mm (0.47 in.)
Weight, approx	175 g (0.39 lb)
Enclosure type	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - 5069-FPD

Attribute	5069-FPD
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports
Conducted RF immunity IEC 61000-4-6	10Vrms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz

Certifications - 5069-FPD

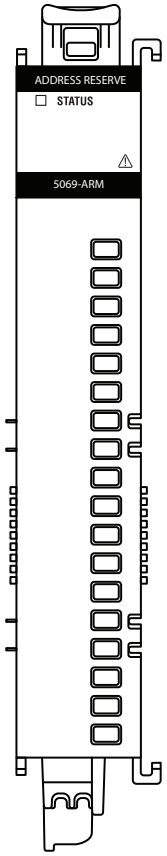
Certifications[1]	5069-FPD
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1455X When used at or below 125V AC
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0007X When used at or below 125V AC
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-ARM Address Reserve Module

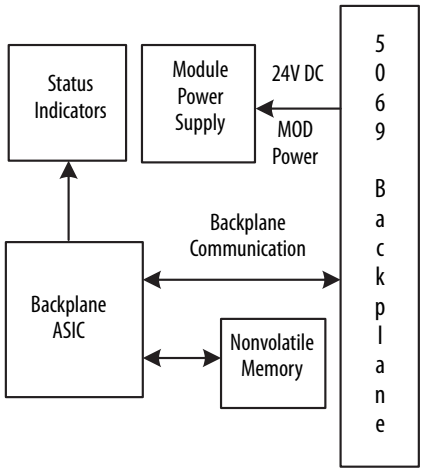
This figure shows the 5069-ARM module.

5069-ARM Module



This figure shows a functional block diagram for the 5069-ARM module.

5069-ARM Functional Block Diagram



Technical Specifications - 5069-ARM

Attribute	5069-ARM
Voltage and current ratings	
MOD Power	45 mA @ 18…32V DC
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power Passthrough, max(2)	9.95 A @ 0…32V DC 9.975 A @ 0…240V AC, 47…63 Hz ATEX/IECEX, 125V AC, max
Do not exceed 10 A MOD or SA Power (Passthrough) current draw	
Power dissipation, max	1.0 W
Thermal dissipation, max	3.4 BTU/hr
Module keying	None
Indicators	1 green/red module status indicator
Dimensions (HxWxD), approx	144.57 x 22 x 105.42 mm (5.69 x 0.87 x 4.15 in.)
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use the EN50022 - 35 x 7.5 mm (1.38 x 0.30 in.) DIN rail.
Weight, approx	175 g (0.39 lb)
Enclosure type	None (open-style)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Level of MOD Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

(2) Level of SA Power current that passes through the module depends on the system configuration, such as, module slot location and the other module types that are used in the system. For more information, see the CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, 5069-UM001, and EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, ENET-UM004.

Environmental Specifications - 5069-ARM

Attribute	5069-ARM
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock):	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock):	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat):	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating):	5 g @ 10…500 Hz

Environmental Specifications - 5069-ARM

Attribute	5069-ARM
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock):	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock):	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC61000-4-2:	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
Voltage variation IEC 61000-4-29:	10 ms interruption on DC supply ports

Certifications - 5069-ARM

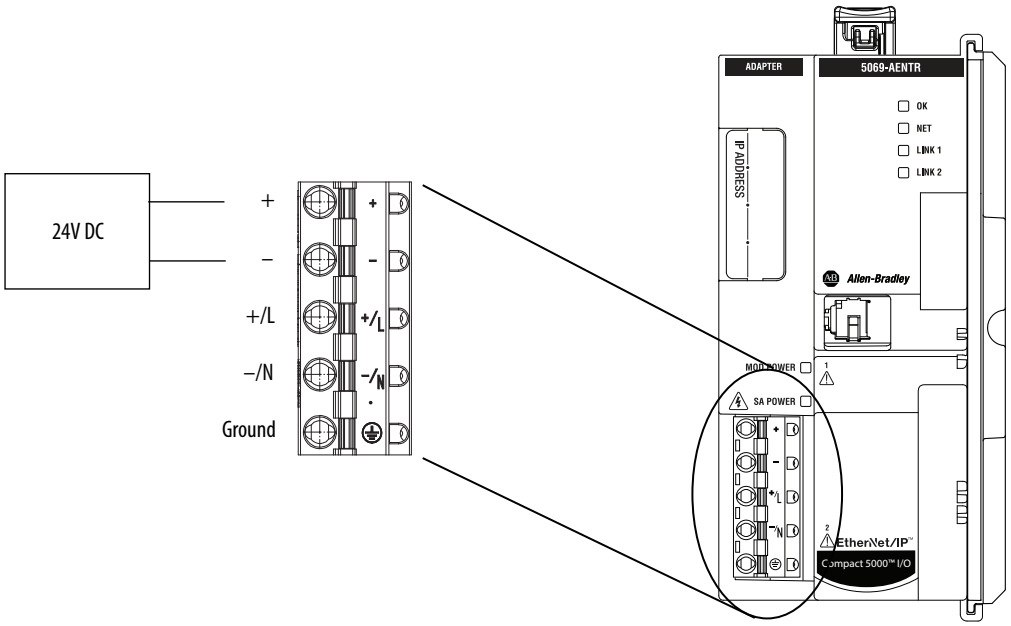
Certifications[1]	5069-ARM
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1455X When used at or below 125V AC
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0007X When used at or below 125V AC
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-AENTR EtherNet/IP Adapter

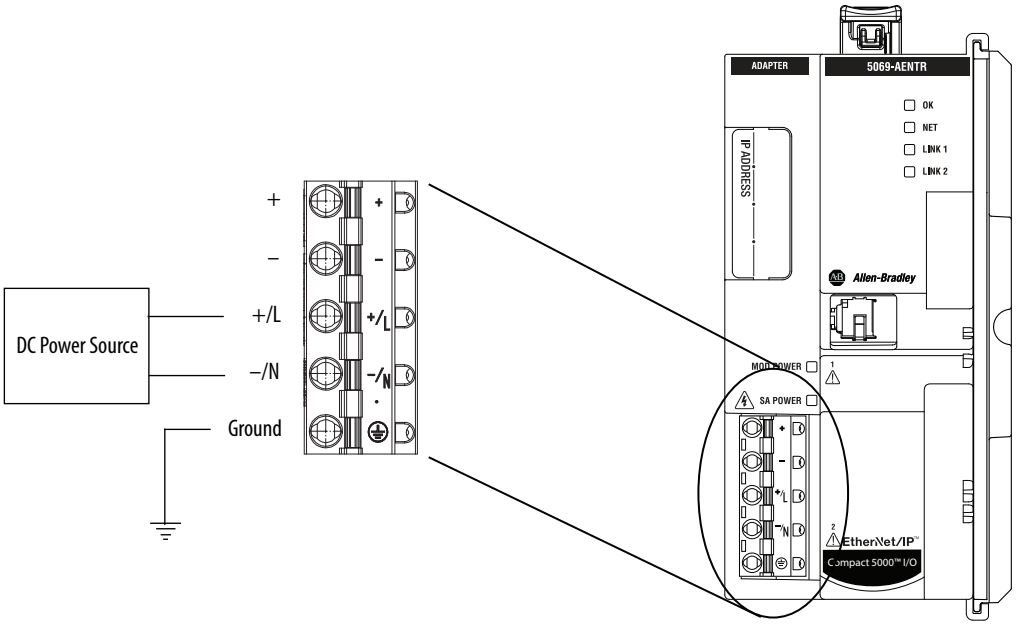
This figure shows a wiring diagram for how to connect MOD power to the 5069-AENTR EtherNet/IP adapter.

5069-AENTR Wiring Diagram - MOD Power (DC)



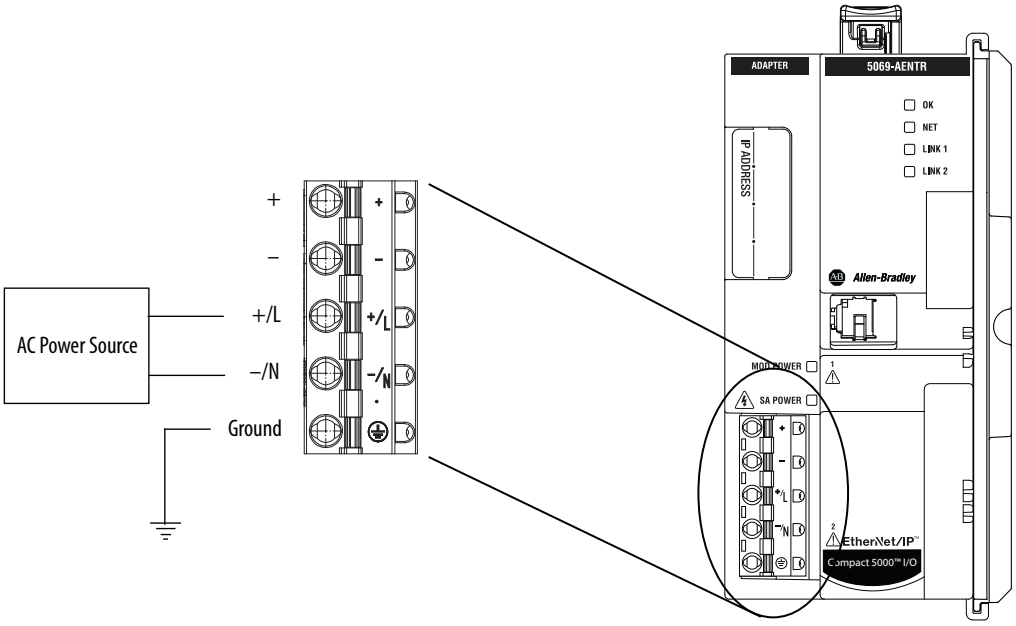
This figure shows a wiring diagram for how to connect SA power (DC) to the 5069-AENTR EtherNet/IP adapter.

5069-AENTR Wiring Diagram - SA Power (DC)



This figure shows a wiring diagram for how to connect SA power (AC) to the 5069-AENTR EtherNet/IP adapter.

5069-AENTR - Wiring Diagram - SA Power (AC)



Technical Specifications - 5069-AENTR

Attribute	5069-AENTR
Enclosure type rating	None (open-style)
Voltage and current ratings	
MOD Power	220 mA @ 18…32V DC
MOD Power inrush	1750 mA for 70 ms
MOD Power Passthrough, max[1]	9.78 A @ 18…32V DC
SA Power	5 mA @ 0…32V DC 2 mA @ 0…240V AC, 47…63 Hz ATEX/IECEx, 125V AC Max
SA Power Passthrough, max[2]	9.95 A @ 0…32V DC 9.975 A @ 0…240V AC, 47…63 Hz ATEX/IECEx, 125V AC Max
Do not exceed 10 A current draw at the MOD or SA Power RTB.	
Recommended external overcurrent protection	MOD Power: 10…12A @ 22.5…43.2 A2t, Fast Acting SA Power: 20 A @ 250V AC
Power dissipation, max	8.5 W
Thermal dissipation, max	29 BTU/hr
Isolation voltage	250V (continuous), Basic Insulation Type, SA, and MOD Power to Backplane 250V (continuous), Basic Insulation Type, SA to MOD Power 250V (continuous), Basic Insulation Type, Ethernet to Backplane Type tested at 1500V AC for 60 s 250V (continuous), Double Insulation Type, Ethernet to MOD Power 250V (continuous), Double Insulation Type, Ethernet to SA Power Type tested at 4242V DC for 60 s No isolation between Ethernet ports

Technical Specifications - 5069-AENTR

Attribute	5069-AENTR
Module keying	Electronic keying via programming software
Dimensions (HxWxD), approx	138 x 56 x 105 mm (5.43 x 2.20 x 4.15 in.)
RTB	We recommend that you order only the RTB type that your system requires. RTBs are available in separately ordered 5069 RTB kits. The following kits are available: • Kit catalog number 5069-RTB5-SCREW kit contains two 5069-RTB5-SCREW RTBs. • Kit catalog number 5069-RTB5-SPRING kit contains two 5069-RTB5-SPRING RTBs. **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O EtherNet/IP adapters. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB5-SCREW RTB only)	0.5…0.6 N•m (4.4…5.3 lb•in)
RTB keying	None
Wiring category[3], [4]	2 - on signal ports 1 - on power ports 2 - on Ethernet ports
Wire size	0.25…2.5 mm^2 (22…14 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation m, single wire connection only. Grounding: 2.5 mm^2 (14 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 3.5mm (0.14in) max diameter including insulation, single wire connection only. Ethernet connections: Ethernet Cabling and Installation according to IEC 61918 and IEC 61784-5-2.
Insulation stripping length	
5069-RTB5-SPRING connections	10 mm (0.39 in.)
5069-RTB5-SCREW connections	10 mm (0.39 in.)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Maximum level of MOD Power current that the adapter can pass through to the next module in the system.

(2) Maximum level of SA Power current that the adapter can pass through to the next module in the system.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

(4) Use this Conductor Category information for planning conductor routing as described in the appropriate System Level Installation Manual.

Environmental Specifications - 5069-AENTR

Attribute	5069-AENTR
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	CISPR 11/22, Class A
ESD immunity IEC61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 10V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±3 kV @ 5 kHz on power ports ±3 kV @ 5 kHz on Ethernet ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±2 kV line-earth (CM) on Ethernet ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz on power and Ethernet ports

Certifications - 5069-AENTR

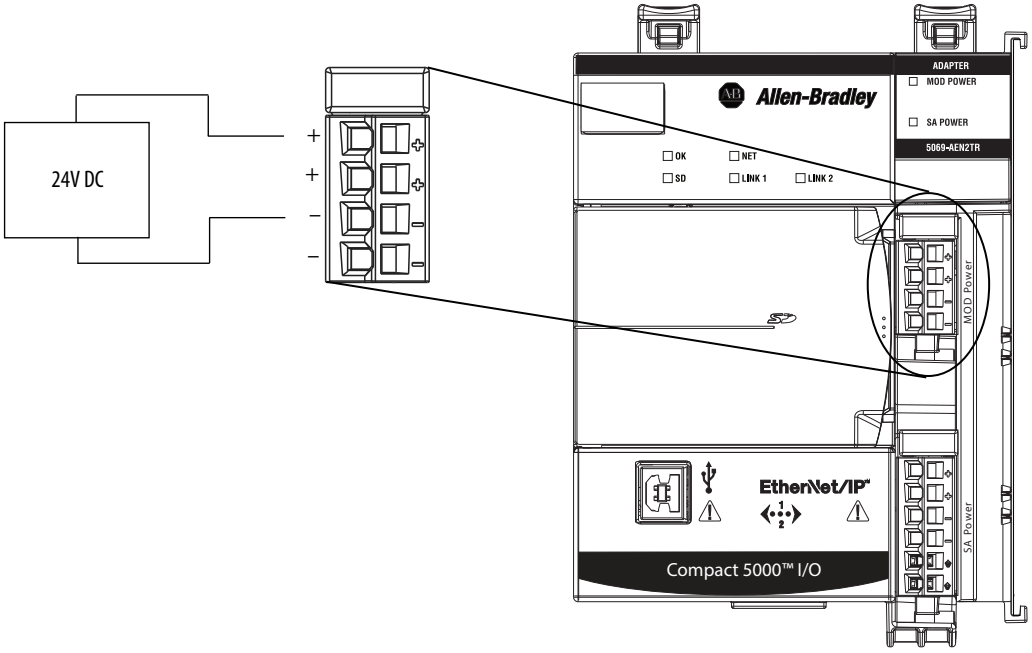
Certifications[1]	5069-AENTR
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E322657. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • EN 60079-0; General Requirements • II 3 G Ex nA IIC T4 Gc • DEMKO 16 ATEX 1758X
IECEx	IECEx System, compliant with: • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • IEC 60079-0; General Requirements • II 3 G Ex nA IIC T4 Gc • IECEx UL 16.0124X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

5069-AEN2TR EtherNet/IP Adapter

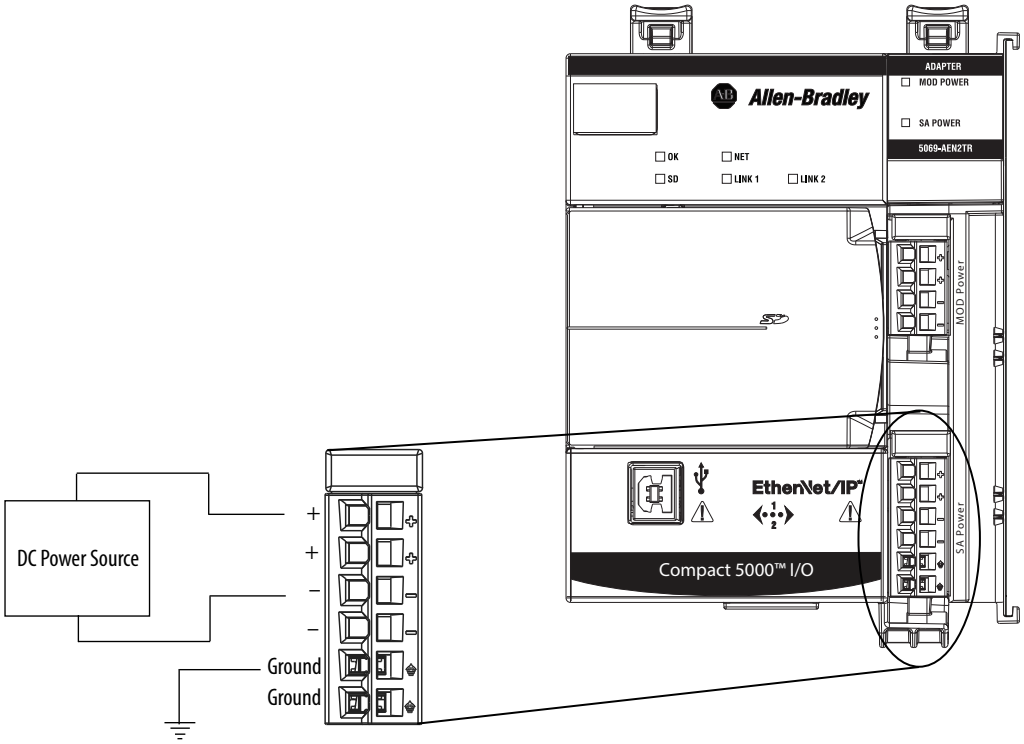
This figure shows a wiring diagram for how to connect MOD power to the 5069-AEN2TR EtherNet/IP adapter.

5069-AEN2TR Wiring Diagram - MOD Power (DC)



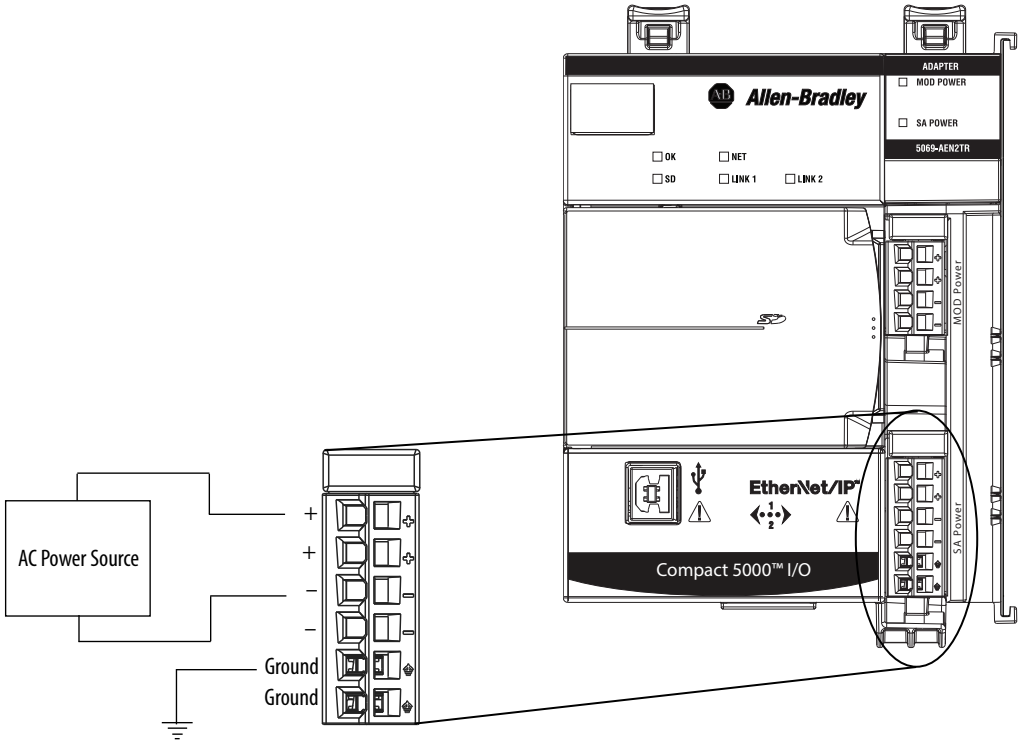
This figure shows a wiring diagram for how to connect SA power (DC) to the 5069-AEN2TR EtherNet/IP adapter.

5069-AEN2TR Wiring Diagram - SA Power (DC)



This figure shows a wiring diagram for how to connect SA power (AC) to the 5069-AEN2TR EtherNet/IP adapter.

5069-AEN2TR - Wiring Diagram - SA Power (AC)



Technical Specifications

Attribute	5069-AEN2TR
Enclosure type rating	None (open-style)
Voltage and current ratings	
MOD Power	450 mA @ 18…32V DC
MOD Power inrush	850 mA for 125 ms
MOD Power Passthrough, max(1)	9.55 A @ 18…32V DC
SA Power	10 mA @ 0…32V DC 25 mA @ 0…240V AC, 47…63 Hz ATEX/IECEx, 125V AC Max
SA Power Passthrough, max(2)	9.95 A @ 0…32V DC 9.975 A @ 0…240V AC, 47…63 Hz ATEX/IECEx, 125V AC Max Do not exceed 10 A current draw at the MOD or SA Power RTB.
Recommended external overcurrent protection	N/A
Power dissipation, max	8.5 W
Thermal dissipation, max	29 BTU/hr

Technical Specifications

Attribute	5069-AEN2TR
Isolation voltage	250V (continuous), basic insulation type, SA, and MOD Power to backplane 250V (continuous), basic insulation type, SA to MOD Power 250V (continuous), basic insulation type, Ethernet to backplane 250V (continuous), double insulation type, Ethernet to MOD Power 250V (continuous), double insulation type, Ethernet to SA Power 50V (continuous), functional insulation type, Ethernet to USB 250V (continuous), basic insulation type, USB to backplane 250V (continuous), double insulation type, USB to MOD Power 250V (continuous), double insulation type, USB to SA Power No isolation between Ethernet ports Type tested at 1500V AC for 60 s
Module keying	Electronic keying via programming software
Dimensions (HxWxD), approx	138 x 98 x 137 mm (5.43 x 3.86 x 5.39 in.)
RTB	RTBs are available in separately ordered 5069 RTB kits. The MOD power connection uses a 4-point RTB, and the SA power connection uses a 6-point RTBs. The following kits are available: • Kit catalog number 5069-RTB64-SCREW contains RTB catalog numbers 5069-RTB6-SCREW and 5069-RTB4-SCREW • Kit catalog number 5069-RTB64-SPRING contains RTB catalog numbers 5069-RTB6-SPRING and 5069-RTB4-SPRING **IMPORTANT**: You must order RTBs separately. RTBs do not ship with Compact 5000 I/O EtherNet/IP adapters. We recommend that you order only the RTB type that your system requires.
RTB torque (5069-RTB4-SCREW and 5069-RTB6-SCREW only)	0.4 N•m (3.5 lb•in)
RTB keying	None
Wiring category[3]	3 - on USB port 2 - on power ports 2 - on Ethernet ports
Wire size	
5069-RTB4-SPRING, 5069-RTB6-SPRING	0.5...1.5 mm^2 (22…16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 2.9 mm (0.11 in.) max diameter including insulation, single wire connection only
5069-RTB4-SCREW, 5069-RTB6-SCREW	0.5...1.5 mm^2 (22…16 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
Ethernet connections	Ethernet Cabling and Installation according to IEC 61918 and IEC 61784-5-2
Insulation stripping length	
5069-RTB4-SPRING, 5069-RTB6-SPRING connections	10 mm (0.39 in.)
5069-RTB4-SCREW, 5069-RTB6-SCREW connections	12 mm (0.47 in.)
North American temp code	T4
ATEX temp code	T4
IECEx temp code	T4

(1) Maximum level of MOD Power current that the adapter can pass through to the next module in the system.

(2) Maximum level of SA Power current that the adapter can pass through to the next module in the system.

(3) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications

Attribute	5069-AEN2TR
Temperature, operating IEC 60068-2-1 (Test Ab, Operating Cold), IEC 60068-2-2 (TestBb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…+85 °C (-40…+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions	IEC 61000-6-4
ESD immunity IEC61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±4 kV @ 5 kHz on power ports ±2 kV @ 5 kHz on Ethernet ports
Surge transient immunity IEC 61000-4-5	±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports ±2 kV line-earth (CM) on Ethernet ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz on power and Ethernet ports
Voltage variation IEC 61000-4-29	10 ms interruption on MOD Power port

Certifications

Certifications[1]	5069-AEN2TR
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2014/35/EU LVD, compliant with: • EN 61010-2-201; Control Equipment Safety Requirements European Union 2011/65/EU RoHS, compliant with: • EN 50581; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 2014/34/EU ATEX Directive, compliant with: • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • EN 60079-0; General Requirements • II 3 G Ex nA IIC T4 Gc • DEMKO 15 ATEX 1455X When used at or below 125V AC
IECEx	IECEx System, compliant with: • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • IEC 60079-0; General Requirements • II 3 G Ex nA IIC T4 Gc • IECEx UL 15.0007X When used at or below 125V AC
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

Minimum Spacing Requirements

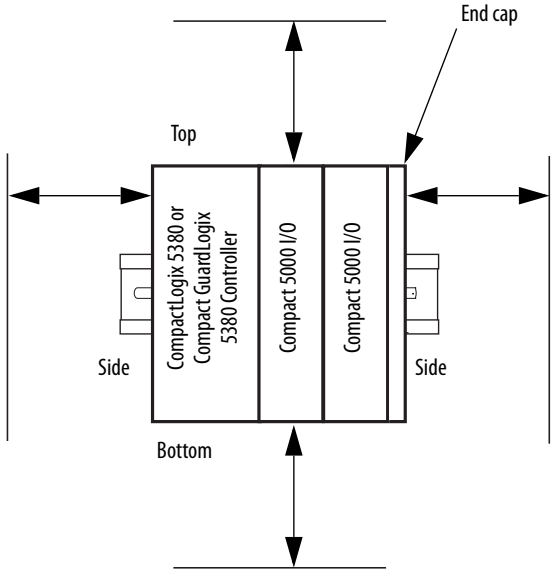
There are minimum spacing requirements based on whether Compact 5000 I/O modules are installed in a CompactLogix 5380 or Compact GuardLogix 5380 controller system or in a Compact 5000 I/O EtherNet/IP adapter system.

Controller Minimum Spacing Requirements

The minimum distance between the controller system and enclosure walls, wireways, and adjacent equipment varies based on current operating temperatures.

The minimum distances on all sides of the system are as follows:

- CompactLogix 5380 Controller
  - 50.80 mm (2.00 in.) at 55 °C (131 °F)
  - 101.60 mm (4.00 in) at 60 °C (140 °F)
- Compact GuardLogix 5380 Controller
  - 50.80 mm (2.0 in.) at 50 °C (122 °F)
  - 101.7 mm (4.00 in.) at 55 °C (131 °F)
  - 152.4 mm (6.00 in) at 60 °C (140 °F)



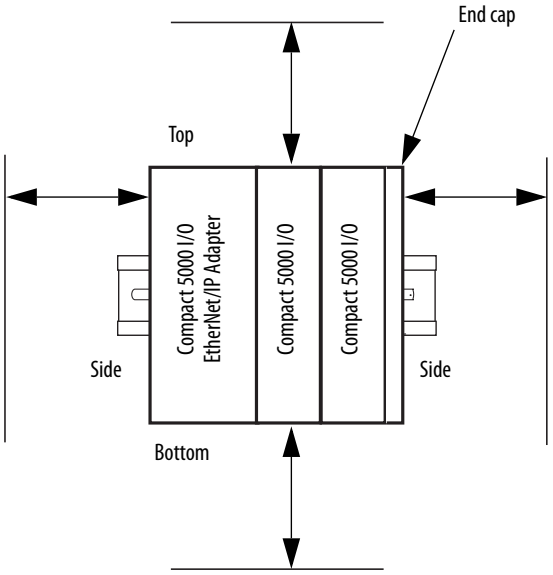
For more information on how to install a CompactLogix 5380 or Compact GuardLogix 5380 controller system, see these publications:

- CompactLogix 5380 Controllers Installation Instructions, publication 5069-IN013
- Compact GuardLogix 5380 SIL 2 Controllers Installation Instructions, publication 5069-IN014

Adapter Minimum Spacing Requirements

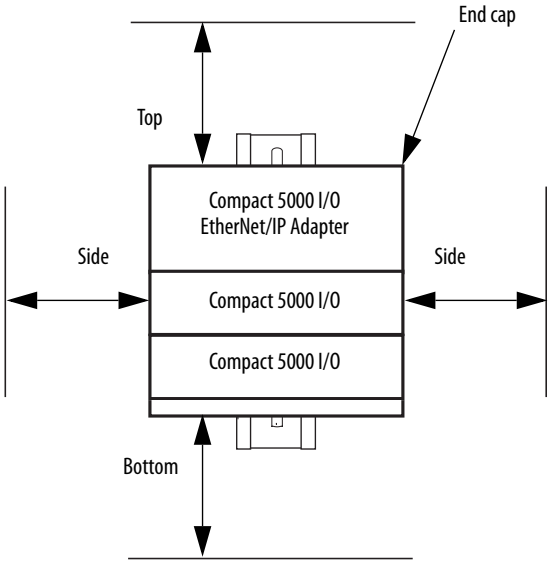
The minimum distance on all sides of the adapter system is 25.40 mm (1.00 in).

Horizontal Mounting



Vertical Mounting

Only the 5069-AENTR adapter supports vertical mounting.



For more information on how to install a Compact 5000 I/O EtherNet/IP adapter system, see the Compact 5000 I/O EtherNet/IP Adapters Installation Instructions, publication 5069-IN003.

Additional Resources

These documents contain more information about related products from Rockwell Automation.

Resource	Description
Compact 5000 Digital I/O Modules in Logix 5000 Control Systems User Manual, publication 5000-UM004	Describes how to configure and operate Compact 5000 digital I/O modules.
Compact 5000 Analog I/O Modules in Logix 5000 Control Systems User Manual, publication 5000-UM005	Describes how to configure and operate Compact 5000 analog I/O modules.
Compact 5000 High-speed Counter Module in Logix 5000 Control Systems User Manual, publication 5000-UM006	Describes how to configure and operate Compact 5000 high-speed counter modules.
Compact 5000 I/O Serial Module User Manual, publication 5069-UM003	Describes how to configure and operate Compact 5000 serial modules.
CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, publication 5069-UM001	Describes how to configure and operate CompactLogix 5380 and Compact GuardLogix 5380 controllers.
EtherNet/IP Communication Modules in Logix 5000 Control Systems User Manual, publication ENET-UM004	Describes how to configure and operate the Compact 5000 I/O EtherNet/IP adapters.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.rockwellautomation.com/rockwellautomation/certification/overview.page	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Notes:

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	www.rockwellautomation.com/knowledgebase
Local Technical Support Phone Numbers	Locate the phone number for your country.	www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	www.rockwellautomation.com/literature
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	www.rockwellautomation.com/global/support/pcdc.page

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.

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