# CompactLogix and Compact GuardLogix Systems

CompactLogix 5380, Compact GuardLogix 5380

CompactLogix 5480

CompactLogix 5370, Compact GuardLogix 5370

Armor CompactLogix 5370, Armor Compact GuardLogix 5370

Allen-Bradley
by ROCKWELL AUTOMATION

Selection Guide

Original Instructions

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# What's New

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes. Translated versions are not always available for each revision.

| Topic | Page |
|---|---|
| CompactLogix™ 5380 Process controllers (5069-L320ERP, 5069-L340ERP) | 9, 22, 26 |
| Added power information for the Compact 5000 I/O Relay Output Modules | 27 |

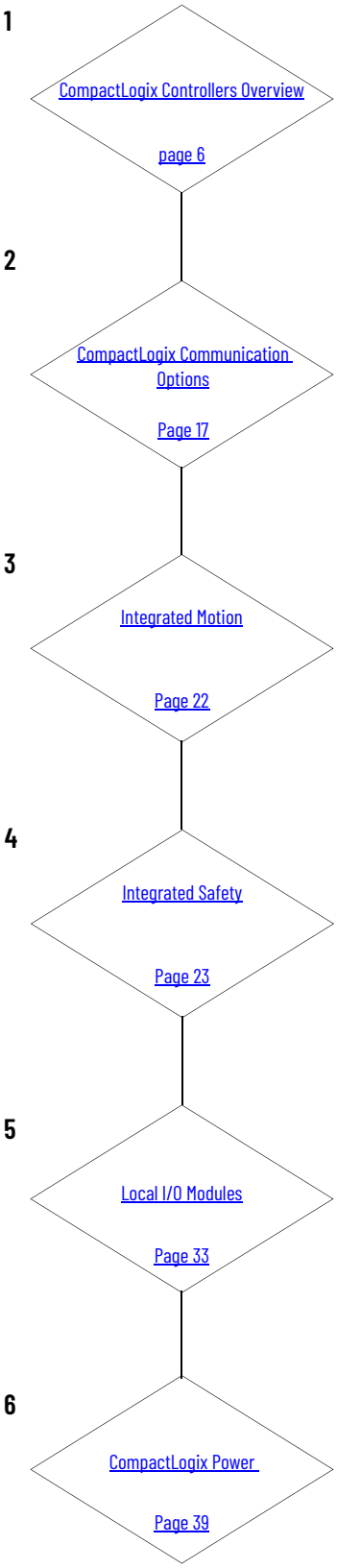
# CompactLogix Controllers Comparison

| Characteristic | CompactLogix™ 5380<br>Compact GuardLogix 5380 | CompactLogix 5480 | CompactLogix 5370 L3<br>Compact GuardLogix 5370 L3<br>Armor™ CompactLogix 5370 L3<br>Armor Compact GuardLogix 5370 | CompactLogix 5370 L2 | CompactLogix 5370 L1 |
|---|---|---|---|---|---|
| Controller tasks:<br>• Continuous<br>• Periodic<br>• Event | 32<br>1000 programs/task | | | | |
| Event tasks | Consumed tag, EVENT instruction triggers, Module Input Data Change, and motion events | Consumed tag, EVENT instruction triggers, Module Input Data Change, and motion events | Consumed tag, EVENT instruction triggers, and motion events | | |
| User memory | Standard 0.6...10MB<br>Safety 0.3...5 MB | Standard 3...20MB | Standard 1.0...5.0 MB<br>Safety 0.5...1.5 MB | 750 KB...1.0 MB | 384 KB ...1.0 MB |
| Built-in ports | 2 - Ethernet,<br>10 Mpbs/100 Mbps/1 Gbps<br>1 - port USB client | Logix control engine use:<br>• 3 - Ethernet,<br>10 Mbps/100 Mbps/1 Gbps<br>• 1- USB client<br>Microsoft Windows® 10 use:<br>• 1 - Ethernet,<br>10 Mbps/100 Mbps/1 Gbps<br>• 2 - USB 3.0 ports<br>• 1 - DisplayPort | 2 - Ethernet,<br>10 Mpbs/100 Mbps<br>1 - USB Client | 2 - Ethernet,<br>10 Mpbs/100 Mbps<br>1 - USB Client | 2 - Ethernet,<br>10 Mpbs/100 Mbps<br>1 - USB Client |
| Communication options | • EtherNet/IP™<br>– Embedded switch<br>– Two IP address<br>• USB Client | • EtherNet/IP<br>– Embedded switch<br>– Two IP address<br>• USB Client | • EtherNet/IP<br>– Embedded switch<br>– Single IP address<br>• DeviceNet®<br>• USB Client | • EtherNet/IP<br>– Embedded switch<br>– Single IP address<br>• DeviceNet<br>• USB Client | • EtherNet/IP<br>– Embedded switch<br>– Single IP address<br>• USB Client |
| Controller connections | — | — | 256 connections | | |
| Network nodes(1) | 16...180 | 60...250 | 16...80 | 8...16 | 4...8 |
| Controller redundancy | None | None | Back up via DeviceNet | None | None |
| Conformal coating | Available | None | Available | Available | Available |

(1) Use the most current version of the Logix Designer application. Previous versions can support fewer nodes.

## Notes:

# Select a CompactLogix System




- Provides an overview of the CompactLogix™ system
- Provides basic system examples
- Select a controller:
  Standard
  Safety
  On-Machine™
  Real-time control + Microsoft Windows© applications

Select:
- Networks
  - EtherNet/IP™ mode
  - EtherNet/IP network topology
  - Network communication rate
- Communication interfaces
- Associated cables and network equipment

Select:
- Controller that supports integrated motion on an EtherNet/IP network
- Drives, motors, and accessories (use Motion Analyzer)

Select:
- Controller that supports integrated safety on an EtherNet/IP network
- Safety I/O and Safety Devices
- Drives, motors, and accessories (use Motion Analyzer)

Select:
- Compact 5000™ I/O, 1734 POINT I/O™, or 1769 Compact I/O™
- Associated cables and accessories

Select:
- Additional 1769 power supplies as needed

# CompactLogix Controllers Overview

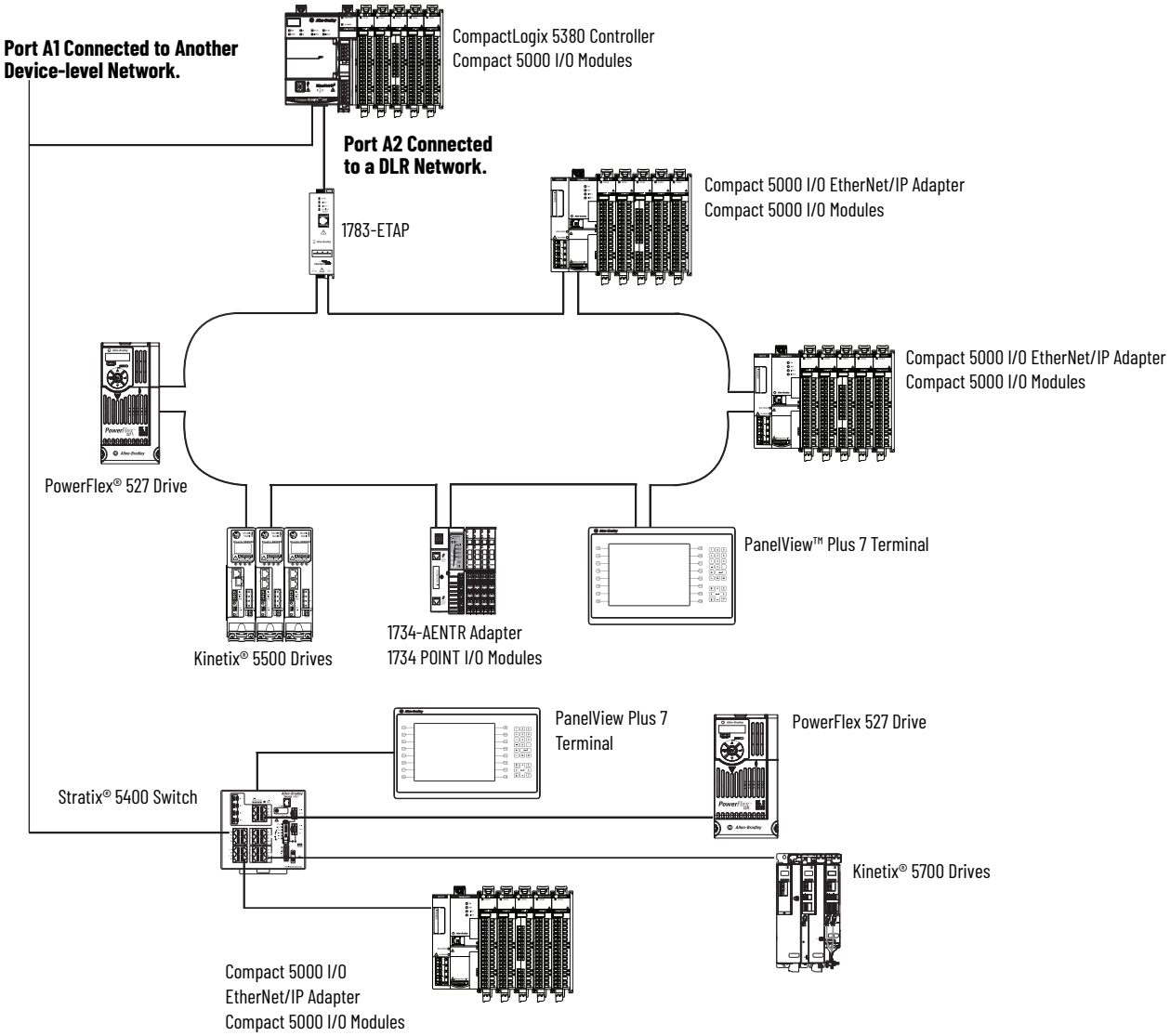
The CompactLogix system is designed to provide a Logix solution for differently sized applications. Most CompactLogix controllers are ideal for small and mid-size applications. These applications are machine-level control applications. The CompactLogix 5480 controllers, however, are more ideal for use in mid to large-size applications.

The CompactLogix platform brings together the benefits of a common programming environment, common networks, and common control engine in a small footprint with high performance. Combined with 1769 Compact I/O or Compact 5000 I/O modules, the CompactLogix platform supports simple to more complex motion, with unprecedented power and scalability. A CompactLogix platform is ideal for systems that require standalone and system-connected control over EtherNet/IP, ControlNet®, or DeviceNet® networks.

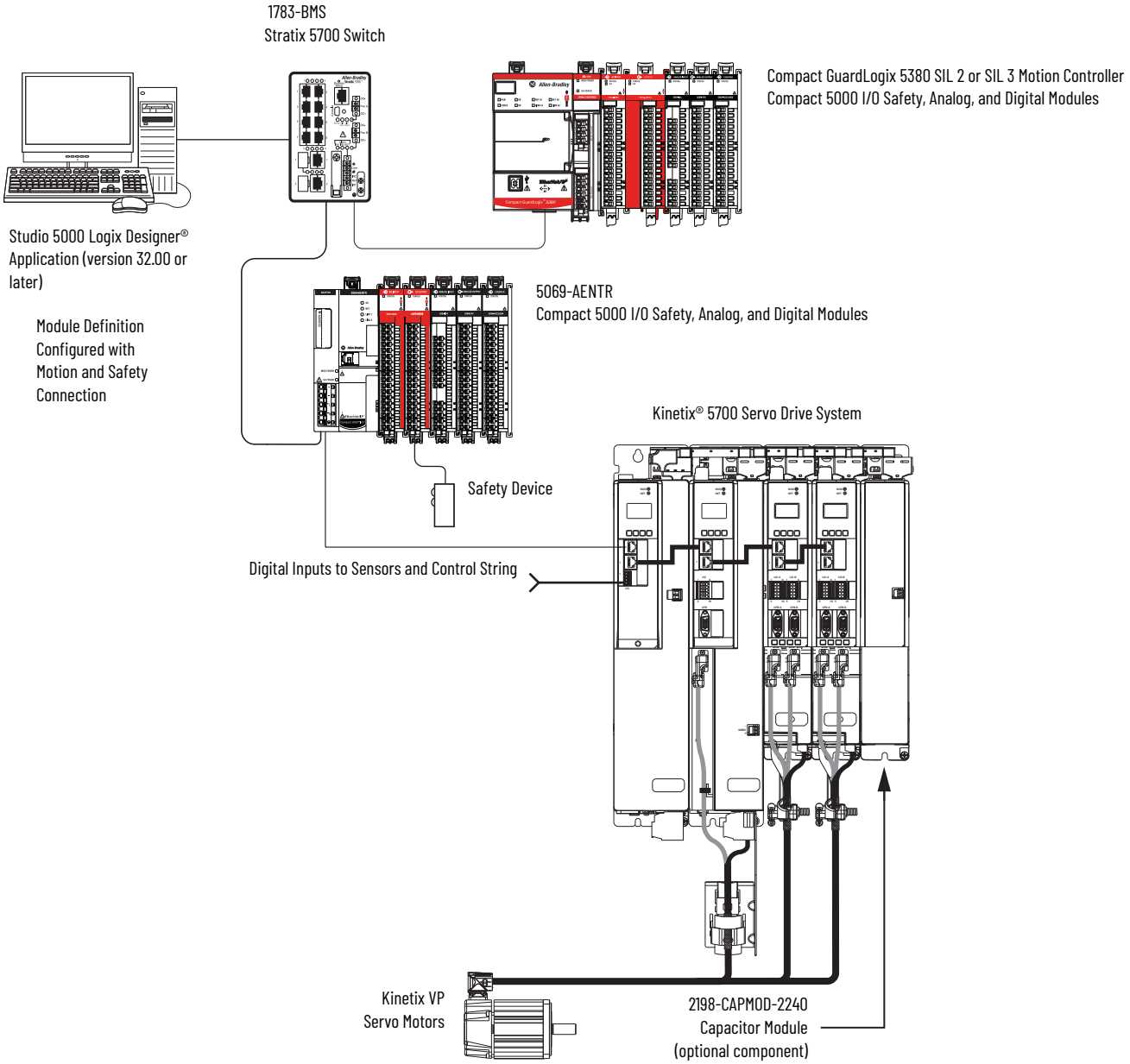
For detailed specifications, see the following publications:

- CompactLogix 5380, Compact GuardLogix 5380, and CompactLogix 5480 Controllers Specifications Technical Data, publication 5069-TD002
- CompactLogix Controllers Specifications Technical Data, publication 1769-TD005

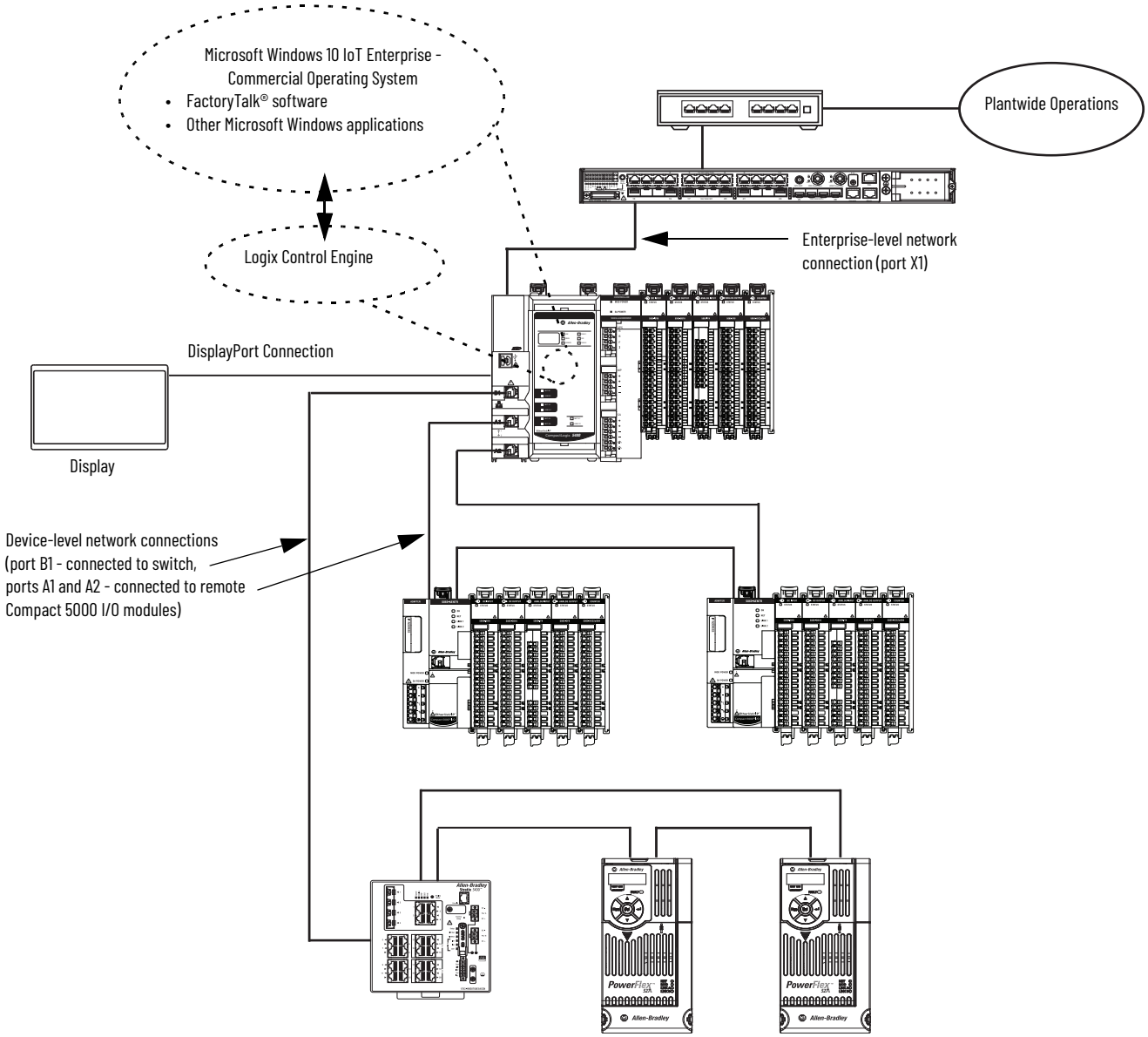
**Standard CompactLogix Example: Dual-IP Mode with a Device Level Ring**



## Compact GuardLogix® Example: Motion and Safety Configuration (single controller)



## CompactLogix 5480 Example: Connected to Enterprise-level and Device-level Networks



# CompactLogix 5380 Controllers

CompactLogix™ 5380 controllers help enable faster system performance, capacity, productivity and security to meet the growing demands of smart machines and equipment for manufacturing.

All CompactLogix™ 5380 controllers use the Studio 5000® development environment, combining elements of design into one standard framework that can optimize productivity and reduce time to commission.

The CompactLogix 5380 controllers offer configurable EtherNet/IP modes, that is, Dual-IP mode or Linear/DLR mode. When the controller operates in Dual-IP mode, each port requires its own network configuration.

The residual stored energy of the 5069-L310ER-NSE controller depletes to 400 µJ or less in 40 seconds. The 5069-L310ER-NSE controller does not maintain the real-time clock on power cycle.

CompactLogix 5380 process controllers (5069-L320ERP, 5069-L340ERP) are extensions of the Logix 5000™ controller family that focus on plantwide process control. The process controller comes configured with a default process tasking model and dedicated PlantPAx® process instructions optimized for process applications and that improve design and deployment efforts. CompactLogix 5380 process controllers support motion, and are conformal coated for extended protection in harsh, corrosive environments.

| Characteristic | 5069-L306ER, 5069-L306ERM | 5069-L310ER, 5069-L310ER-NSE, 5069-L310ERM | 5069-L320ER, 5069-L320ERM, 5069-L320ERMK 5069-L320ERP | 5069-L330ER, 5069-L330ERM, 5069-L330ERMK | 5069-L340ER, 5069-L340ERM 5069-L340ERP | 5069-L350ERM, 5069-L350ERMK | 5069-L380ERM | 5069-L3100ERM |
|---|---|---|---|---|---|---|---|---|
| Available user memory | 0.6 MB | 1 MB | 2 MB | 3 MB | 4 MB | 5 MB | 8 MB | 10 MB |
| Memory card | 1784-SD1 (1 GB), 1784-SD2 (2 GB) - ships with controller, 1784-SDHC8 (8 GB), 1784-SDHC32 (32 GB), 9509-CMSDCD4 (4 GB) CodeMeter CmCard card | | | | | | | |
| Communication ports | 2 - Ethernet, 10 Mbps/100 Mbps/1 Gbps<br>1- USB client | | | | | | | |
| EtherNet/IP nodes supported, max(1) | 16 | 24 | 40 | 60 | 90 | 120 | 150 | 180 |
| Axes supported, max(2)(3) | 256 | | | | | | | |
| CIP® Drive axes (position loop) supported, max | 5069-L306ERM: 2 | 5069-L310ERM: 4 | 5069-L320ERM, 5069-L320ERMK: 8 | 5069-L330ERM, 5069-L330ERMK: 16 | 5069-L340ERM: 20 | 24 | 28 | 32 |
| Local I/O modules, max | 8 | | 16 | 31(4) | | | | |
| Battery | None | | | | | | | |
| Power supply terminals (kits sold separately) | 5069-RTB64-SCREW kit: Includes 5069-RTB6-SCREW and 5069-RTB4-SCREW RTBs<br>5069-RTB64-SPRING kit: Includes 5069-RTB6-SPRING and 5069-RTB4-SPRING RTBs | | | | | | | |
| Programming software support | Based on catalog number:<br>• Version 28 or later - 5069-L320ER, 5069-L340ERM only<br>• Version 29 or later - 5069-L306ER, 5069-L306ERM, 5069-L310ER, 5069-L310ER-NSE, 5069-L310ERM, 5069-L320ERM, 5069-L320ERMK, 5069-L330ER, 5069-L330ERM, 5069-L330ERMK, 5069-L340ER<br>• Version 30 or later - 5069-L350ERM, 5069-L350ERMK, 5069-L380ERM, 5069-L3100ERM<br>• Version 33 or later - 5069-L320ERP, 5069-L340ERP | | | | | | | |

(1) Use the most current version of the Logix Designer application. Previous versions can support fewer nodes.
(2) Only controllers that have an M in their catalog number support Integrated Motion on EtherNet/IP networks.
(3) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.
(4) When you use a 5069-L330ER, 5069-L330ERM, or 5069-L330ERMK controller with the Logix Designer application, version 29.00.00, the application limits the number of local I/O modules in the project to 16. For more information, see the Knowledgebase article 5380 CompactLogix controllers limited to 16 local 5069 modules in V29 of Studio 5000 software.
With the Logix Designer application, version 30.00.00 or later, the controller supports as many as 31 local I/O modules.

# Compact GuardLogix 5380 Controllers

Compact GuardLogix 5380 controllers function in the same way as CompactLogix 5380 controllers and provide the functionality to perform safety functions.

- The Compact GuardLogix SIL 2 Controllers can achieve up to SIL 2/PLd (Category 3) with the use of the safety task and safety I/O.
- The Compact GuardLogix SIL 3 Controllers have an internal safety partner, and can achieve up to SIL 3/PLe (Category 4) with the use of the safety task and safety I/O.

During development, safety and standard have the same rules; multiple programmers, online editing, and forcing are all allowed. Once the safety system is validated and the safety signature applied, safety memory is protected, the safety logic cannot be modified.

**IMPORTANT** You must use SELV/PELV-rated power supplies for Module (MOD) power and Sensor Actuator (SA) power. You can only use DC SA power with Compact GuardLogix 5380 controllers.

| **Characteristic (5069-)** | **L306ERS2, L306ERMS2, L306ERMS3** | **L310ERS2, L310ERMS2, L310ERMS3** | **L320ERS2, L320ERMS2 L320ERS2K, L320ERMS2K, L320ERMS3, L320ERMS3K** | **L330ERS2, L330ERMS2 L330ERS2K, L330ERMS2K, L330ERMS3, L330ERMS3K** | **L340ERS2, L340ERMS2, L340ERMS3** | **L350ERS2, L350ERMS2 L350ERS2K, L350ERMS2K L350ERMS3, L350ERMS3K** | **L380ERS2, L380ERMS2, L380ERMS3** | **L3100ERS2, L3100ERMS2 L3100ERMS3** |
|---|---|---|---|---|---|---|---|---|
| Available user memory | 0.6 MB + 0.3 MB safety | 1 MB + 0.5 MB safety | 2 MB + 1 MB safety | 3 MB + 1.5 MB safety | 4 MB + 2 MB safety | 5 MB + 2.5 MB safety | 8 MB + 4 MB safety | 10 MB + 5 MB safety |
| Memory card | 1784-SD1 (1 GB)<br>1784-SD2 (2 GB), ships with controller<br>1784-SDHC8 (8 GB)<br>1784-SDHC32 (32 GB)<br>9509-CMSDCD4 (4 GB) CodeMeter CmCard card | | | | | | | |
| Communication ports | 2 - Ethernet, 10 Mbps/100 Mbps/1 Gbps<br>1 - USB client | | | | | | | |
| EtherNet/IP nodes supported, max | 16 | 24 | 40 | 60 | 90 | 120 | 150 | 180 |
| Axes supported, max(1)(2) | 256 | | | | | | | |
| CIP Drive axes (position loop) supported, max (5069-) | L306ERMS2, L306ERMS3: 2 | L310ERMS2, L310ERMS3: 4 | L320ERMS2, L320ERMS2K, L320ERMS3, L320ERMS3K: 8 | L330ERMS2, L330ERMS2K, L330ERMS3, L330ERMS3K: 16 | L340ERMS2, L340ERMS3: 20 | L350ERMS2, L350ERMS2K, L350ERMS3, L350ERMS3K: 24 | L380ERMS2, L380ERMS3: 28 | L3100ERMS2, L3100ERMS3: 32 |
| Local I/O modules, max | 8 | | 16 | 31 | | | | |
| Battery | None | | | | | | | |
| Power supply terminals (kits sold separately) | 5069-RTB64-SCREW kit: Includes 5069-RTB6-SCREW and 5069-RTB4-SCREW RTBs<br>5069-RTB64-SPRING kit: Includes 5069-RTB6-SPRING and 5069-RTB4-SPRING RTBs | | | | | | | |
| Programming software support | Compact GuardLogix SIL 2 Controllers: Version 31 or later<br>Compact GuardLogix SIL 3 Controllers: Version 32 or later | | | | | | | |

(1) Only controllers that have an M in their catalog number support Integrated Motion on EtherNet/IP networks.

(2) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

# CompactLogix 5480 Controllers

The CompactLogix 5480 Controller offers the benefits of Logix control with Microsoft Windows computing. With a commercially available CPU and a Microsoft Windows 10 IoT Enterprise operating system running independently of the Logix control engine, it provides a high-performance architecture with the ability to run 3rd-party applications.

The CompactLogix 5480 controllers deliver scalable control that is ideal for mid-size to large applications that require high-performance control and data throughput. The CompactLogix 5480 controllers also provide an integrated motion solution.

| Characteristic | 5069-L430ERMW | 5069-L450ERMW | 5069-L4100ERMW | 5069-L4200ERMW |
|---|---|---|---|---|
| Memory: Logix control engine | 3 MB | 5 MB | 10 MB | 20 MB |
| Memory: Microsoft Windows 10 (COS on controller) | RAM - 6 GB<br>SSD - 64 GB | | | |
| Memory card | 1784-SD1 (1 GB)<br>1784-SD2 (2 GB), ships with controller<br>1784-SDHC8 (8 GB)<br>1784-SDHC32 (32 GB)<br>9509-CMSDCD4 (4 GB) CodeMeter CmCard card | | | |
| Communication ports | Logix control engine use:<br>• 3 - Ethernet, 10 Mbps/100 Mbps/1 Gbps<br>• 1- USB client<br>Microsoft Windows 10 use:<br>• 1 - Ethernet, 10 Mbps/100 Mbps/1 Gbps | | | |
| EtherNet/IP nodes supported, max | 60 | 120 | 180 | 250 |
| Axes supported, max(1) | 512 | | | |
| CIP Drive axes (position loop) supported, max | 16 | 24 | 32 | 150 |
| Local I/O modules, max | 31 | | | |
| Battery | None | | | |
| Power supply terminals (ship with controller) | 5069-RTB4-SCREW RTB<br>5069-RTB6-SCREW RTB<br>5069-L4UPSRTB RTB | | | |
| Programming software support | Version 32.01.00 or later | | | |

(1) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

# CompactLogix 5370 Controllers

The CompactLogix 5370 controllers include integrated safety and use the same programming software, network protocol, and information capabilities as all Logix controllers. These controllers are ideal for small, to mid-size applications that require low axis motion and I/O point counts.

- The CompactLogix 5370 L3 controllers deliver scalable, affordable control ideal for applications from small standalone equipment to high-performance indexing tables, process skids, case packers and erectors, and packaging.
- The CompactLogix 5370 L2 controllers combine the power of the Logix architecture with the flexibility of 1769 Compact I/O modules. From small standalone equipment to higher performance applications, these controllers are ideal for assembly machines, hoisting systems, process skids, indexing tables, and packaging.
- The CompactLogix 5370 L1 controllers combine the power of the Logix architecture with the flexibility of 1734 POINT I/O modules. Ideal for small to mid-size machines, these controllers offer value to customers who need the benefits of an Integrated Architecture® system in a lower-cost system.

## CompactLogix 5370 L1 Controllers with Embedded I/O

The CompactLogix 5370 L1 controller comes with:

- A built-in, 24V DC isolated power supply module.(1)
- Dual Ethernet ports for linear and ring topologies.
- USB port for firmware updates and programming.
- Embedded digital I/O (16 DC inputs, 16 DC outputs).
- Support for 1734 POINT I/O.

| Characteristic | 1769-L16ER-BB1B | 1769-L18ER-BB1B | 1769-L18ERM-BB1B<br>1769-L18ERM-BB1BK | 1769-L19ER-BB1B<br>1769-L19ER-BB1BK |
|---|---|---|---|---|
| Available user memory | 384 KB | 512 KB | 512 KB | 1 MB |
| Memory card | 1784-SD1 (1 GB), shipped with controller<br>1784-SD2 (2 GB) | | | |
| Communication ports | 2 EtherNet/IP<br>1 USB | | | |
| Embedded I/O | 16 sinking 24V DC digital input points<br>16 sourcing 24V DC digital output points | | | |
| EtherNet/IP connections | 256 EtherNet/IP<br>120 TCP | | | |
| EtherNet/IP nodes supported, max | 4 | 8 | | |
| Axes supported, max(1) | — | — | 100 | — |
| CIP Drive axes (position loop) supported, max | — | — | 2 | — |
| Module expansion capacity | 6 POINT I/O modules | 8 POINT I/O modules | | |
| Battery | None | | | |
| Embedded power supply | 10...28.8V DC<br>24V DC nominal | | | |
| Programming software support | Version 20 - For controllers that use firmware revision 20.<br>Version 21 or later - For controllers that use firmware revision 21 or later. | | | Version 28 or later - For controllers that use firmware revision 28 or later. |

(1) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

(1) Only series B power supply modules are isolated. Series A power supply modules are non-isolated. For more information on how to connect a 24V DC power source to the 24V DC nonisolated power supply of the CompactLogix 5370 L1 controller, see the CompactLogix 5370 Controllers User Manual, publication 1769-UM021.

# CompactLogix 5370 L2 Controllers with Embedded I/O

The CompactLogix 5370 L2 controller comes with:

- A built-in, 24V DC power supply module.
- Dual Ethernet ports for linear and ring topologies.
- USB port for firmware updates and programming.
- A combination of embedded digital, analog, and high-speed counter I/O.
- A 1769-ECR right-end cap.
- Support for 1769 Compact I/O.

| Characteristic | 1769-L24ER-QB1B | 1769-L24ER-QBFC1B, 1769-L24ER-QBFC1BK | 1769-L27ERM-QBFC1B |
|---|---|---|---|
| Available user memory | 0.75 MB | 0.75 MB | 1 MB |
| Memory card | 1784-SD1 (1 GB), shipped with controller<br>1784-SD2 (2 GB) | | |
| Communication ports | 2 EtherNet/IP<br>1 USB | | |
| Embedded I/O | 16 sinking/sourcing 24V DC digital input points<br>16 sourcing 24V DC digital output points | 16 sinking/sourcing 24V DC digital input points<br>16 sourcing 24V DC digital output points<br>4 universal analog input points<br>2 analog output points<br>4 high-speed counters | |
| EtherNet/IP connections | 256 EtherNet/IP<br>120 TCP | 256 EtherNet/IP<br>120 TCP | 256 EtherNet/IP<br>120 TCP |
| EtherNet/IP nodes supported, max | 8 | | 16 |
| Axes supported, max(1) | — | — | 100 |
| CIP Drive axes (position loop) supported, max | — | — | 4 |
| Module expansion capacity | 4 1769 modules | | |
| Battery | None | | |
| Embedded power supply | 24V DC | | |
| Programming software support | Version 20 - For controllers that use firmware revision 20.<br>Version 21 or later - For controllers that use firmware revision 21 or later. | | |

(1) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

These controllers replace previous catalog numbers.

| New Controller | Replaces Previous Controller | Differences |
|---|---|---|
| 1769-L24ER-QBFC1B | 1769-L23-QBFC1B<br>1769-L23E-QBFC1B | Additional memory<br>Integrated motion on EtherNet/IP support (1769-L27ERM-QBFC1B)<br>USB port instead of RS-232 port<br>Dual-port EtherNet/IP support<br>SD card support addition<br>Support for additional expansion I/O modules |
| 1769-L24ER-QB1B | 1769-L23E-QB1B | |
| 1769-L27ERM-QBFC1B | 1769-L23E-QBFC1B | |

# CompactLogix 5370 L3 Controllers

The CompactLogix 5370 L3 controller comes with:

- Dual Ethernet ports for linear and ring topologies.
- USB port for firmware updates and programming.
- Support for 1769 Compact I/O.

Use the 1769-L30ER-NSE controller for mining applications. You can deplete the residual stored energy of the 1769-L30ER-NSE controller to 200 µJ or less before you transport it into or out of a mine. The 1769-L30ER-NSE controller does not maintain the real-time clock on power cycle.

| Characteristic | 1769-L30ER<br>1769-L30ERK | 1769-L30ERM<br>1769-L30ERMK | 1769-L30ER-NSE | 1769-L33ER<br>1769-L33ERK | 1769-L33ERM<br>1769-L33ERMK | 1769-L36ERM | 1769-L37ERM<br>1769-L37ERMK | 1769-L38ERM<br>1769-L38ERMK |
|---|---|---|---|---|---|---|---|---|
| Available user memory | 1 MB | 1 MB | 1 MB<br>No capacitor | 2 MB | 2 MB | 3 MB | 4 MB | 5 MB |
| Memory card | 1784-SD1 (1 GB), shipped with controller<br>1784-SD2 (2 GB) | | | | | | | |
| Communication ports | 2 EtherNet/IP<br>1 USB | | | | | | | |
| EtherNet/IP connections | 256 EtherNet/IP<br>120 TCP | | | | | | | |
| EtherNet/IP nodes supported, max | 16 | | | 32 | | 48 | 64 | 80 |
| Axes supported, max(1) | – | 100 | – | – | 100 | 100 | | |
| CIP Drive axes (position loop) supported, max | – | 4 | – | – | 8 | 16 | | |
| Module expansion capacity | 8 1769 modules<br>1 bank of modules | | | 16 1769 modules<br>2 banks of modules | | 30 1769 modules<br>3 banks of modules | | |
| Battery | None | | | | | | | |
| Power supply distance rating | 4 modules | | | 4 modules | | 4 modules | | |
| Programming software support | Version 20 - For controllers that use firmware revision 20.<br>Version 21 or later - For controllers that use firmware revision 21 or later. | | | | | | Version 31 or later | |

(1) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

These controllers replace previous catalog numbers.

| New Controller(1) (2) | Replaces Previous Controller | Differences |
|---|---|---|
| 1769-L30ER<br>1769-L30ERM<br>1769-L30ER-NSE | 1769-L31<br>1769-L32C(3)<br>1769-L32E | Additional memory<br>Integrated motion on EtherNet/IP support (1769-L30ERM, 1769-L33ERM, 1769-L36ERM)<br>USB port instead of RS-232 port<br>Dual-port EtherNet/IP support<br>SD card instead of CompactFlash card |
| 1769-L33ER<br>1769-L33ERM | 1769-L35CR(3)<br>1769-L35E<br>1768-L43 | |
| 1769-L36ERM | 1768-L45<br>Any previous 1769-L3x and 1769-L4x controller. | |

(1) Typically, you can use any of the new controllers that are listed in each row as replacements for any of the previous controllers that are listed in the corresponding cell to the right. For example, you can replace a 1769-L32E controller with a 1769-L30ER, 1769-L30ERM, or 1769-L30ER-NSE controller.
In some rare cases, system configuration helps to prevent controller replacement as shown in the previous table. For example, if your system uses a 1769-L32E controller with 12 expansion modules, you cannot replace that controller with a 1769-L30ER, 1769-L30ERM, or 1769-L30ER-NSE controller. Those controllers support no more than eight expansion modules. You must replace the 1769-L32E controller with a 1769-L33ER, 1769-L33ERM, or 1769-L36ERM controller.
We recommend that before you upgrade your controllers, consider your application requirements to verify that the replacements that are listed previously apply.

(2) If you require Serial communication, consider a CompactLogix 5380 solution with the 5069-SERIAL module.
(3) Requires converting from ControlNet connections to EtherNet/IP connections.

# Compact GuardLogix 5370 Controllers

The Compact GuardLogix 5370 controller provides safety control at SIL CL3 according to EN62061 / EN 61511-1 / IEC 61508 and PLe according to EN ISO 13849-1.

| Characteristic | 1769-L30ERMS | 1769-L33ERMS<br>1769-L33ERMSK | 1769-L36ERMS | 1769-L37ERMS<br>1769-L37ERMSK | 1769-L38ERMS<br>1769-L38ERMSK |
|---|---|---|---|---|---|
| Available user memory | 1 MB + 0.5 MB (safety) | 2 MB + 1 MB (safety) | 3 MB + 1.5 MB (safety) | 4 MB + 1.5 MB (safety) | 5 MB + 1.5 MB (safety) |
| Memory card | 1784-SD1 (1 GB), shipped with controller<br>1784-SD2 (2 GB) | | | | |
| Communication ports | 2 EtherNet/IP<br>1 USB | | | | |
| EtherNet/IP connections | 256 EtherNet/IP<br>120 TCP | | | | |
| EtherNet/IP nodes supported, max | 16 | 32 | 48 | 64 | 80 |
| Axes supported, max(1) | 100 | | | | |
| CIP Drive axes (position loop) supported, max | 4 | 8 | 16 | | |
| Module expansion capacity | Eight 1769 modules<br>One bank of modules | Sixteen 1769 modules<br>Two banks of modules | Thirty 1769 modules<br>Three banks of modules | | |
| Battery | None | | | | |
| Power supply distance rating | Four modules | | | | |
| Programming software support | Version 28 or later - For controllers that use firmware revision 28 or later. | | | Version 31 or later | |

(1) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

# Armor CompactLogix and Armor Compact GuardLogix Controllers

The Armor™ CompactLogix™ and Armor™ Compact GuardLogix® controllers deliver standard, safety and motion control for On-Machine applications. You can obtain SIL 3, PL(e), CAT 4 safety control in the Armor Compact GuardLogix controller and standard control in the Armor CompactLogix controller.

On-Machine controllers offer global certifications and ratings and Ingress Protection (IP67) for dust and wash-down protection for immersion between 15 cm...1 m (5.91...393.70 in.) in harsher environments.

| Characteristic | 1769-L33ERMO | 1769-L36ERMO | 1769-L37ERMO | 1769-L38ERMO | 1769-L33ERMOS | 1769-L36ERMOS | 1769-L37ERMOS | 1769-L38ERMOS |
|---|---|---|---|---|---|---|---|---|
| Available user memory | 2 MB | 3 MB | 4 MB | 5 MB | 2 MB + 1 MB (safety) | 3 MB + 1.5 MB (safety) | 4 MB + 1.5 MB (safety) | 5 MB + 1.5 MB (safety) |
| Memory card | 1784-SD1 (1 GB), shipped with controller<br>1784-SD2 (2 GB) | | | | | | | |
| Communication ports | 2 EtherNet/IP<br>1 USB | | | | | | | |
| EtherNet/IP connections | 256 EtherNet/IP<br>120 TCP | | | | | | | |
| EtherNet/IP nodes supported, max | 32 | 48 | 64 | 80 | 32 | 48 | 64 | 80 |
| Axes supported, max(1) | 100 | | | | | | | |
| CIP Drive axes (position loop) supported, max | 8 | 16 | | | 8 | 16 | | |
| Programming software support | Version 28 or later - For controllers that use firmware revision 28 or later.<br>Version 31 or later - 1769-L37ERMO, 1769-L38ERMO, and 1769-L38ERMOS | | | | | | | |

(1) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

# CompactLogix Communication Options

You can configure your system for information exchange between a range of devices and computing platforms and operating systems. Select a CompactLogix controller with integrated communication or the appropriate communication module.

For detailed specifications, see:

- CompactLogix 5380, Compact GuardLogix 5380, and CompactLogix 5480 Controllers Specifications Technical Data, publication 5069-TD002
- Compact 5000 I/O Modules and EtherNet/IP Adapters Specifications Technical Data, publication 5069-TD001
- CompactLogix Controllers Specifications Technical Data, publication 1769-TD005.
- CompactLogix Communication Modules Specifications Technical Data, publication 1769-TD007.

## EtherNet/IP Communication Options

The Ethernet Industrial network protocol (EtherNet/IP) is an open industrial-networking standard that supports real-time I/O messaging and message exchange. The EtherNet/IP network uses off-the-shelf Ethernet communication chips and physical media.

Dual-port EtherNet/IP support embeds switch technology directly in the controller to so the controller can operate on star, linear, or ring EtherNet/IP topologies.

### CompactLogix Controller EtherNet/IP Communication Options

| Cat. No. | Description | Communication Rate | Logix Resources[(1), (2)] | TCP/IP Connections |
|---|---|---|---|---|
| 5069-L306ER, 5069-L306ERM | CompactLogix 5380 controller with embedded dual Ethernet ports | 10/100 Mbps, 1 Gbps[(3)] | 16 | – |
| 5069-L310ER, 5069-L310ER-NSE, 5069-L310ERM | | | 24 | |
| 5069-L320ER, 5069-L320ERM, 5069-L320ERMK | | | 40 | |
| 5069-L330ER, 5069-L330ERM, 5069-L330ERMK | | | 60 | |
| 5069-L340ER, 5069-L340ERM | | | 90 | |
| 5069-L350ERM, 5069-L350ERMK | | | 120 | |
| 5069-L380ERM | | | 150 | |
| 5069-L3100ERM | | | 180 | |
| 5069-L306ERS2, 5069-L306ERMS2, 5069-L306ERMS3 | Compact GuardLogix 5380 controller with embedded dual Ethernet ports | 10/100 Mbps, 1 Gbps[(4)] | 16 | – |
| 5069-L310ERS2, 5069-L310ERMS2, 5069-L310ERMS3 | | | 24 | |
| 5069-L320ERS2, 5069-L320ERMS2<br>5069-L320ERS2K, 5069-L320ERMS2K<br>5069-L320ERMS3, 5069-L320ERMS3K, 5069-L320ERP | | | 40 | |
| 5069-L330ERS2, 5069-L330ERMS2<br>5069-L330ERS2K, 5069-L330ERMS2K<br>5069-L330ERMS3, 5069-L330ERMS3K | | | 60 | |
| 5069-L340ERS2, 5069-L340ERMS2, 5069-L340ERMS3,<br>5069-L340ERP | | | 90 | |
| 5069-L350ERS2, 5069-L350ERMS2<br>5069-L350ERS2K, 5069-L350ERMS2K<br>5069-L350ERMS3, 5069-L350ERMS3K | | | 120 | |
| 5069-L380ERS2, 5069-L380ERMS2, 5069-L380ERMS3 | | | 150 | |
| 5069-L3100ERS2, 5069-L3100ERMS2, 5069-L3100ERMS3 | | | 180 | |
| 5069-L430ERMW | CompactLogix 5480 controller with embedded Ethernet ports | 10/100 Mbps, 1 Gbps[(5)] | 60 | – |
| 5069-L450ERMW | | | 120 | |
| 5069-L4100ERMW | | | 180 | |
| 5069-L4200ERMW | | | 250 | |

## CompactLogix Controller EtherNet/IP Communication Options (Continued)

| Cat. No. | Description | Communication Rate | Logix Resources[(1), (2)] | TCP/IP Connections |
|---|---|---|---|---|
| 1769-L16ER-BB1B | CompactLogix 5370 L1 controller with embedded dual Ethernet ports, POINT I/O form factor | 10/100 Mbps | 4 nodes<br>256 EtherNet/IP connections | 120 |
| 1769-L18ER-BB1B<br>1769-L18ERM-BB1B, 1769-L18ERM-BB1BK | | | 8 nodes<br>256 EtherNet/IP connections | |
| 1769-L19ER-BB1B, 1769-L19ER-BB1BK | | | | |
| 1769-L24ER-QB1B<br>1769-L24ER-QBFC1B<br>1769-L24ER-QBFC1BK | CompactLogix 5370 L2 controller with embedded dual Ethernet ports, 1769 Compact I/O form factor | 10/100 Mbps | 8 nodes<br>256 EtherNet/IP connections | 120 |
| 1769-L27ERM-QBFC1B | | 10/100 Mbps | 16 nodes<br>256 EtherNet/IP connections | |
| 1769-L30ER, 1769-L30ERK, 1769-L30ERM, 1769-L30ERMK, 1769-L30ERMS | CompactLogix 5370 L3 controller with embedded dual Ethernet ports | 10/100 Mbps | 16 nodes<br>256 EtherNet/IP connections | 120 |
| 1769-L33ER, 1769-L33ERK, 1769-L33ERM, 1769-L33ERMS, 1769-L33ERMK, 1769-L33ERMSK, 1769-L33ERMO, 1769-L33ERMOS | | | 32 nodes<br>256 EtherNet/IP connections | |
| 1769-L36ERM, 1769-L36ERMS, 1769-L36ERMO, 1769-L36ERMOS | | | 48 nodes<br>256 EtherNet/IP connections | |
| 1769-L37ERM, 1769-L37ERMS, 1769-L37ERMK, 1769-L37ERMSK, 1769-L37ERMO, 1769-L37ERMOS | | | 64 nodes<br>256 EtherNet/IP connections | |
| 1769-L38ERM, 1769-L38ERMS, 1769-L38ERMK, 1769-L38ERMSK, 1769-L38ERMO, 1769-L38ERMOS | | | 80 nodes<br>256 EtherNet/IP connections | |

(1) The number of nodes that are listed for CompactLogix 5370, CompactLogix 5380, Compact GuardLogix 5380, CompactLogix 5480 controllers represents the maximum number of EtherNet/IP nodes you can include in a Logix Designer application project. For example, in a controller project that uses a 1769-L18ERM-BB1B controller, you can add as many as eight EtherNet/IP nodes to the project.

(2) The maximum number of nodes that are listed represents when the controller is used with the Logix Designer application, version 31 or later. Some controllers can be used with earlier Logix Designer application versions. The maximum number of nodes that a controller supports can be fewer in the Logix Designer application, versions 30 or earlier.

(3) Network performance in a CompactLogix 5380 system is optimal if the 1 Gbps network communication rate is used. However, many Ethernet devices do not support the 1 Gbps network communication rate. You must consider how the different maximum network communication rates impact your CompactLogix 5380 control system when you design the system.

(4) Network performance in a Compact GuardLogix 5380 system is optimal if the 1 Gbps network communication rate is used. However, many Ethernet devices do not support the 1 Gbps network communication rate. You must consider how the different maximum network communication rates impact your Compact GuardLogix 5380 control system when you design the system.

(5) Network performance in a CompactLogix 5480 system is optimal if the 1 Gbps network communication rate is used. However, many Ethernet devices do not support the 1 Gbps network communication rate. You must consider how the different maximum network communication rates impact your CompactLogix 5480 control system when you design the system.

# EtherNet/IP Modes

These controllers offer multiple EtherNet/IP modes:

- CompactLogix 5380
- Compact GuardLogix 5380
- CompactLogix 5480 (Dual-IP mode enabled by default)

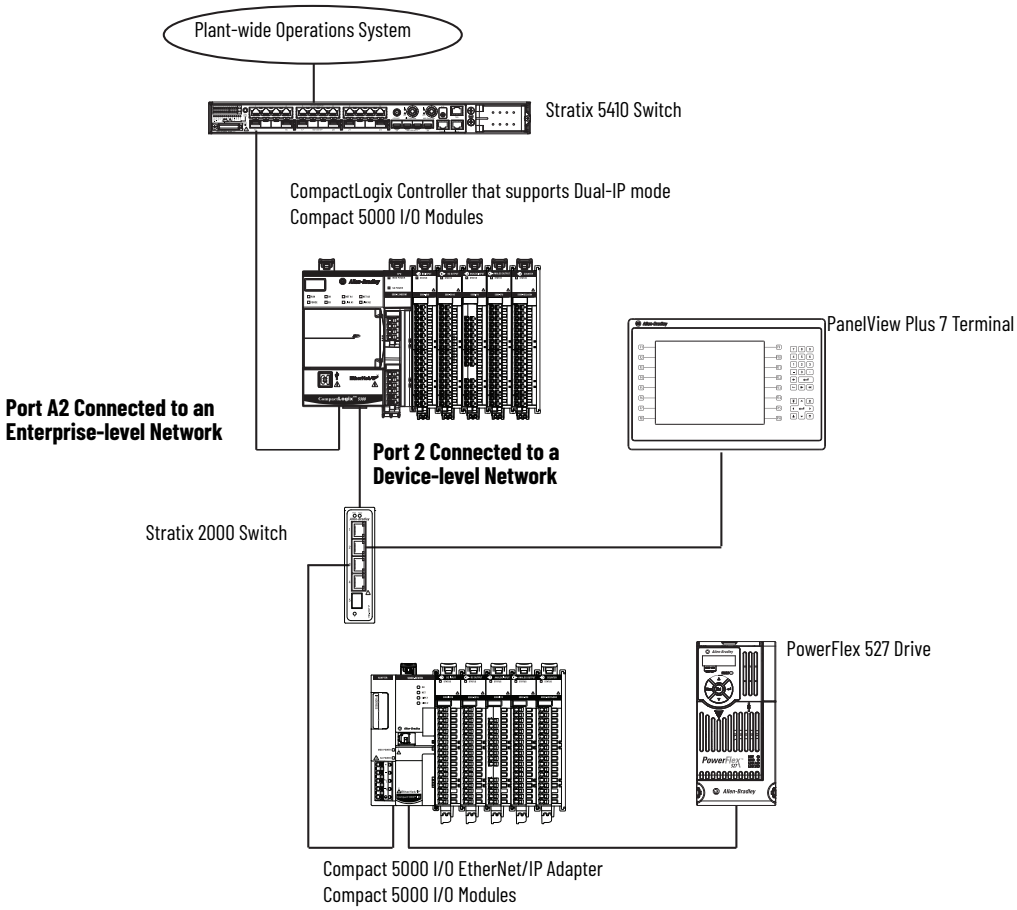
For more information on EtherNet/IP modes, see the following:

- CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, publication 5069-UM001
- CompactLogix 5480 Controllers User Manual, publication 5069-UM002

## Dual-IP Mode

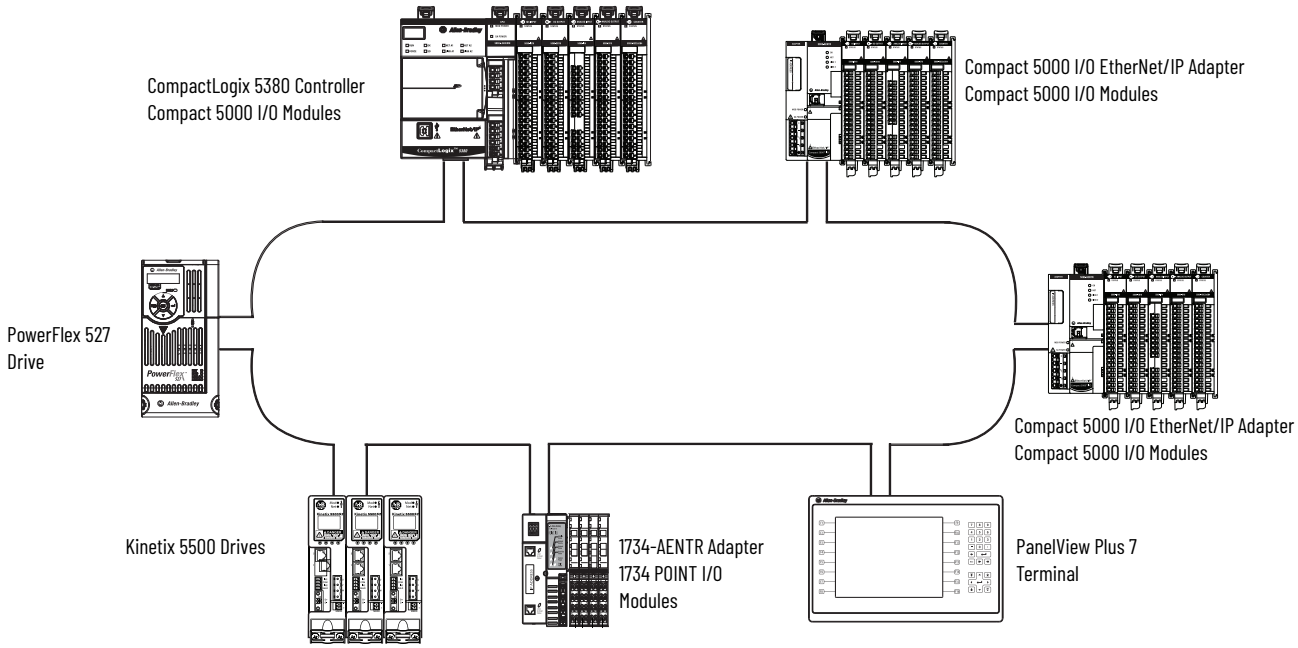
Dual-IP mode lets you configure the embedded Ethernet ports to connect to separate EtherNet/IP networks, that is, an enterprise-level network and a device-level network. The machine internal network is isolated from factory network. In this mode, each port requires its own network configurations that include some restrictions. For example, when you set IP addresses in Dual-IP mode, you cannot overlap IP addresses between the ports.

### Dual-IP Mode with Enterprise-level and Device-level Network Connections



## Linear/DLR Mode

In Linear/DLR mode, the controller connects to only one network. Linear/DLR mode supports any EtherNet/IP network topology–linear, DLR, or star.




## DeviceNet Communication Options

The DeviceNet network is an open, low-level network that provides connections between simple industrial devices (such as sensors and actuators) and higher-level devices (such as controllers and computers).

| Cat. No. | Description | Communication Rate | Number of Nodes |
|---|---|---|---|
| 1769-SDN<br>1769-SDNK(1) | 1769 Compact I/O DeviceNet scanner | 125 Kbps (500 m, max)<br>250 Kbps (250 m, max)<br>500 Kbps (100 m, max) | 64 |

(1) Module has conformal coating.

## Serial Communication Options

These CompactLogix controllers support serial communication.

| Cat. No. | Serial Options |
|---|---|
| 1769-L16ER-BB1B, 1769-L18ER-BB1B, 1769-L18ERM-BB1B, 1769-L18ERM-BB1BK, 1769-L19ER-BB1B, 1769-L19ER-BB1BK | 1734-232ASC module for an RS-232 serial interface<br>1734-485 ASC module for an RS-422 and RS-485 serial device |
| 1769-L24ER-QB1B, 1769-L24ER-QBFC1B, 1769-L24ER-QBFC1BK | 1769-ASCII module for an ASCII interface to RS-232, RS-422, and RS-485 devices<br>1769-SM2 module for a Modbus RTU interface |
| 1769-L27ERM-QBFC1B | |
| 1769-L30ER, 1769-L30ERK, 1769-L30ERM, 1769-L30ERMK, 1769-L30ERMS | |
| 1769-L33ER, 1769-L33ERK, 1769-L33ERM, 1769-L33ERMS, 1769-L33ERMO, 1769-L33ERMOS, 1769-L33ERMK, 1769-L33ERMSK | |
| 1769-L36ERM, 1769-L36ERMS, 1769-L36ERMO, 1769-L36ERMOS | |
| 1769-L37ERM, 1769-L37ERMS, 1769-L37ERMK, 1769-L37ERMSK, 1769-L37ERMO, 1769-L37ERMOS | |
| 1769-L38ERM, 1769-L38ERMS, 1769-L38ERMK, 1769-L38ERMSK, 1769-L38ERMO, 1769-L38ERMOS | |
| 5069-L306ER, 5069-L306ERM, 5069-L306ERS2, 5069-L306ERMS2, 5069-L306ERMS3<br>5069-L310ER, 5069-L310ER-NSE, 5069-L310ERM, 5069-L310ERS2, 5069-L310ERMS2, 5069-L310ERMS3<br>5069-L320ER, 5069-L320ERM 5069-L320ERMK, 5069-L320ERS2, 5069-L320ERMS2, 5069-L320ERS2K, 5069-L320ERMS2K, 5069-L320ERMS3, 5069-L320ERMS3K, 5069-L320ERP<br>5069-L330ER, 5069-L330ERM, 5069-L330ERMK, 5069-L330ERS2, 5069-L330ERMS2, 5069-L330ERS2K, 5069-L330ERMS2K, 5069-L330ERMS3, 5069-L330ERMS3K<br>5069-L340ER, 5069-L340ERM, 5069-L340ERS2, 5069-L340ERMS2, 5069-L340ERMS3, 5069-L340ERP<br>5069-L350ERM, 5069-L350ERMK, 5069-L350ERS2, 5069-L350ERMS2, 5069-L350ERS2K, 5069-L350ERMS2K, 5069-L350ERMS3, 5069-L350ERMS3K<br>5069-L380ERM, 5069-L380ERS2, 5069-L380ERMS2, 5069-L380ERMS3<br>5069-L3100ERM, 5069-L3100ERS2, 5069-L3100ERMS2, 5069-L3100ERMS3 | 5069-SERIAL module for an ASCII, Modbus, DF1, and DH485 interface to RS-232, RS-422, and RS-485 devices |
| | |
| 5069-L430ERMW, 5069-L450ERMW, 5069-L4100ERMW, 5069-L4200ERMW | |

## Modbus Support

To access a Modbus TCP network, connect through the embedded Ethernet port of the CompactLogix 5370 or CompactLogix 5380 controllers and execute a ladder logic routine. For more information, see Knowledgebase document 470365 at http://www.rockwellautomation.com/knowledgebase/.

To access a Modbus RTU network via a CompactLogix 5370 or Compact GuardLogix 5370 L3 controller, connect through a 1769-SM2 module, or Encompass™ partner, ProSoft ModBus module, or Gateway and execute a ladder logic routine. For more information, see Using Logix 5000 Controllers as Masters or Slaves on Modbus Application Solution, publication CIG-AP129.

To access a Modbus RTU network via a CompactLogix 5380, Compact GuardLogix 5380 controller, or CompactLogix 5480 controller, connect through a 5069-SERIAL module and execute a ladder logic routine. For more information, see the Compact 5000 I/O Serial Module User Manual, publication 5069-UM003.

# Integrated Motion

The standard and safety CompactLogix controllers support motion control components that work in a wide variety of machine architectures. Controllers with an M or P in their catalog numbers support motion.

- Integrated motion on an EtherNet/IP network
- EtherNet/IP sequence of events for software registration
- Kinematics
- Networked motion via the DeviceNet network to one axis drive to perform point-to-point indexing
- Load observer with Kinetix 6500 drives

| Motion Feature | CompactLogix 5380 | Compact GuardLogix 5380 | CompactLogix 5480 | CompactLogix 5370 L3 | CompactLogix 5370 L2 | CompactLogix 5370 L1 |
|---|---|---|---|---|---|---|
| Axes supported, max(1) | 256 | | 512 | 100 | | |
| CIP Drive axes (Position loop-configured) supported, max(2) | 5069-L306ERM: 2<br>5069-L310ERM: 4<br>5069-L320ERM,<br>5069-L320ERMK,<br>5069-L320ERP: 8<br>5069-L330ERM,<br>5069-L330ERMK: 16<br>5069-L340ERM,<br>5069-L340ERP: 20<br>5069-L350ERM,<br>5069-L350ERMK: 24<br>5069-L380ERM: 28<br>5069-L3100ERM: 32 | 5069-L306ERMS2,<br>5069-L306ERMS3: 2<br>5069-L310ERMS2,<br>5069-L310ERMS3: 4<br>5069-L320ERMS2,<br>5069-L320ERMS2K,<br>5069-L320ERMS3,<br>5069-L320ERMS3K: 8<br>5069-L330ERMS2,<br>5069-L330ERMS2K,<br>5069-L330ERMS3,<br>5069-L330ERMS3K: 16<br>5069-L340ERMS2,<br>5069-L340ERMS3: 20<br>5069-L350ERMS2,<br>5069-L350ERMS2K,<br>5069-L350ERMS3,<br>5069-L350ERMS3K: 24<br>5069-L380ERMS2,<br>5069-L380ERMS3: 28<br>5069-L3100ERMS2,<br>5069-L3100ERMS3: 32 | 5069-L430ERMW: 16<br>5069-L450ERMW: 24<br>5069-L4100ERMW: 32<br>5069-L4200ERMW: 150 | 1769-L30ERM,<br>1769-L30ERMK,<br>1769-L30ERMS: 4<br>1769-L33ERM,<br>1769-L33ERMK,<br>1769-L33ERMO,<br>1769-L33ERMOS,<br>1769-L33ERMS,<br>1769-L33ERMSK: 8<br>1769-L36ERM,<br>1769-L36ERMO,<br>1769-L36ERMOS,<br>1769-L36ERMS: 16<br>1769-L37ERM,<br>1769-L37ERMS,<br>1769-L37ERMK,<br>1769-L37ERMSK,<br>1769-L37ERMO,<br>1769-L37ERMOS: 16<br>1769-L38ERM,<br>1769-L38ERMS,<br>1769-L38ERMO,<br>1769-L38ERMOS,<br>1769-L38ERMK,<br>1769-L38ERMSK: 16 | 1769-L27ERM-QBFC1B,<br>1769-L27ERM-QBFC1BK: 4 | 1769-L18ERM-BB1B: 2 |
| Indexing | Yes | | | Yes with AMCI 1769-3602 pulse-train output module | | Yes with one of these pulse-train output modules:<br>• AMCI 1734-3401<br>• AMCI 1734-3401L |
| EtherNet/IP feedback, VHz, torque, or velocity axis, max | 180 | | 5069-L430ERMW: 60<br>5069-L450ERMW: 120<br>5069-4100ERMW: 180<br>5069-L4200ERMW: 250 | 80 | 16 | 8 |

(1) Any combination of CIP Drive, Virtual, Consumed, Regenerative AC/DC Converter and Non-Regenerative AC/DC Converter axis types.

(2) The maximum number of CIP Drive axes (configured for Position Loop) that can be included in the total integrated motion axes count for a controller.

For more information, see the:

- CompactLogix 5380 and Compact GuardLogix 5380 Controllers User Manual, publication 5069-UM001.
- CompactLogix 5480Controllers User Manual, publication 5069-UM002.
- Motion Analyzer CD to size your motion application and to make final component selection. Download the software from http://www.ab.com/motion/software/analyzer.html.
- Kinetix Motion Control Selection Guide, publication GMC-SG001, to verify drive, motor, and accessory specifications.

# Integrated Safety

## Compact GuardLogix 5380 Integrated Safety

The Compact GuardLogix 5380 controller provides safety control to achieve up to SIL 3/PLe according to ISO 13849. A major benefit of this system is that it is still one project, safety, and standard together.

| Application | Description |
|---|---|
| SIL 1, 2, 3 | The Compact GuardLogix 5380 SIL 2 controller system is type-approved and certified for use in safety applications up to and including SIL 2 according to IEC 61508, and applications up to and including PLd/Cat.3 according to ISO 13849-1.<br>The Compact GuardLogix 5380 SIL 3 controller system has an internal safety partner, and is type-approved and certified for use in safety applications up to and including SIL 3 according to IEC 61508, and applications up to and including PLe/Cat.4 according to ISO 13849-1.<br>For more information, see:<br>• CompactLogix 5380 and Compact GuardLogix Controllers User Manual, publication 5069-UM001<br>• GuardLogix 5580 and Compact GuardLogix 5380 Controller Safety Systems Safety Reference Manual, publication 1756-RM012<br>• GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095 |

The Compact GuardLogix 5380 controller has these safety-related features and the standard features of a CompactLogix 5380 controller.

| Characteristic (5069-) | L306ERMS2, L306ERMS3 | L310ERMS2, L310ERMS3 | L320ERMS2, L320ERS2K, L320ERMS2K, L320ERMS3, L320ERMS3K | L330ERMS2, L330ERS2K, L330ERMS2K, L330ERMS3, L330ERMS3K | L340ERMS2, L340ERMS3 | L350ERMS2, L350ERS2K, L350ERMS2K, L350ERMS3, L350ERMS3K | L380ERMS2, L380ERMS3 | L3100ERMS2, L3100ERMS3 |
|---|---|---|---|---|---|---|---|---|
| Available user memory | 0.6 MB standard<br>0.3 MB safety | 1 MB standard<br>0.5 MB safety | 2 MB standard<br>1 MB safety | 3 MB standard<br>1.5 MB safety | 4 MB standard<br>2 MB safety | 5 MB standard<br>2.5 MB safety | 8 MB standard<br>4 MB safety | 10 MB standard<br>5 MB safety |
| Communication options | • Dual-port EtherNet/IP<br>• USB Client | | | | | | | |
| Programming languages | • Standard task: all languages<br>• Safety task: relay ladder, safety application instructions | | | | | | | |

# Compact GuardLogix 5370 Integrated Safety

The Compact GuardLogix 5370 controller provides safety control to achieve SIL 3/PLe according to ISO 13849. A major benefit of this system is that it is still one project, safety, and standard together.

| Application | Description |
|---|---|
| SIL 1, 2, 3 | The Compact GuardLogix controller system is type-approved and certified for use in safety applications up to and including SIL 3 according to IEC 61508, and applications up to and including PLe/Cat.4 according to ISO 13849-1. For more information, see:<br>• GuardLogix Controllers User Manual, publication 1769-UM022.<br>• GuardLogix 5570 and Compact GuardLogix 5370 Controller Safety Systems Safety Reference Manual, publication 1756-RM099<br>• GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095.<br>For more information on safety application requirements for 1768 Compact GuardLogix controllers, see:<br>• Compact GuardLogix Controllers User Manual, publication 1768-UM002.<br>• GuardLogix Controller Systems Safety Reference Manual, publication 1756-RM093. |

The Compact GuardLogix controller has these safety-related features and the standard features of a CompactLogix controller.

| Characteristic | 1769-L30ERMS | 1769-L33ERMS<br>1769-L33ERMSK | 1769-L36ERMS | 1769-L37ERMS,<br>1769-L37ERMSK | 1769-L38ERMS,<br>1769-L38ERMSK | 1768-L43S | 1768-L45S |
|---|---|---|---|---|---|---|---|
| Available user memory | 1 MB standard<br>0.5 MB safety | 2 MB standard<br>1 MB safety | 3 MB standard<br>1.5 MB safety | 4 MB standard<br>1.5 MB safety | 5 MB standard<br>1.5 MB safety | 2 MB standard<br>0.5 MB safety | 3 MB standard<br>1 MB safety |
| Communication options | • Dual-port EtherNet/IP (standard and safety)<br>• DeviceNet (standard) | | | | | • EtherNet/IP (standard and safety)<br>• ControlNet (standard and safety)<br>• DeviceNet (standard) | • EtherNet/IP (standard and safety)<br>• ControlNet (standard and safety)<br>• DeviceNet (standard) |
| Programming languages | • Standard task: all languages<br>• Safety task: relay ladder, safety application instructions | | | | | | |

# Armor CompactLogix and Armor Compact GuardLogix Integrated Safety

The Armor CompactLogix and Armor Compact GuardLogix controllers extend the features of the CompactLogix 5370 and Compact GuardLogix 5370 controllers to On-Machine space.

The Armor Compact GuardLogix controllers deliver integrated safety control up to and including SIL 3, according to IEC 61508 and PIe/CAT. 4, according to ISO 13849-1.

| Application | Description |
|---|---|
| SIL 1, 2, 3 | The Armor Compact GuardLogix controller system is type-approved and certified for use in safety applications up to and including SIL 3 according to IEC 61508, and applications up to and including PLe/Cat.4 according to ISO 13849-1. For more information, see:<br>• GuardLogix Controllers User Manual, publication 1769-UM022.<br>• GuardLogix 5570 and Compact GuardLogix 5370 Controller Safety Systems Safety Reference Manual, publication 1756-RM099.<br>• Compact GuardLogix Controllers User Manual, publication 1768-UM002.<br>• GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095. |

The Armor CompactLogix and Armor Compact GuardLogix controllers have the standard features of a CompactLogix controller. The Armor Compact GuardLogix controllers have the safety-related features of a Compact Guardlogix controller.

### Armor CompactLogix Controllers

| Characteristic | 1769-L33ERMO | 1769-L36ERMO | 1769-L37ERMO | 1769-L38ERMO |
|---|---|---|---|---|
| Available user memory | 2 MB | 3 MB | 4 MB | 5 MB |
| Communication options | • Dual-port EtherNet/IP (standard and safety)<br>• DLR | | | |
| Programming languages | • Standard task: all languages | | | |

### Armor Compact GuardLogix Controllers

| Characteristic | 1769-L33ERMOS | 1769-L36ERMOS | 1769-L37ERMOS | 1769-L38ERMOS |
|---|---|---|---|---|
| Available user memory | • 2 MB standard<br>• 1 MB safety | • 3 MB standard<br>• 1.5 MB safety | • 4 MB standard<br>• 1.5 MB safety | 5 MB standard<br>1.5 MB safety |
| Communication options | • Dual-port EtherNet/IP (standard and safety)<br>• DLR | | | |
| Programming languages | • Standard task: all languages<br>• Safety task: relay ladder | | | |

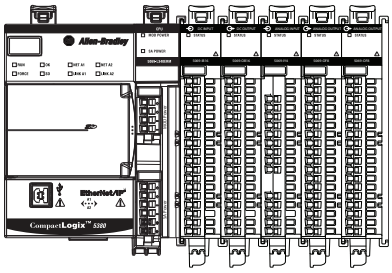
# Local I/O Modules

These CompactLogix controllers support local I/O modules. The local I/O modules that are supported is different based on controller type.

| Cat. No. | Local I/O Options |
|---|---|
| 5069-L306ER, 5069-L306ERM, 5069-L310ER, 5069-L310ER-NSE, 5069-L310ERM, 5069-L320ER, 5069-L320ERM, 5069-L320ERMK, 5069-L320ERP, 5069-L330ER, 5069-L330ERM, 5069-L330ERMK, 5069-L340ER, 5069-L340ERM, 5069-L340ERP, 5069-L350ERM, 5069-L350ERMK, 5069-L380ERM, 5069-L3100ERM | Compact 5000 I/O modules |
| 5069-L306ERS2, 5069-L306ERMS2, 5069-L310ERS2, 5069-L310ERMS2, 5069-L320ERS2, 5069-L320ERS2K, 5069-L320ERMS2, 5069-L320ERMS2K, 5069-L330ERS2, 5069-L330ERS2K, 5069-L330ERMS2, 5069-L330ERMS2K, 5069-L340ERS2, 5069-L340ERMS2, 5069-L350ERS2, 5069-L350ERS2K, 5069-L350ERMS2, 5069-L350ERMS2K, 5069-L380ERS2, 5069-L380ERMS2, 5069-L3100ERS2, 5069-L3100ERMS2 | |
| 5069-L306ERMS3, 5069-L310ERMS3, 5069-L320ERMS3, 5069-L320ERMS3K, 5069-L330ERMS3, 5069-L330ERMS3K, 5069-L340ERMS3, 5069-L350ERMS3, 5069-L350ERMS3K, 5069-L380ERMS3, 5069-L3100ERMS3 | |
| 5069-L430ERMW, 5069-L450ERMW, 5069-L4100ERMW, 5069-L4200ERMW | |
| 1769-L16ER-BB1B, 1769-L18ER-BB1B, 1769-L18ERM-BB1B, 1769-L18ERM-BB1BK, 1769-L19ER-BB1B, 1769-L19ER-BB1BK | Embedded I/O modules<br>1734 POINT I/O modules |
| 1769-L24ER-QB1B, 1769-L24ER-QBFC1B, 1769-L24ER-QBFC1BK, 1769-L27ERM-QBFC1B | Embedded I/O modules<br>1769 Compact I/O modules |
| 1769-L30ER, 1769-L30ERK, 1769-L30ERM, 1769-L30ERMK, 1769-L30ER-NSE,1769-L33ER, 1769-L33ERK, 1769-L33ERMK, 1769-L33ERM, 1769-L36ERM, 1769-L37ERM, 1769-L37ERMK, 1769-L38ERM, 1769-L38ERMK | 1769 Compact I/O modules |
| 1769-L30ERMS, 1769-L33ERMS, 1769-L33ERMSK, 1769-L36ERMS, L37ERMS, 1769-L37ERMSK, 1769-L38ERMS, 1769-L38ERMSK | 1769 Compact I/O modules |

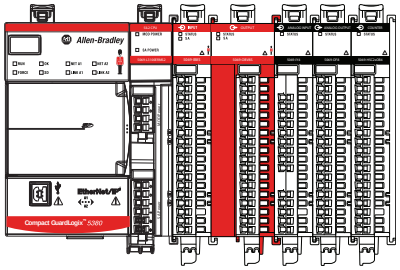
## Compact 5000 I/O Modules

You can install Compact 5000 I/O modules as local I/O modules in a CompactLogix 5380, Compact GuardLogix 5380, or CompactLogix 5480 control system.



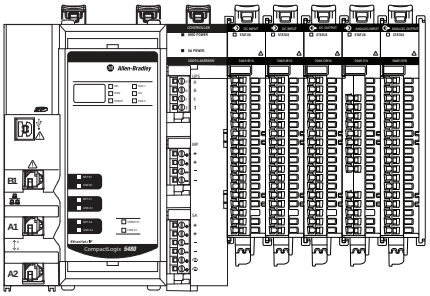
The Compact 5000 I/O architecture provides a wide range of input and output modules to span many applications, from high-speed digital to process control. The architecture uses Producer/Consumer technology that allows input information and output status to be shared among multiple Logix 5000 controllers.

The Compact 5000 I/O modules are installed to the right of a CompactLogix 5380, Compact GuardLogix 5380, or CompactLogix 5480 controller and require removable terminal blocks (RTBs) to connect field-side wiring. The RTBs that are used with Compact 5000 I/O modules are sold separately. See Removable Terminal Blocks on page 30 for the RTBs that are available for Compact 5000 I/O modules.



You can use Compact 5000 I/O safety modules with Compact GuardLogix 5380 controllers only. You cannot use them with CompactLogix 5380 or 5480 controllers.

The modules draw system-side power, which is known as Module (MOD) power, and field-side power, which is known as Sensor/Actuator (SA) power from the controller through the system backplane as needed. The modules then pass the remaining power to the next module in the system.



The following apply when you use Compact 5000 I/O modules:

- You cannot use Compact 5000 I/O modules with the other CompactLogix controllers.
- Some restrictions that apply when you use Compact 5000 I/O modules with Compact GuardLogix 5380 controllers. For more information, see the CompactLogix 5380 and Compact GuardLogix Controllers User Manual, publication 5069-UM001 and the Compact 5000 I/O Digital Modules User Manual, publication 5069-UM004.

## Compact 5000 I/O DC Digital Modules

| Cat. No. | Inputs/Outputs | Voltage Category | MOD Current, Max | SA Power Current, Max |
|---|---|---|---|---|
| 5069-IB16, 5069-IB16K | 16 inputs, sink | 24V DC | 75 mA | 200 mA |
| 5069-IB16F | | | | |
| 5069-IB6F-3W | 6 inputs, sink | | | 150 mA per channel<br>900 mA module |
| 5069-OB16, 5069-OB16K | 16 outputs, source | | | Local Actuator (LA) Power Current(1)<br>0.5 A per channel<br>8 A module |
| 5069-OB16F | | | | |
| 5069-OB8 | 8 outputs (2 groups of 4) | | | LA Power Current(1)<br>2 A per channel<br>8 A per group<br>16 A per module |

(1) The module does not draw current from the SA power bus that is internal to the system. Local Actuator (LA+ and LA-) connections are used to supply field-side power to the module.

## Compact 5000 I/O AC Digital Modules

| Cat. No. | Inputs/Outputs | Voltage Category | MOD Current, Max | SA Power Current, Max |
|---|---|---|---|---|
| 5069-IA16 | 16 inputs | 120/240V AC | 75 mA | 240 mA |
| 5069-OA16 | 16 outputs | 120/240V AC | 100 mA | 4 A |

## Compact 5000 I/O Relay Output Modules

| Cat. No. (1) | Outputs | Output Voltage Range | Module Power Current, Max | Sensor Actuator Power Current, Max |
|---|---|---|---|---|
| 5069-OW4I(2) | 4 - Form A<br>(normally open) | 5...125V DC<br>5...264V AC | 75 mA | – |
| 5069-OW16(2) | 2 groups of 8 - Form A<br>(normally open) | 5...125V DC<br>5...264V AC | | 150 mA |
| 5069-OX4I(2) | 4 - Form C (SPDT) | 5...125V DC<br>5...264V AC | | – |

(1) 5069 relay modules are DC-type modules that require 24VDC power to the module. The relay modules can drive both AC and DC outputs. For power information, see the Compact 5000 I/O Modules and EtherNet/IP Adapters Technical Data, publication 5069-TD001.

(2) **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.

## Compact 5000 I/O Analog, Resistance, and Temperature Modules

| Cat. No. | Inputs/Outputs | Range | Resolution | Module Power Current, Max | Sensor Actuator Power Current, Max |
|---|---|---|---|---|---|
| 5069-IF8 | 8 differential | Voltage<br>±10V<br>0...10V<br>0...5V | ±10.5V: <320 µV/count (15 bits plus sign bipolar)<br>0...10.5V: <160 µV/count (16 bits unipolar)<br>0...5.25V: <80 µV/count (16 bits unipolar) | 75 mA | 100 mA |
| | | Current<br>0...20 mA<br>4...20 mA | 0...21 mA: <0.32 µA/count (16 bits)<br>3.6...21 mA: <0.27 µA/count (16 bits) | | |
| 5069-IY4, 5069-IY4K | 4 differential, RTD, Thermocouple | Voltage<br>±10V<br>0...10V<br>0...5V | ±10.5V: <320 µV/count (15 bits plus sign bipolar)<br>0...10.5V: <160 µV/count (16 bits unipolar)<br>0...5.25V: <80 µV/count (16 bits unipolar) | | |
| | | Current<br>0...20 mA<br>4...20 mA | 0...21 mA: <0.32 µA/count (16 bits)<br>3.6...21 mA: <0.27 µA/count (16 bits) | | |
| | | RTD[1]<br>(Input types PT 385, PT 3916, CU 427, NI 618, NI 672 available)<br>1...500 Ω<br>2...1000 Ω<br>4...2000 Ω<br>8...4000 Ω | < 7.9 mΩ/cnt in 1...500 Ω mode<br>< 15.8 mΩ/cnt in 2...1000 Ω mode<br>< 31.7 mΩ/cnt in 4...2000 Ω mode<br>< 63.4 mΩ/cnt in 8...4000 Ω mode | | |
| | | Thermocouple<br>(Input types B, C, D, E, J, K, N, R, S, T, TXK/XK (L) available)<br>±100 mV | < 3.1 µV/cnt in ±100 mV mode | | |
| 5069-OF4, 5069-OF4K | 4 current or voltage | Voltage<br>± 10V<br>0...10V<br>0...5V | 16 bits across ± 10.5V - 320 µV/bit<br>16 bits across 10.5V - 160 µV/bit<br>16 bits across 5.25V - 80 µV/bit | 75 mA | 150 mA |
| | | Current<br>0...20 mA<br>4...20 mA | 16 bits across 21 mA - 320 nA/bit | | |
| 5069-OF8 | 8 current or voltage | Voltage<br>± 10V<br>0...10V<br>0...5V | 16 bits across ± 10.5V - 320 µV/bit<br>16 bits across 10.5V - 160 µV/bit<br>16 bits across 5.25V - 80 µV/bit | | 250 mA |
| | | Current<br>0...20 mA<br>4...20 mA | 16 bits across 21 mA - 320 nA/bit | | |

(1) Operating in 3-wire mode.

## Compact 5000 I/O Safety Modules

| Cat. No. | Inputs/Outputs | Voltage Category | MOD Current, Max | SA Power Current, Max |
|---|---|---|---|---|
| 5069-IB8S, 5069-IB8SK | 8 inputs, sink | 24V DC | 75 mA | 80 mA |
| 5069-OBV8S,<br>5069-OBV8SK | 8 outputs (used as bipolar or sourcing outputs) | 24V DC | 75 mA | Local Actuator (LA) Power Current[1]<br>0.5 A per channel<br>8 A module |

(1) The module does not draw current from the SA power bus that is internal to the system. Local Actuator (LA+ and LA-) connections are used to supply field-side power to the module.

## Compact 5000 I/O EtherNet/IP Adapters

| Cat. No. | Description | Module Power Current, Max | Sensor Actuator Power Current, Max |
|---|---|---|---|
| 5069-AENTR, 5069-AENTRK | The adapter connects remote Compact 5000 I/O modules, to star, linear, and DLR EtherNet/IP network topologies. | 220 mA | 5 mA (DC power)<br>2 mA (AC power) |
| 5069-AEN2TR | | 450 mA | 10 mA (DC power)<br>25 mA (AC power) |

## Compact 5000 I/O Specialty Modules

| Cat. No. | Description | Module Power Current, Max | Sensor Actuator Power Current, Max |
|---|---|---|---|
| 5069-HSC2X0B4 | Compact 5000 I/O high-speed counter module | 50 mA | 3 A(1) |
| 5069-SERIAL | Compact 5000 I/O serial module | 100 mA | – |
| 5069-ARM | Compact 5000 I/O address reserve module | 45 mA | – |
| 5069-FPD | Compact 5000 I/O field potential distributor | – | 10 mA (DC power)<br>25 mA (AC power) |

(1) SA power current is drawn only when the embedded output channels are used.

For more information on how to use local Compact 5000 I/O modules, see the following:

- Compact 5000 I/O Digital and Safety Modules in Logix 5000 Control Systems User Manual, publication 5069-UM004
- Compact 5000 I/O Analog Modules in Logix 5000 Control Systems User Manual, publication 5069-UM005
- Compact 5000 I/O High-speed Counter Modules in Logix 5000 Control Systems User Manual, publication 5069-UM006

## Compact 5000 I/O End Caps

The right-most Compact 5000 I/O module in a CompactLogix 5380 or CompactLogix 5480 control system requires an end cap. The end cap catalog number is 5069-ECR. An end cap ships with the CompactLogix 5380, Compact GuardLogix 5380, CompactLogix 5480 controllers, and Compact 5000 I/O EtherNet/IP adapters. You do not need to order one separately. However, you can order replacement 5069-ECR end caps.

## Removable Terminal Blocks

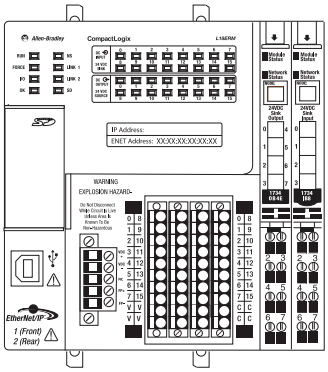
You must order removable terminal blocks (RTBs) for the CompactLogix 5380 and Compact GuardLogix 5380 controllers, and Compact 5000 Adapters and I/O modules, separately. The RTBs are used to connect wiring to the controllers and I/O modules. The following table describes the RTBs.

| Cat. Nos. | Device Supported | Description |
|---|---|---|
| 5069-RTB14CJC-SCREW(1) | Compact 5000 I/O module | 14-pin screw type terminal block with embedded CJC thermistors |
| 5069-RTB14CJC-SPRING(1) | | 14-pin spring type terminal block with embedded CJC thermistors |
| 5069-RTB18-SCREW | | 18-pin screw type terminal block |
| 5069-RTB18-SPRING | | 18-pin spring type terminal block |
| 5069-RTB6-SCREW | 5069-FPD module | 6-pin screw type terminal block |
| 5069-RTB6-SPRING | | 6-pin spring type terminal block |
| 5069-RTB64-SCREW | CompactLogix 5380 and Compact GuardLogix 5380 controllers<br>5069-AEN2TR EtherNet/IP adapter | 4 and 6-pin screw type terminal block |
| 5069-RTB64-SPRING | | 4 and 6-pin spring type terminal block |
| 5069-RTB5-SCREW | 5069-AENTR EtherNet/IP adapter | 5-pin screw type terminal block |
| 5069-RTB5-SPRING | | 5-pin spring type terminal block |

(1) Applies to 5069-IY4 module only.

The CompactLogix 5480 controllers use RTBs for power supply connections.

## 1734 POINT I/O Modules




Additional 1734 POINT I/O modules can be installed on a CompactLogix 5370 L1 controller. The POINT I/O family is ideal for applications where flexibility and low cost of ownership are key for successful control system design and operation.

An RTB provides the wiring and terminations for field-side connections, and system power for the backplane.

### 1734 AC Digital Modules

| Cat. No. | Inputs/Outputs | Voltage Category | Wiring Base | POINTBus™ Current @ 5V DC |
|---|---|---|---|---|
| 1734-IA2 | 2 inputs, nonisolated, sink | 120V AC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-IA4 | 4 inputs, nonisolated, sink | | | |
| 1734-IM2 | 2 inputs, nonisolated, sink | 220V AC | | |
| 1734-IM4 | 4 inputs, nonisolated, sink | | | |
| 1734-OA2 | 2 outputs, nonisolated, source | 120/220V AC | | |
| 1734-OA4 | 4 outputs, nonisolated, source | | | |

## 1734 DC Digital Modules

| Cat. No. | Inputs/Outputs | Voltage Category | Wiring Base | POINTBus Current @ 5V DC |
|---|---|---|---|---|
| 1734-IB2 | 2 inputs, sink | 24V DC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-IB4 | 4 inputs, sink | | | |
| 1734-IB4D | 4 inputs, sink, diagnostic | 24V DC | | 50 mA |
| 1734-IB8 | 8 inputs, sink | 24V DC | | 75 mA |
| 1734-IB8S | 8 inputs, sink, safety | 24V DC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS, 1734-TOP3, 1734-TOP3S | 175 mA |
| 1734-IV2 | 2 inputs, source | 24V DC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-IV4 | 4 inputs, source | | | |
| 1734-IV8 | 8 inputs, source | | | |
| 1734-OB2 | 2 outputs, nonisolated, source | 12/24V DC | | 75 mA |
| 1734-OB2E | 2 outputs, nonisolated protected, source | | | |
| 1734-OB2EP | 2 outputs, nonisolated protected, source | | | |
| 1734-OB4 | 4 outputs, nonisolated, source | | | |
| 1734-OB4E | 4 outputs, nonisolated protected, source | | | |
| 1734-OB8 | 8 outputs, nonisolated, source | | | |
| 1734-OB8E | 8 outputs, nonisolated protected, source | | | |
| 1734-OB8S | 8 outputs, safety | 24V DC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS, 1734-TOP3, 1734-TOP3S | 190 mA |
| 1734-OV2E | 2 outputs, nonisolated protected, sink | 12/24V DC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-OV4E | 4 outputs, nonisolated protected, sink | | | |
| 1734-OV8E | 8 outputs, nonisolated protected, sink | | | |

## 1734 Relay Contact Output Modules

| Cat. No. | Inputs/Outputs | Voltage Range | Wiring Base | POINTBus Current @ 5V DC |
|---|---|---|---|---|
| 1734-OW2 | 2 Form A (normally open) relays | 5...28.8V DC @ 2.0 A<br>48V DC @ 0.5 A<br>125V DC @ 0.25 A<br>125V DC @ 2.0 A<br>240V AC @ 2.0 A | 1734-TB,1734-TBS, 1734-TOP, 1734-TOPS | 80 mA |
| 1734-OW4 | 4 Form A (normally open) relays | | | |
| 1734-OX2 | 2 Form C isolated (normally open; normally closed) electromechanical relays | | | 100 mA |

## 1734 Analog and Temperature Modules

| Cat. No. | Inputs/Outputs | Range | Resolution | Wiring Base | POINTBus Current @ 5V DC |
|---|---|---|---|---|---|
| 1734-IE2C | 2 single-ended, nonisolated, current | 4...20 mA<br>0...20 mA | 16 bits over 0...21 mA<br>0.32 µA/cnt | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-IE2V | 2 single-ended, nonisolated, voltage | 0...10V (-0.0V under, +0.5V over)<br>±10V (-0.5V under, +0.5V over) | 15 bits plus sign<br>320 µV/cnt in unipolar or bipolar mode | | |
| 1734-IE4C | 4 single-ended, nonisolated, current | 4...20 mA<br>0...20 mA | 16 bits - over 0...21 mA<br>0.32 µA/cnt | | |
| 1734-IE4S | 4 inputs, single-ended, Safety rated | 0...20 mA, 4...20 mA<br>±5V, 0...5V, ±10V, 0...10V | 12 bits | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS, 1734-TOP3,1734-TOP3S | 110 mA |
| 1734-IE8C | 8 single-ended, nonisolated, current | 4...20 mA<br>0...20 mA | 16 bits - over 0...21 mA<br>0.32 µA/cnt | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-IR2 | 2 single-ended, nonisolated | 0...600 Ω | 16 bits<br>9.5 mΩ/cnt<br>0.03 °C/cnt (Pt385 @ 25 °C)<br>[0.05 °F/cnt (Pt385 @ 77 °F)] | | 220 mA |
| 1734-IR2E | 2 single-ended, nonisolated, protected | 0...220 Ω | 16 bits<br>2.4 mΩ/cnt<br>0.006 °C/cnt (Pt385 @ 25 °C)<br>[0.0114 °F/cnt (Pt385 @ 77 °F)] | | |
| 1734-IT2I | 2 differential, individually isolated | Sensors B, C, E, J, K, N, R, S, T | 15 bits plus sign<br>2.5 µV/cnt | 1734-TBCJC | 175 mA |
| 1734-OE2C | 2 single-ended, nonisolated, current | 4...20 mA<br>0...20 mA | 13 bits over 0...21mA<br>2.5 µA/cnt (average)<br>3...2.7 µA/cnt (typical range) | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-OE2V | 2 single-ended, nonisolated, voltage | 0...10V (-0.0V under, +0.5V over)<br>±10V (-0.5V under, +0.5V over) | 14 bits (13 plus sign)<br>1.28 mV/cnt in unipolar or bipolar mode | | |
| 1734-OE4C | 4 single-ended, nonisolated, current | 4...20 mA<br>0...20 mA | 16 bits over 0...21 mA<br>0.32 µA/cnt) | | |

## 1734 Counter Modules

| Cat. No. | Inputs/Outputs | Range | Frequency | Wiring Base | POINTBus Current @ 5V DC |
|---|---|---|---|---|---|
| 1734-IJ | 1 - 1 group of A/Areturn, B/Breturn and Z/Zreturn | 5V DC | 1.0 MHz counter and encoder X1<br>500 kHz encoder X2 (no filter<br>250 kHz encoder X4 (no filter) | 1734-TB, 1734-TBS, 1734-TB3, 1734-TB3S, 1734-TOP, 1734-TOPS | 160 mA |
| 1734-IK | 1 - 1 group of A/Areturn, B/Breturn and Z/Zreturn | 15...24V DC | | | 160 mA |
| 1734-VHSC24 | 1 - 1 group of A/Areturn, B/Breturn and Z/Zreturn | 15...24V DC | | | 180 mA |
| 1734-VHSC5 | 1 - 1 group of A/Areturn, B/Breturn and Z/Zreturn | 5V DC | | | 180 mA |

## 1734 Self-configurable Modules

| Cat. No. | Inputs/Outputs | Voltage Category | Wiring Base | POINTBus Current @ 5V DC |
|---|---|---|---|---|
| 1734-8CFG | 8 self-configurable | 24V DC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 100 mA |

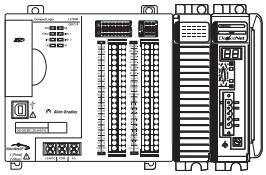
## 1734 Communication and Specialty Modules

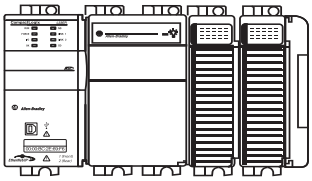
| Cat. No. | Description | Wiring Base | POINTBus Current |
|---|---|---|---|
| 1734-AENT | The single port adapter connects POINT I/O modules to the Ethernet network. | – | |
| 1734-AENTR | The adapter connects POINT I/O modules to a linear or DLR network and uses two copper network ports to connect to the network. | – | |
| 1734-232ASC | The 1734-232ASC and 1734-485ASC serial interface modules offer a serial-link communication interface solution for peripheral products with RS-232 (only 1734-232ASC), RS-485, and RS-422 ports (only 1734-485ASC.) | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-485ASC | | | |
| 1734-ARM | The 1734-ARM address reserve module reserves the address and slot numbers to maintain a numbering scheme of a system. The 1734-ARM has no module configuration and does not communicate I/O data. | | 75 mA |
| 1734-CTM | The common terminal module (1734-CTM) and voltage terminal module (1734-VTM) expand the termination capabilities of POINT I/O modules. Install the modules to support higher density (8 channel) POINT I/O modules. | | 75 mA |
| 1734-VTM | | | |
| 1734-SSI | The 1734-SSI module collects serial data from absolute-position, encoding sensors that use standard serial synchronous interface (SSI) protocol. | | 110 mA |

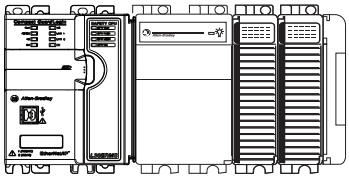
## 1769 Compact I/O Modules

The 1769 Compact I/O modules can be used as local I/O modules with these controllers:

- CompactLogix 5370 L2 controllers
- CompactLogix 5370 L3 controllers
- Compact GuardLogix 5370 controllers
- 1768 CompactLogix controllers







The modules mechanically lock together with a tongue-and-groove design and have an integrated communication bus that is connected from module to module by a moveable bus connector.

Each I/O module includes a built-in removable terminal block with fingersafe cover for connections to I/O sensors and actuators. The terminal block is behind a door at the front of the module. I/O wiring can be routed from beneath the module to the I/O terminals.

For detailed specifications, see 1769 Compact I/O Modules Specifications Technical Data, publication 1769-TD006.

### Power Supply Distance Ratings

Check the specification table of each module for the power supply distance rating. This rating indicates how many slot positions the module can be from the power supply.

## 1769 AC Digital Modules

| Cat. No. | Inputs/Outputs | Voltage Category | Operating Voltage Range | Backplane Current | Power Supply Distance Rating |
|---|---|---|---|---|---|
| 1769-IA8I<br>1769-IA8IK(2) | 8 inputs, individually isolated | 100/120V AC | 79...132V AC,<br>47...63 Hz | 90 mA @ 5.1V(1) | 8 |
| 1769-IA16<br>1769-IA16K(2) | 16 inputs | 100/120V AC | 79...132V AC,<br>47...63 Hz | 115 mA @ 5.1V | 8 |
| 1769-IM12 | 12 inputs | 200/240V AC | 159...265V AC,<br>47...63 Hz | 100 mA @ 5.1V | 8 |
| 1769-OA8 | 8 outputs | 100/240V AC | 85...265V AC<br>47...63 Hz | 145 mA @ 5.1V | 8 |
| 1769-OA16<br>1769-OA16K(2) | 16 outputs | 100/240V AC | 85...265V AC<br>47...63 Hz | 225 mA @ 5.1V | 8 |

(1) Maximum is 190 mA.

(2) Module has conformal coating.

## 1769 DC Digital Modules

| Cat. No. | Inputs/Outputs | Voltage Category | Operating Voltage Range | Backplane Current | Power Supply Distance Rating |
|---|---|---|---|---|---|
| 1769-IG16 | 16 inputs | 5V DC TTL | 4.5...5.5V DC | 120 mA @ 5.1V | 8 |
| 1769-IQ16<br>1769-IQ16K(1) | 16 inputs | 24V DC sink/source | 10...30V DC @ 30 °C (86 °F)<br>10...26.4V DC @ 60 °C (140 °F) | 115 mA @ 5.1V | 8 |
| 1769-IQ16F | 16 inputs, high speed | 24V DC sink/source | 10...30V DC @ 30 °C (86 °F)<br>10...26.4V DC @ 60 °C (140 °F) | 100 mA @ 5.1V | 8 |
| 1769-IQ32<br>1769-IQ32K(1) | 32 inputs | 24V DC sink/source | 10...30V DC @ 30 °C (86 °F)<br>10...26.4V DC @ 60 °C (140 °F) | 170 mA @ 5.1V | 8 |
| 1769-IQ32T | 32 inputs | 24V DC sink/source | 20.4...26.4V DC @ 60 °C (140 °F) | 170 mA @ 5.1V | 8 |
| 1769-IQ6XOW4 | 6 inputs<br>4 outputs | 24V DC sink/source input AC/DC normally open relay contact outputs | 10...30V DC @ 30 °C (86 °F)<br>10...26.4V DC @ 60 °C (140 °F) | 105 mA @ 5.1V<br>50 mA @ 24V | 8 |
| 1769-OB8<br>1769-OB8K(1) | 8 outputs | 24V DC source | 20.4...26.4V DC | 145 mA @ 5.1V | 8 |
| 1769-OB16<br>1769-OB16K(1) | 16 outputs | 24V DC source | 20.4...26.4V DC | 200 mA @ 5.1V | 8 |
| 1769-OB16P | 16 outputs, protected | 24V DC source | 20.4...26.4V DC | 160 mA @ 5.1V | 8 |
| 1769-OB32<br>1769-OB32K(1) | 32 outputs | 24V DC source | 20.4...26.4V DC | 300 mA @ 5.1V | 6 |
| 1769-OB32T | 32 outputs | 24V DC source | 10.2...26.4V DC | 220 mA @ 5.1V | 8 |
| 1769-OG16 | 16 outputs | 5V DC TTL | 4.5...5.5V DC | 200 mA @ 5.1V | 8 |
| 1769-OV16 | 16 outputs | 24V DC sink | 20.4...26.4V DC | 200 mA @ 5.1V | 8 |
| 1769-OV32T | 32 outputs | 24V DC sink | 10.2...26.4V DC | 300 mA @ 5.1V | 8 |

(1) Module has conformal coating.

## 1769 Contact Output Modules

| Cat. No. | Inputs/Outputs | Operating Voltage Range | Backplane Current | Power Supply Distance Rating |
|---|---|---|---|---|
| 1769-OW8 | 8 outputs | 5...265V AC<br>5...125V DC | 125 mA @ 5.1V<br>100 mA @ 24V | 8 |
| 1769-OW8I<br>1769-OW8IK(1) | 8 outputs, individually isolated | 5...265V AC<br>5...125V DC | 125 mA @ 5.1V<br>100 mA @ 24V | 8 |
| 1769-OW16<br>1769-OW16K(1) | 16 outputs | 5...265V AC<br>5...125V DC | 205 mA @ 5.1V<br>180 mA @ 24V | 8 |

(1) Module has conformal coating.

## 1769 Analog Modules

| Cat. No. | Inputs/Outputs | Range | Resolution | Backplane Current | Power Supply Distance Rating |
|---|---|---|---|---|---|
| 1769-IF4<br>1769-IF4K(1) | 4 inputs, differential or single-ended | ±10V<br>0...10V<br>0...5V<br>1...5V<br>0...20 mA<br>4...20 mA | 14 bits (unipolar)<br>14 bits plus sign (bipolar) | 120 mA @ 5.1V<br>60 mA @ 24V | 8 |
| 1769-IF4I<br>1769-IF4IK(1) | 4 inputs, differential or single-ended, individually isolated | ±10V<br>0...10V<br>0...5V<br>1...5V<br>0...20 mA<br>4...20 mA | 16 bits (unipolar)<br>15 bits plus sign (bipolar) | 145 mA @ 5.1V<br>125 mA @ 24V | 8 |
| 1769-IF8<br>1769-IF8K(1) | 8 inputs, differential or single-ended | ±10V<br>0...10V<br>0...5V<br>1...5V<br>0...20 mA<br>4...20 mA | 16 bits (unipolar)<br>15 bits plus sign (bipolar) | 120 mA @ 5.1V<br>70 mA @ 24V | 8 |
| 1769-IF16C<br>1769-IF16CK(1) | 16 inputs, single-ended | 0...20 mA<br>4...20 mA | 16 bits (unipolar)<br>15 bits plus sign (bipolar) | 190 mA @ 5.1V<br>70 mA @ 24V | 8 |
| 1769-IF16V<br>1769-IF16VK(1) | 16 inputs, single-ended | ±10V<br>0...10V<br>0...5V<br>1...5V | 16 bits (unipolar)<br>15 bits plus sign (bipolar) | 190 mA @ 5.1V<br>70 mA @ 24V | 8 |
| 1769-IF4XOF2<br>1769-IF4XOF2K(1) | 4 inputs, differential or single-ended<br>2 outputs, single-ended | 0...10V<br>0...20 mA | Input: 8 bits plus sign<br>Output: 8 bits plus sign | 120 mA @ 5.1V<br>160 mA @ 24V | 8 |
| 1769-IF4FXOF2F | 4 inputs, fast differential or single-ended<br>2 outputs, fast single-ended | ±10V<br>0...10V<br>0...5V<br>1...5V<br>0...20 mA<br>4...20 mA | Input: 14 bits (unipolar)<br>14 bits plus sign (bipolar)<br>Output: 13 bits (unipolar)<br>13 bits plus sign (bipolar) | 220 mA @ 5.1V<br>120 mA @ 24V | 8 |
| 1769-OF2<br>1769-OF2K(1) | 2 outputs, single-ended | ±10V<br>0...10V<br>0...5V<br>1...5V<br>0...20 mA<br>4...20 mA | 14 bits (unipolar)<br>14 bits plus sign (bipolar) | 120 mA @ 5.1V<br>120 mA @ 24V | 8 |

| Cat. No. | Inputs/Outputs | Range | Resolution | Backplane Current | Power Supply Distance Rating |
|---|---|---|---|---|---|
| 1769-OF4<br>1769-OF4K(1) | 4 outputs, single-ended | ±10V<br>0...10V<br>0...5V<br>1...5V<br>0...20 mA<br>4...20 mA | 15 bits plus sign unipolar and bipolar | 120 mA @ 5.1V<br>170 mA @ 24V | 8 |
| 1769-OF4CI<br>1769-OF4CIK(1) | 4 outputs, differential, individually isolated | 0...20 mA<br>4...20 mA | 16 bits (unipolar) | 165 mA @ 5V<br>110 mA @ 24V | 8 |
| 1769-OF4VI<br>1769-OF4VIK(1) | 4 outputs, differential, individually isolated | ±10V<br>0...10V<br>0...5V<br>1...5V | 15 bits plus sign (bipolar) | 145 mA @ 5.1V<br>75 mA @ 24V | 8 |
| 1769-OF8C<br>1769-OF8CK(1) | 8 outputs, single-ended | 0...20 mA<br>4...20 mA | 16 bits (unipolar) | 140 mA @ 5.1V<br>145 mA @ 24V | 8 |
| 1769-OF8V<br>1769-OF8VK(1) | 8 outputs, single-ended | ±10V<br>0...10V<br>0...5V<br>1...5V | 16 bits plus sign (bipolar) | 145 mA @ 5.1V<br>125 mA @ 24V | 8 |

(1) Module has conformal coating.

## 1769 Analog RTD and Thermocouple Modules

| Cat. No. | Inputs/Outputs | Sensors Supported | Backplane Current | Power Supply Distance Rating |
|---|---|---|---|---|
| 1769-IR6<br>1769-IR6K(1) | 6 RTD inputs | 100, 200, 500, 1000 Ω Platinum 385<br>100, 200, 500, 1000 ΩPlatinum 3916<br>120 Ω Nickel 618<br>120 Ω Nickel 672<br>10 Ω Nickel-iron 518<br>0...150 Ω<br>0...500 Ω<br>0...1000 Ω<br>0...3000 Ω | 100 mA @ 5.1V<br>45 mA @ 24V | 8 |
| 1769-IT6<br>1769-IT6K(1) | 6 thermocouple inputs | Thermocouple types B, C, E, J, K, N, R, S, T<br>±50V<br>±100V | 100 mA @ 5.1V<br>45 mA @ 24V | 8(2) |

(1) Module has conformal coating.
(2) To reduce the effects of electrical noise, install the 1769-IT6 module at least two slots away from the AC power supplies.

## 1769 Communication and Specialty Modules

| Cat. No. | Description | Backplane Current | Power Supply Distance Rating |
|---|---|---|---|
| 1769-AENTR<br>1769-AENTRK[1] | The adapter connects 1769 Compact I/O modules to a linear or DLR network and uses two copper network ports to connect to the network. | 500 mA @ 5V | 5 |
| 1769-ARM | Use a 1769-ARM address reserve module to reserve module slots. After creating an I/O configuration and user program, you can remove and replace any I/O module in the system with a 1769-ARM module. You must first inhibit the removed module in the Logix Designer application. | 60 mA @ 5.1V | 8 |
| 1769-ASCII | The 1769-ASCII module, a general-purpose two-channel ASCII interface, provides a flexible network interface to a wide variety of RS-232, RS-485, and RS-422 ASCII devices. The module provides the communication connections to the ASCII device. | 425 mA @ 5.1V | 4 |
| 1769-BOOLEAN | Use the 1769-BOOLEAN module in applications that require repeatability, such as material handling and packaging, when there is a requirement to activate an output that is based on the transition of an input. If the Boolean expression is true, the output is directed to the ON state. If the Boolean expression is false, the output channel is directed to the OFF state. There are four operators that you can configure as OR, AND, XOR, or none. | 220 mA @ 5.1V | 8 |
| 1769-HSC | Use the 1769-HSC when you need:<br>• A counter module that can react to high-speed input signals.<br>• To generate rate and time-between-pulses (pulse interval) data.<br>• As many as two channels of quadrature or four channels of pulse/count inputs. | 245 mA @ 5.1V | 4 |
| 1769-SM1 | The Compact I/O to DPI™ or SCANport™ module connects to PowerFlex 7-class drives, other DPI-based host devices, and SCANport-based host devices such as 1305 and 1336 PLUS™ II drives. | 280 mA @ 5.1V | 6 |
| 1769-SM2 | The Compact I/O to DSI/Modbus module connects to PowerFlex 4-class drives and to other Modbus RTU slave devices, such as PowerFlex 7-class drives with 20-COMM-H RS-485 HVAC adapters. | 350 mA @ 5.1V | 4 |

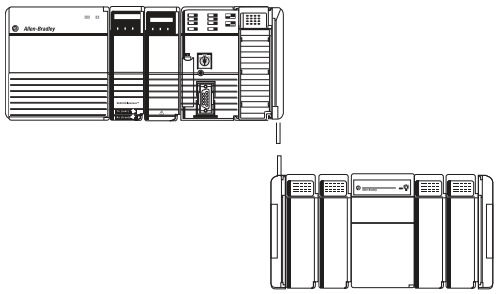
(1) Module has conformal coating.

## 1769 Expansion Cables

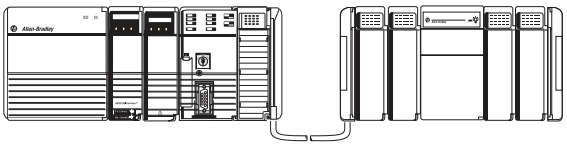
If you divide 1769 modules into multiple banks, make sure:

- Each bank needs its own power supply.
- To use expansion cables to connect the banks.
- The last I/O bank requires an end cap.

Vertical



Horizontal



How you orient I/O banks determines the expansion cables that you must connect the I/O banks.

| If You Add a | And Connect the Chassis | Use This Cable[1] |
|---|---|---|
| Second bank | Right to left | 1769-CRL*x* |
| | Right to right | 1769-CRR*x* |
| Third bank | Right to left | 1769-CRL*x* |
| | Right to right | 1769-CRR*x* |
| | Left to left | 1769-CLL*x* |

(1) Where *x* = 1 for 1 ft (305 mm) or 3 for 3.28 ft (1 m).

## 1769 End Caps

The final 1769 Compact I/O bank requires an end cap on the end without the expansion cable. The CompactLogix 5370 L2 controller comes with a right-end cap, so you do not need to order one separately.

- Right end cap, catalog number 1769-ECR
- Right end cap with conformal coating, catalog number 1769-ECRK
- Left end cap, catalog number 1769-ECL
- Left end cap with conformal coating, catalog number 1769-ECLK

## 1769 Wiring Systems

As an alternative to buying removable terminal blocks (RTBs) and connecting the wires yourself, you can buy a wiring system of:

- Interface modules (IFMs) that provide the output terminal blocks for digital I/O modules. Use the prewired cables that match the I/O module to the IFM.
- Analog interface modules (AIFMs) that provide the output terminal blocks for analog I/O modules. Use the prewired cables that match the I/O module to the AIFM.
- I/O module-ready cables. One end of the cable assembly is an RTB that plugs into the front of the I/O module. The other end has individually color-coded conductors that connect to a standard terminal block.

## Removable Terminal Kits

You can order removable terminal kits with the CompactLogix 5370 L1 and L2 controllers separately. The kits are used to connect wiring to the controllers. The following table describes the kits.

| Cat. Nos. | Controllers Supported | Description |
|---|---|---|
| 1769-RTB45 | CompactLogix 5370 L1 | • Four 10-pin connectors that are used to connect wiring to the embedded digital I/O module of the controller.<br>• One 5-pin connector that is used to connect an external 24V DC power source to the controller. |
| 1769-RTB40DIO | CompactLogix 5370 L2 | Four 10-pin connectors that are used to connect wiring to the embedded digital I/O module of the controller. |
| 1769-RTB40AIO | 1769-L24ER-QBFC1B and 1769-L27ERM-QBFC1B | Four 10-pin connectors that are used to connect wiring to the embedded analog I/O module of the controller. |

# CompactLogix Power Supplies

Select power supplies based on the controller and the number of additional I/O banks.

| For a | Select |
|---|---|
| CompactLogix 5370 L3 controller | • One 1769 power supply for the controller and local I/O modules.<br>• One 1769 power supply for each additional bank of I/O modules. |
| CompactLogix 5370 L2 controller | No power supply as it is integrated to the controller package. |
| CompactLogix 5370 L1 controller | No power supply as it is integrated to the controller package. |
| CompactLogix 5380 controller | None<br>External power supplies must be used to transfer MOD power and SA power to the system. The external power supplies are connected to a MOD power RTB and an SA power RTB that is installed on the controller.<br>IMPORTANT: When you use Compact GuardLogix 5380 controllers, you must use SELV/PELV-rated power supplies for MOD power and SA power. Additionally, you can only use DC SA power with Compact GuardLogix 5380 controllers. |
| Compact GuardLogix 5380 controller | |
| CompactLogix 5480 | None<br>External power supplies must be used to transfer MOD power and SA power to the system. The external power supplies are connected to a MOD power RTB and an SA power RTB that is installed on the controller.<br>External uninterruptible power supply can be used to provide power to the UPS RTB that is installed on the controller. You can connect an external uninterruptible power supply (UPS) to the UPS RTB to save the program if power is lost.<br>IMPORTANT: The UPS lets the controller save the program but not the state of the program.<br>We recommend that you use a 1606 switched mode uninterruptible power supply, for example, the 1606-XLS240-UPS power supply. |

## Power Supplies

| Cat. No. | Description | Voltage Category | Operating Voltage Range |
|---|---|---|---|
| 1769-PA2<br>1769-PA2K(1) | 1769 Compact I/O expansion power supply | 120V/220V AC | 85...265V AC |
| 1769-PB2<br>1769-PB2K(1) | | 24V DC | 19.2...31.2V DC |
| 1769-PA4<br>1769-PA4K(1) | | 120V/220V AC | 85...265V AC or 170...265V AC (switch selectable) 47...63 Hz |
| 1769-PB4<br>1769-PB4K(1) | | 24V DC | 19.2...31.2V DC |

(1) Module has conformal coating.

For detailed specifications, see Compact Power Supplies Specifications Technical Data, publication 1769-TD008.

# Notes:

# Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource | Description |
|---|---|
| Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1 | Provides general guidelines for installing a Rockwell Automation industrial system. |
| Product Certifications website, rok.auto/certifications. | Provides declarations of conformity, certificates, and other certification details. |

You can view or download publications at rok.auto/literature.

## Rockwell Automation Support

Use these resources to access support information.

| | | |
|---|---|---|
| **Technical Support Center** | Find help with how-to videos, FAQs, chat, user forums, and product notification updates. | rok.auto/support |
| **Knowledgebase** | Access Knowledgebase articles. | rok.auto/knowledgebase |
| **Local Technical Support Phone Numbers** | Locate the telephone number for your country. | rok.auto/phonesupport |
| **Literature Library** | Find installation instructions, manuals, brochures, and technical data publications. | rok.auto/literature |
| **Product Compatibility and Download Center (PCDC)** | Get help determining how products interact, check features and capabilities, and find associated firmware. | rok.auto/pcdc |

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