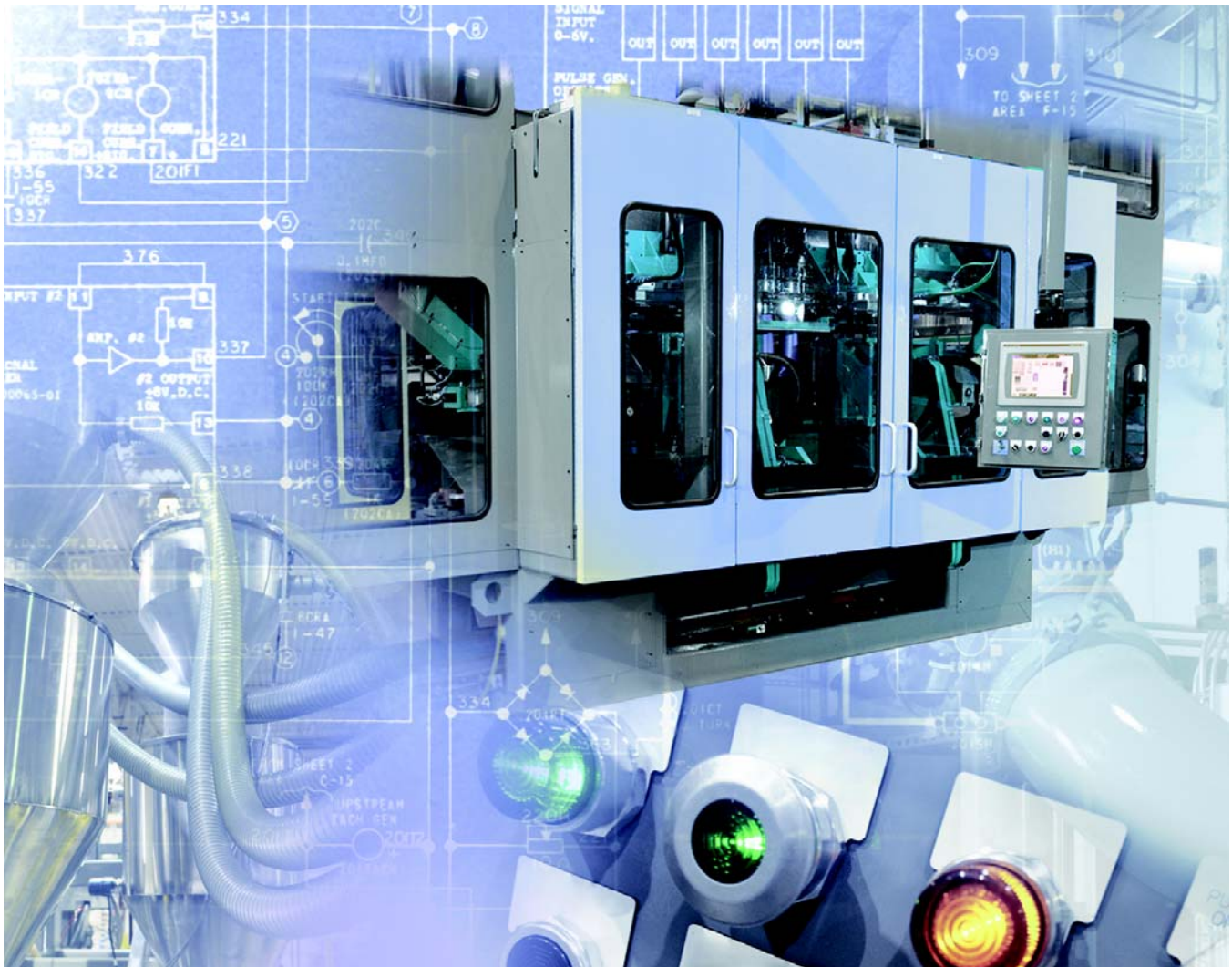


CompactLogix System

Catalog Numbers 1769-L16ER-BB1B, 1769-L18ER-BB1B, 1769-L18ERM-BB1B, 1769-L24ER-QB1B, 1769-L24ER-QBFC1B, 1769-L27ERM-QBFC1B, 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM, 1769-L33ER, 1769-L33ERM, 1769-L36ERM, 1769-AENTR, 1768-L43, 1768-L43S, 1768-L45, 1768-L45S



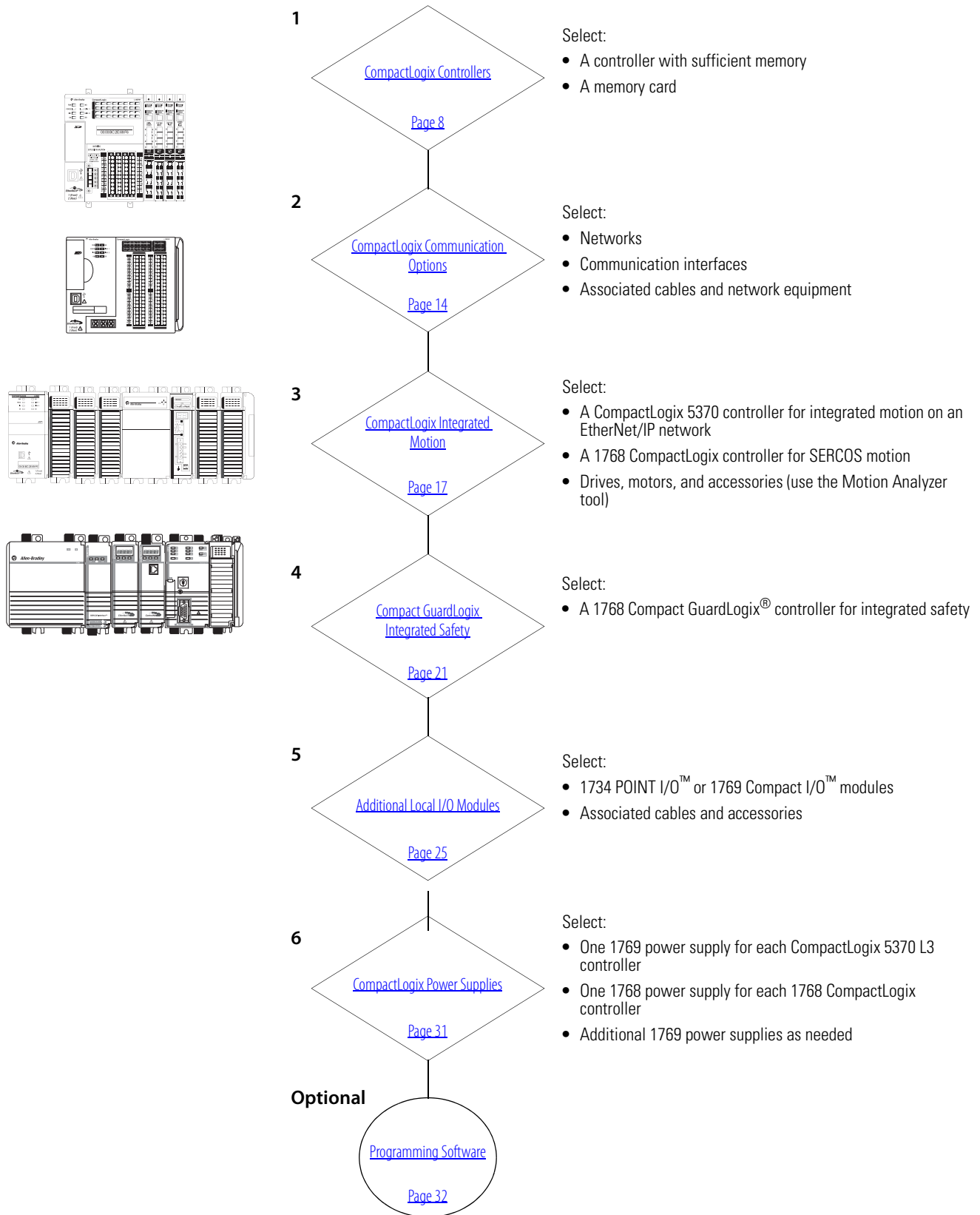
LISTEN.
THINK.
SOLVE.®

Logix Controllers Comparison

| Characteristic | ControlLogix 1756-71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75 GuardLogix 1756-L72S, 1756-L73S, 1756-L73SXT | CompactLogix 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM, 1769-L33ER, 1769-L33ERM, 1769-L36ERM | CompactLogix 1769-L24ER-BB1B, 1769-L24ER-QBFC1B, 1769-L27ERM-QBFC1B | CompactLogix 1769-L16ER-BB1B, 1769-L18ER-BB1B, 1769-L18ERM-BB1B | CompactLogix 1768-L43, 1768-L45 Compact GuardLogix 1768-L43S, 1768-L45S |
|---|---|---|---|---|--|
| Controller tasks: • Continuous • Periodic • Event | 32; 100 programs/task | 32; 100 programs/task | 32; 100 programs/task | 32; 100 programs/task | • 1768-L43: 16; 32 programs/task • 1768-L45: 30; 32 programs/task |
| Event tasks | All event triggers | All event triggers | All event triggers | All event triggers, plus embedded inputs | All event triggers |
| User memory | <ul style="list-style-type: none"> 1756-L71: 2 MB 1756-L72: 4 MB 1756-L72S: 4 MB + 2 MB safety 1756-L73, 1756-L73SXT, 1756-L73XT: 8 MB 1756-L73S: 8 MB + 4 MB safety 1756-L74: 16 MB 1756-L75: 32 MB | <ul style="list-style-type: none"> 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM: 1MB 1769-L33ER, 1769-L33ERM: 2 MB 1769-L36ERM: 3 MB | <ul style="list-style-type: none"> 1769-L24ER: 750 KB 1769-L27ERM: 1 MB | <ul style="list-style-type: none"> 1769-L16ER: 384 KB 1769-L18ER, 1769-L18ERM: 512 KB | <ul style="list-style-type: none"> 1768-L43: 2 MB 1768-L43S: 2 MB + 0.5 MB safety 1768-L45: 3 MB 1768-L45S: 3 MB + 1 MB safety |
| Memory card | Secure Digital | Secure Digital | Secure Digital | Secure Digital | CompactFlash |
| Built-in ports | 1 USB | 2 EtherNet/IP 1 USB | 2 EtherNet/IP 1 USB | 2 EtherNet/IP 1 USB | 1 RS-232 |
| Communication options | <ul style="list-style-type: none"> EtherNet/IP (standard and safety) ControlNet (standard and safety) DeviceNet (standard and safety) DH+ Remote I/O SynchLink | <ul style="list-style-type: none"> Dual-port EtherNet/IP⁽¹⁾ DeviceNet | <ul style="list-style-type: none"> Dual-port EtherNet/IP⁽¹⁾ DeviceNet | <ul style="list-style-type: none"> Dual-port EtherNet/IP⁽¹⁾ | <ul style="list-style-type: none"> EtherNet/IP (standard and safety) ControlNet (standard and safety) DeviceNet (standard) |
| Controller connections | 500 | 256 | 256 | 256 | 250 |
| Network connections | Per module: <ul style="list-style-type: none"> 128 ControlNet (CN2/B) 40 ControlNet (CNB) 256 EtherNet/IP; 128 TCP (EN2x) 128 EtherNet/IP; 64 TCP (ENBT) | <ul style="list-style-type: none"> 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM: 256 EtherNet/IP; 120 TCP 1769-L33ER, 1769-L33ERM: 256 EtherNet/IP; 120 TCP 1769-L36ERM: 256 EtherNet/IP; 120 TCP | <ul style="list-style-type: none"> 1769-L24ER: 256 EtherNet/IP; 120 TCP 1769-L27ERM: 256 EtherNet/IP; 120 TCP | <ul style="list-style-type: none"> 1769-L16ER: 256 EtherNet/IP; 120 TCP 1769-L18ER, 1769-L18ERM: 256 EtherNet/IP; 120 TCP | Per module: <ul style="list-style-type: none"> 48 ControlNet 128 EtherNet/IP; 64 TCP |
| EtherNet/IP nodes in a single Logix Designer application, max | N/A | <ul style="list-style-type: none"> 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM: 16 1769-L33ER, 1769-L33ERM: 32 1769-L36ERM: 48 | <ul style="list-style-type: none"> 1769-L24ER: 8 1769-L27ERM: 16 | <ul style="list-style-type: none"> 1769-L16ER: 4 1769-L18ER, 1769-L18ERM: 8 | N/A |
| Controller redundancy | Full support | Backup via DeviceNet | Backup via DeviceNet | — | Backup via DeviceNet |
| Integrated motion | <ul style="list-style-type: none"> Integrated motion on an EtherNet/IP network SERCOS interface Analog options | Integrated motion on an EtherNet/IP network | Integrated motion on an EtherNet/IP network | Integrated motion on an EtherNet/IP network | SERCOS interface |
| Programming languages | <ul style="list-style-type: none"> Standard task: all languages Safety task: relay ladder, safety application instructions | <ul style="list-style-type: none"> Relay ladder Structured text Function block SFC | <ul style="list-style-type: none"> Relay ladder Structured text Function block SFC | <ul style="list-style-type: none"> Relay ladder Structured text Function block SFC | <ul style="list-style-type: none"> Standard task: all languages Safety task: relay ladder, safety application instructions |

(1) CompactLogix™ 5370 controllers have two EtherNet/IP ports to connect to an EtherNet/IP network. The ports carry the same network traffic as part of the controller's embedded switch. The controller uses only one IP address.

Select a CompactLogix System

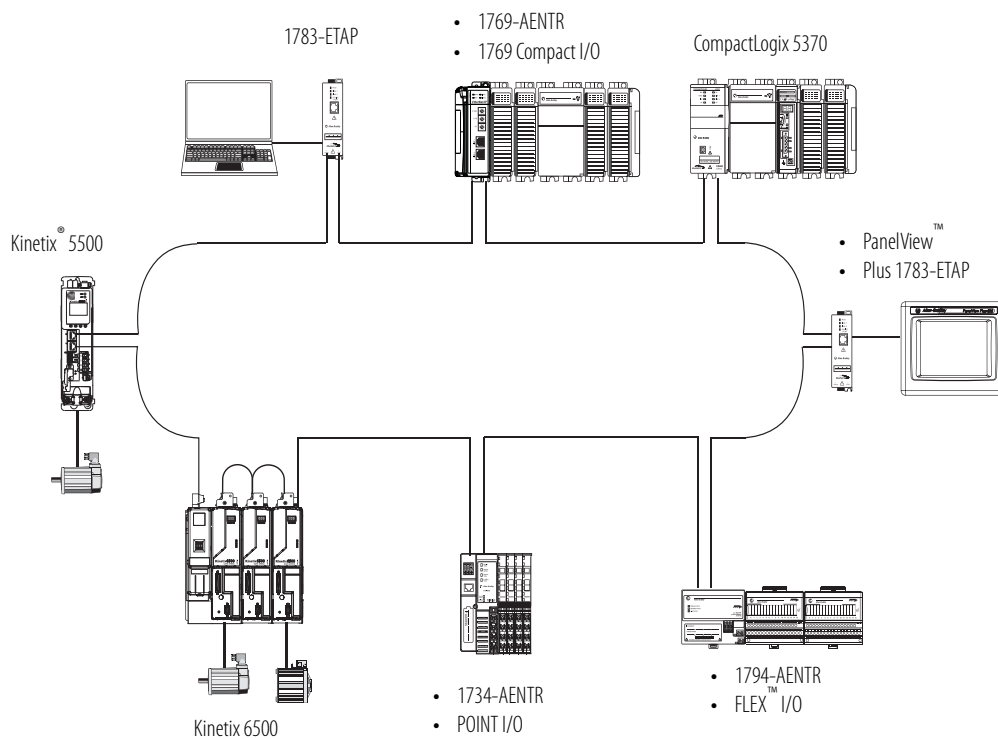


CompactLogix Controllers Overview

The CompactLogix system is designed to provide a Logix solution for small and mid-size applications. Typically, these applications are machine-level control applications. A simple system can consist of a standalone controller with one bank of I/O modules and DeviceNet communication. In a more complex system, add other networks, motion control, and safety control. As part of the Integrated Architecture™ system, the CompactLogix controllers use the same programming software, network protocol, and information capabilities as all Logix controllers, providing a common development environment for all control disciplines.

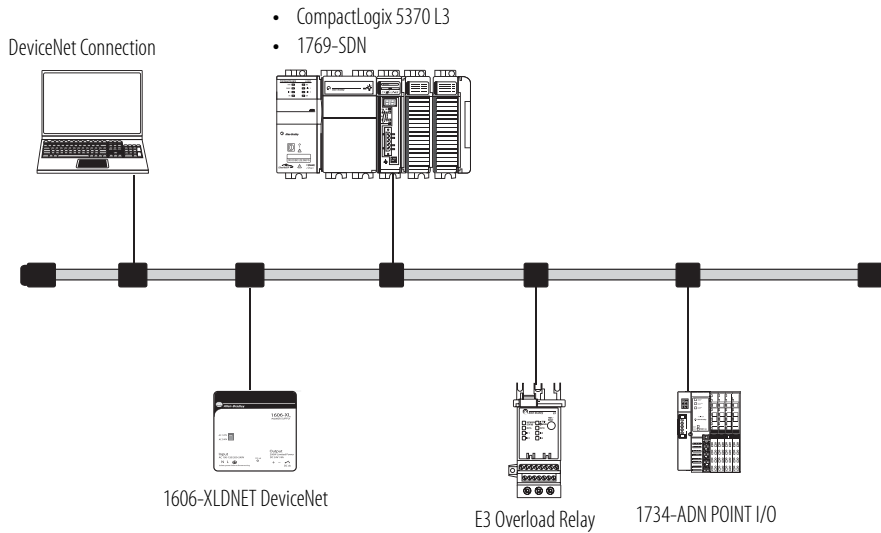
- The CompactLogix 5370 L3 controllers deliver scalable, affordable control ideal for applications from small standalone equipment to high-performance indexing tables, process skids, case packers and erectors, and packaging. The CompactLogix 5370 L3 controllers also provide a truly integrated motion solution.
- The CompactLogix 5370 L2 controllers combine the power of the Logix architecture with the flexibility of 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 POINT I/O. Ideal for small to mid-size machines, these controllers offer value to customers looking for the benefits of Integrated Architecture in a lower cost system.

CompactLogix 5370 System on an EtherNet/IP Network



The CompactLogix 5370 L2 and L3 controllers support DeviceNet connectivity.

CompactLogix 5370 System on an DeviceNet Network

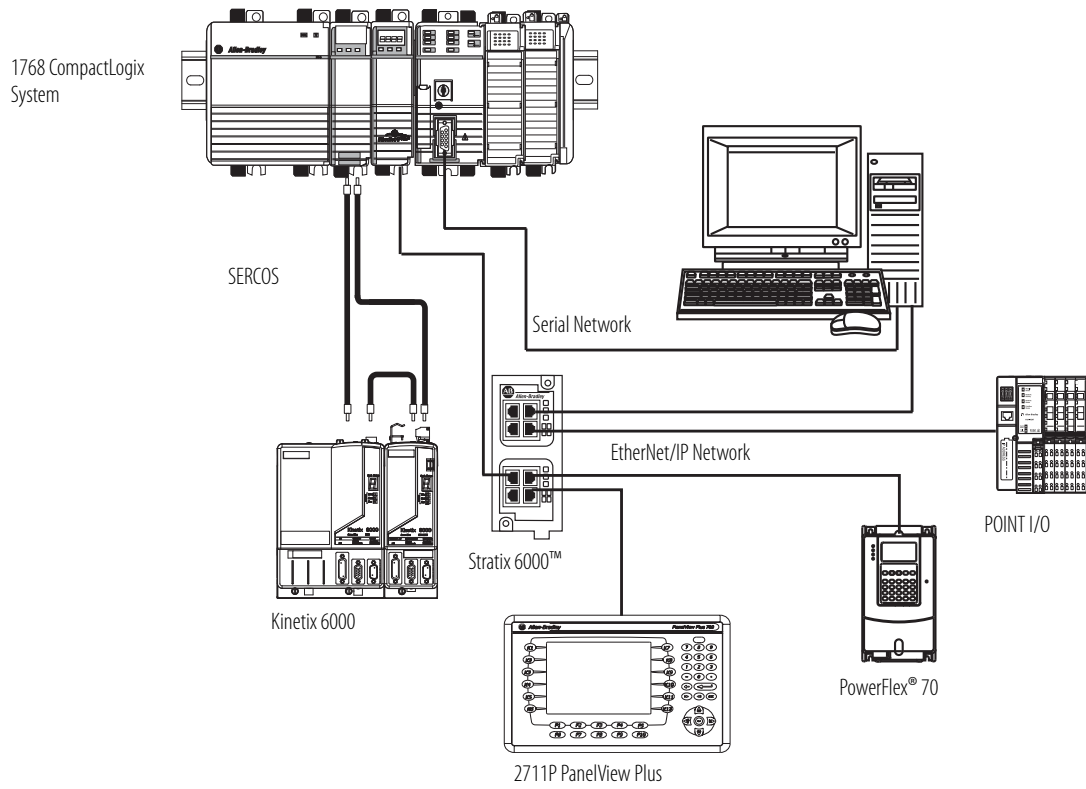


1768 CompactLogix System

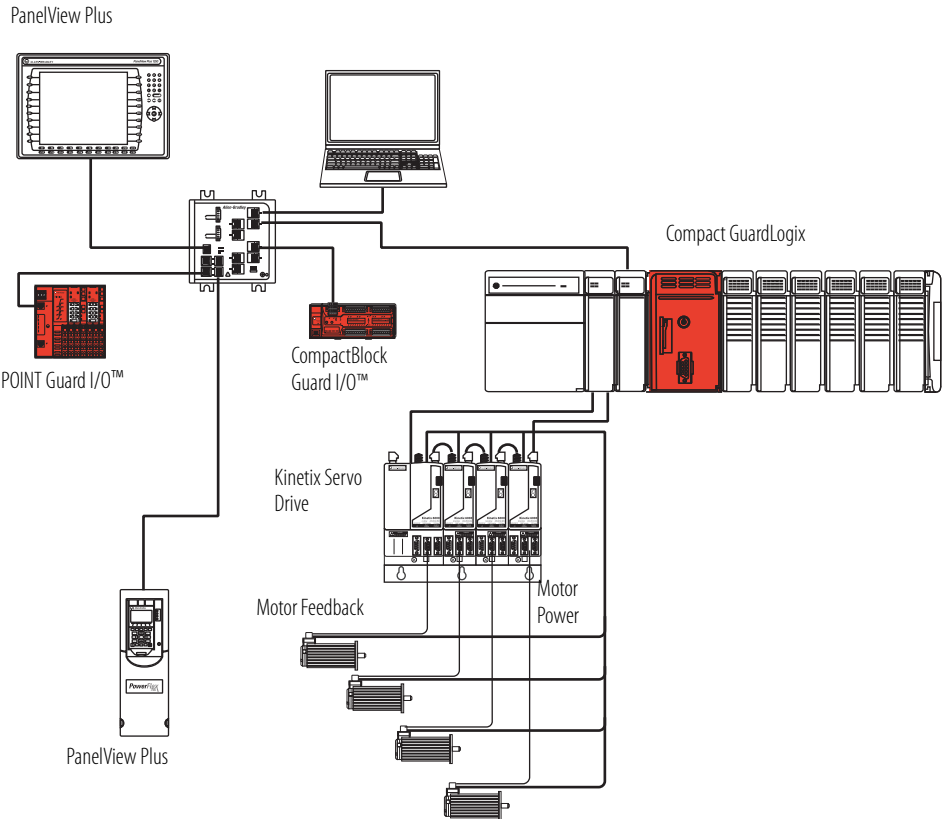
Important: 1768 controllers are compatible with only version 20 or earlier of the RSLogix 5000 software.

The 1768 CompactLogix system combines a 1768 backplane for communication and motion support and a 1769 backplane for I/O support. The 1768 controller is designed for integrated motion, integrated safety, and more complex communication requirements than the other CompactLogix controllers. The 1768 controller has one serial port. Add 1768 modules for motion control, EtherNet/IP communication, and ControlNet communication.

1768 CompactLogix System on an EtherNet/IP Network



1768 Compact GuardLogix Safety System



CompactLogix Controllers

The CompactLogix platform brings together the benefits of the Logix platform— common programming environment, common networks, common control engine—in a small footprint with high performance. Combined with Compact I/O modules, the CompactLogix platform is perfect for tackling smaller, machine-level control applications, with or without simple 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 CompactLogix Controllers Specifications Technical Data, publication [1769-TD005](#).

| Characteristic | CompactLogix 5370 L1 Controllers | CompactLogix 5370 L2 Controllers | CompactLogix 5370 L3 Controllers | 1768 Controllers ⁽¹⁾ |
|------------------------|--|--|--|--|
| Controller application | Small applications Embedded 1734 I/O modules | Small applications Embedded 1769 I/O modules | General purpose | Integrated safety Integrated SERCOS motion |
| Controller tasks | 32; 100 programs/task | 32; 100 programs/task | 32; 100 programs/task | <ul style="list-style-type: none"> 1768-L43: 16; 32 programs/task 1768-L45: 30; 32 programs/task |
| Event tasks | Consumed tag, EVENT instruction, embedded inputs, remote I/O, axis, and motion event triggers | Consumed tag, EVENT instruction, remote I/O, axis, and motion event triggers | Consumed tag, EVENT instruction, remote I/O, axis, and motion event triggers | Consumed tag, EVENT instruction, remote I/O, axis, and motion event triggers |
| User memory | <ul style="list-style-type: none"> 1769-L16ER-BB1B: 384 KB 1769-L18ER-BB1B, 1769-L18ERM-BB1B: 512 KB | <ul style="list-style-type: none"> 1769-L24ER-QB1B, 1769-L24ER-QBFC1B: 750 KB 1769-L27ERM-QBFC1B: 1 MB | <ul style="list-style-type: none"> 1769-L30ER, 1769-L30ERM, 1769-L30ER-NSE: 1MB 1769-L33ER, 1769-L33ERM: 2 MB 1769-L36ERM: 3 MB | <ul style="list-style-type: none"> 1768-L43: 2 MB 1768-L43S: 2 MB + 0.5 MB safety 1768-L45: 3 MB 1768-L45S: 3 MB + 1 MB safety |
| Built-in ports | <ul style="list-style-type: none"> 2 EtherNet/IP⁽²⁾ 1 USB | <ul style="list-style-type: none"> 2 EtherNet/IP⁽²⁾ 1 USB | <ul style="list-style-type: none"> 2 EtherNet/IP⁽²⁾ 1 USB | <ul style="list-style-type: none"> 1 port RS-232 serial (DF1 or ASCII) |
| Communication options | <ul style="list-style-type: none"> Dual-port EtherNet/IP | <ul style="list-style-type: none"> Dual-port EtherNet/IP DeviceNet | <ul style="list-style-type: none"> Dual-port EtherNet/IP DeviceNet | <ul style="list-style-type: none"> EtherNet/IP (standard and safety) ControlNet (standard and safety) DeviceNet (standard) |

(1) 1768 controllers are compatible with only version 20 or earlier of the RSLogix 5000 software.

(2) CompactLogix 5370 controllers have two EtherNet/IP ports to connect to an EtherNet/IP network. The ports carry the same network traffic as part of the controller's embedded switch. The controller uses only one IP address.

For information on estimating memory requirements for you application, see Logix5000 Controllers Execution Time and Memory Use Reference Manual, publication [1756-RM087](#).

CompactLogix 5370 L1 Controllers with Embedded POINT I/O Modules

The CompactLogix 5370 L1 controller comes with:

- a built-in, 24V DC nonisolated power supply.⁽¹⁾
- dual EtherNet/IP ports for ring topologies.
- USB port for firmware download and programming.
- embedded digital I/O (16 DC inputs, 16 DC outputs).



| Characteristic | 1769-L16ER-BB1B | 1769-L18ER-BB1B | 1769-L18ERM-BB1B |
|--|--|--|--|
| Available user memory | 384 KB | 512 KB | 512 KB |
| Memory card | <ul style="list-style-type: none"> • 1784-SD1 (1 GB), shipped with controller • 1784-SD2 (2 GB) | | |
| Communication ports | <ul style="list-style-type: none"> • 2 EtherNet/IP • 1 USB | | |
| Embedded I/O | <ul style="list-style-type: none"> • 16 sinking 24V DC digital input points • 16 sourcing 24V DC digital output points | | |
| EtherNet/IP connections | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP |
| EtherNet/IP nodes in one Logix Designer application, max | 4 | 8 | |
| Integrated motion on an EtherNet/IP network | — | — | Supports up to 2 axes |
| Module expansion capacity | 6 POINT I/O modules | 8 POINT I/O modules | 8 POINT I/O modules |
| Battery | None | | |
| Embedded power supply | 10...28.8V DC 24V DC nominal | | |
| Programming software support | <ul style="list-style-type: none"> • RSLogix™ 5000 software, version 20 - For controllers that use firmware revision 20.xxx. • Logix Designer application, version 21 or later - For controllers that use firmware revision 21.xxx or later. | | |

(1) For more information on connecting a 24V DC power source to the CompactLogix 5370 L1 controller's 24V DC nonisolated power supply, see the CompactLogix 5370 Controllers User Manual, publication [1769-UM021](#).

CompactLogix 5370 L2 Controllers with Embedded Compact I/O Modules



The CompactLogix 5370 L2 controller comes with:

- a built-in, 24V DC power supply.
- dual EtherNet/IP ports for ring topologies.
- USB port for firmware download and programming.
- a combination of embedded digital, analog, and high-speed counter I/O.
- a 1769-ECR right-end cap.

| Characteristic | 1769-L24ER-QB1B | 1769-L24ER-QBFC1B | 1769-L27ERM-QBFC1B |
|--|---|---|--|
| Available user memory | 0.75 MB | 0.75 MB | 1 MB |
| Memory card | <ul style="list-style-type: none"> • 1784-SD1 (1 GB), shipped with controller • 1784-SD2 (2 GB) | | |
| Communication ports | <ul style="list-style-type: none"> • 2 EtherNet/IP • 1 USB | | |
| Embedded I/O | <ul style="list-style-type: none"> • 16 sinking/sourcing 24V DC digital input points • 16 sourcing 24V DC digital output points | <ul style="list-style-type: none"> • 16 sinking/sourcing 24V DC digital input points • 16 sourcing 24V DC digital output points • 4 universal analog input points • 2 analog output points • 4 high-speed counters | |
| EtherNet/IP connections | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP |
| EtherNet/IP nodes in one Logix Designer application, max | 8 | | 16 |
| Integrated motion on an EtherNet/IP network | — | — | Supports up to 4 axes |
| Module expansion capacity | 4 1769 modules | | |
| Battery | None | | |
| Embedded power supply | 24V DC | | |
| Programming software support | <ul style="list-style-type: none"> • RSLogix 5000 software, version 20 - For controllers that use firmware revision 20.xxx. • Logix Designer application, version 21 or later - For controllers that use firmware revision 21.xxx or later. | | |

These controllers replace previous catalog numbers.

| New Controller | Replaces Previous Controller ⁽¹⁾ | Differences |
|--------------------|---|--|
| 1769-L24ER-QBFC1B | 1769-L23-QBFC1B 1769-L23E-QBFC1B | <ul style="list-style-type: none"> • Additional memory • Integrated motion on EtherNet/IP support (1769-L27ERM-QBFC1B) • USB port instead of RS-232 port • Dual-port EtherNet/IP support • SD card support addition • Support for additional expansion I/O modules |
| 1769-L24ER-QB1B | 1769-L23E-QB1B | |
| 1769-L27ERM-QBFC1B | 1769-L23E-QBFC1B | |

(1) These catalog numbers are still available for sale, see [page 12](#) for details. Please contact your local Rockwell Automation sales office for ordering information.

CompactLogix 5370 L3 Controllers

In a CompactLogix 5370 L3 controller system, the 1769 I/O modules can be placed to the left and the right of the power supply. As many as eight modules can be placed on each side of the power supply. The CompactLogix 5370 L3 controller comes with:



- dual EtherNet/IP ports for ring topologies.
- USB port for firmware download and programming.

| Characteristic | 1769-L30ER | 1769-L30ERM | 1769-L30ER-NSE | 1769-L33ER | 1769-L33ERM | 1769-L36ERM |
|--|---|--|--|--|--|--|
| Available user memory | 1 MB | 1 MB | 1 MB No capacitor | 2 MB | 2 MB | 3 MB |
| Memory card | 1784-SD1 (1 GB), shipped with controller 1784-SD2 (2 GB) | | | | | |
| Communication ports | <ul style="list-style-type: none"> • 2 EtherNet/IP • 1 USB | | | | | |
| EtherNet/IP connections | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP | <ul style="list-style-type: none"> • 256 EtherNet/IP • 120 TCP |
| EtherNet/IP nodes in one Logix Designer application, max | 16 | | | 32 | | 48 |
| Integrated motion on an EtherNet/IP network | — | Supports up to 4 axes | — | — | Supports up to 8 axes | Supports up to 16 axes |
| Module expansion capacity | 8 1769 modules 1 bank of modules | | | 16 1769 modules 2 banks of modules | | 30 1769 modules 3 banks of modules |
| Battery | None | | | | | |
| Power supply distance rating | 4 modules | | | 4 modules | | 4 modules |
| Programming software support | <ul style="list-style-type: none"> • RSLogix 5000 software, version 20 - For controllers that use firmware revision 20.xxx. • Logix Designer application, version 21 or later - For controllers that use firmware revision 21.xxx or later. | | | | | |

These controllers replace previous catalog numbers.

| New Controller ⁽¹⁾ | Replaces Previous Controller ⁽²⁾ | Differences |
|-------------------------------|---|---|
| 1769-L30ER | 1769-L31 | <ul style="list-style-type: none"> • Additional memory • Integrated motion on EtherNet/IP support (1769-L30ERM, 1769-L33ERM, 1769-L36ERM) • USB port instead of RS-232 port • Dual-port EtherNet/IP support • SD card instead of CompactFlash card |
| 1769-L30ERM | 1769-L32C ⁽³⁾ | |
| 1769-L30ER-NSE | 1769-L32E | |
| 1769-L33ER | 1769-L35CR ⁽³⁾ | |
| 1769-L33ERM | 1769-L35E | |
| 1769-L36ERM | Any previous 1769-L3x controller | |

(1) IMPORTANT: Typically, you can use any of the new controllers listed in each row as replacements for any of the previous controllers listed in the corresponding cell to the right. For example, you can replace a 1769-L32E with a 1769-L30ER, 1769-L30ERM, or 1769-L30ER-NSE controller.

In some rare cases, system configuration prevents controller replacement as shown above. 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 8 expansion modules. You must replace the 1769-L32E controller with a 1769-L33ER, 1769-L33ERM, or 1769-L36ERM controller.

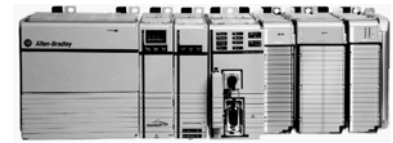
We recommend that before you upgrade your controllers, consider your application requirements to verify that the replacements listed above apply.

(2) These catalog numbers are still available for sale, see [page 13](#) for details. Please contact your local Rockwell Automation sales office for ordering information.

(3) Requires converting from ControlNet connections to EtherNet/IP connections.

1768 CompactLogix Controllers

The 1768 CompactLogix controller combines a 1768 backplane and a 1769 backplane. The 1768 backplane supports the 1768 controller, the 1768 power supply, and a maximum of four 1768 modules. The 1769 backplane supports 1769 modules.



| Characteristic | 1768-L43 | 1768-L43S | 1768-L45 | 1768-L45S |
|---------------------------------|---|--------------------------------|----------|------------------------------|
| Available user memory | 2 MB | 2 MB standard 0.5 MB safety | 3 MB | 3 MB standard 1 MB safety |
| Memory card | 1784-CF128 (128 MB) | | | |
| Communication options | <ul style="list-style-type: none"> • EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard) | | | |
| Serial communication port | 1 RS-232 port | | | |
| Number of 1768 modules, max | 2 | | 4 | |
| Number of 1769 I/O modules, max | 16 | | 30 | |
| Number of I/O banks, max | 2 | | 3 | |
| Battery | None | | | |
| Programming software support | RSLogix 5000 software, version 20 or earlier | | | |

1769-L23x Packaged CompactLogix Controllers with Embedded I/O

The 1769-L23x controllers provide the following functionality:

- Built-in power supply
- Two serial ports or one serial and one EtherNet/IP port, depending on controller catalog number
- Combination of embedded digital, analog, and high-speed counter I/O modules
- 1769-ECR right-end cap

| Characteristic | 1769-L23-QBFC1B | 1769-L23E-QB1B | 1769-L23E-QBFC1B |
|------------------------------|---|---|---|
| Available user memory | 512 KB | 512 KB | 512 KB |
| CompactFlash card | None | | |
| Communication ports | 2 RS-232 ports (isolated DF1 or ASCII; only nonisolated DF1) | 1 EtherNet/IP port 1 RS-232 serial port (DF1 or ASCII) | 1 EtherNet/IP port 1 RS-232 serial port (DF1 or ASCII) |
| Embedded I/O | <ul style="list-style-type: none"> • 16 DC inputs • 16 DC outputs • 4 analog inputs • 2 analog outputs • 4 high-speed counters | <ul style="list-style-type: none"> • 16 DC inputs • 16 DC outputs | <ul style="list-style-type: none"> • 16 DC inputs • 16 DC outputs • 4 analog inputs • 2 analog outputs • 4 high-speed counters |
| Module expansion capacity | 2 1769 modules | 3 1769 modules | 2 1769 modules |
| Embedded power supply | 24V DC | | |
| Programming software support | RSLogix 5000 software, version 20 or earlier | | |

1769-L3x Modular CompactLogix Controllers

In a 1769-L3x controller system, the 1769 I/O modules can be placed to the left and the right of the power supply. As many as eight modules can be placed on each side of the power supply.

| Characteristic | 1769-L31 | 1769-L32C | 1769-L32E | 1769-L35CR | 1769-L35E |
|------------------------------|--|---|--|---|--|
| Available user memory | 512 KB | 750 KB | 750 KB | 1.5 MB | 1.5 MB |
| CompactFlash card | 1784-CF128 | | | | |
| Communication ports | 2 RS-232 ports (isolated DF1 or ASCII; only nonisolated DF1) | 1 ControlNet port 1 RS-232 port (DF1 or ASCII) | 1 EtherNet/IP port 1 RS-232 port (DF1 or ASCII) | 1 ControlNet port 1 RS-232 port (DF1 or ASCII) | 1 EtherNet/IP port 1 RS-232 port (DF1 or ASCII) |
| Module expansion capacity | 16 1769 modules | | | 30 1769 modules | |
| Power supply distance rating | 4 modules | | | | |
| Programming software support | RSLogix 5000 software, version 20 or earlier | | | | |

Controller Memory Use

These equations provide an estimate of the memory needed for a CompactLogix controller. These numbers are rough estimates.

| | | | |
|--|---------------|---|------------------------------|
| Controller tasks | _____ * 4000 | = | _____ bytes (minimum 1 task) |
| Digital I/O points | _____ * 400 | = | _____ bytes |
| Analog I/O points | _____ * 2600 | = | _____ bytes |
| DeviceNet modules ⁽¹⁾ | _____ * 7400 | = | _____ bytes |
| Other communication modules ⁽²⁾ | _____ * 2000 | = | _____ bytes |
| Motion axes | _____ * 8000 | = | _____ bytes |
| FactoryTalk [®] alarm instruction | _____ * 1000 | = | _____ bytes (per alarm) |
| FactoryTalk subscriber | _____ * 10000 | = | _____ bytes |

(1) The first DeviceNet module is 7400 bytes. Additional DeviceNet modules are 5800 bytes each.

(2) Count the communication modules in the system, not just those in the local chassis. This includes device connection modules, adapter modules, and ports on PanelView terminals.

Reserve 20...30% of the controller memory for future expansion.

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 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.

| Cat. No. | Description | Communication Rate | Logix Resources ⁽¹⁾ | TCP/IP Connections |
|---------------------------------------|--|--------------------|---|--------------------|
| 1769-L16ER-BB1B, | CompactLogix 5370 L1 controller with integrated EtherNet/IP dual-port, POINT I/O form factor | 10/100 Mbps | 4 nodes 256 EtherNet/IP connections | 120 |
| 1769-L18ER-BB1B, 1769-L18ERM-BB1B | | | 8 nodes 256 EtherNet/IP connections | |
| 1769-L24ER-BB1B, 1769-L24ER-QBFC1B | CompactLogix 5370 L2 controller with integrated EtherNet/IP dual-port, Compact I/O form factor | 10/100 Mbps | 8 nodes 256 EtherNet/IP connections | 120 |
| 1769-L27ERM-QBFC1B | | 10/100 Mbps | 16 nodes 256 EtherNet/IP connections | |
| 1769-L30ER, 1769-L30ERM | CompactLogix 5370 L3 controller with integrated EtherNet/IP dual-port | 10/100 Mbps | 16 nodes 256 EtherNet/IP connections | 120 |
| 1769-L33ER, 1769-L33ERM | | | 32 nodes 256 EtherNet/IP connections | |
| 1769-L36ERM | | | 48 nodes 256 EtherNet/IP connections | |
| 1769-AENTR | 1769 EtherNet/IP adapter | 10/100 Mbps | 128 EtherNet/IP connections | 96 |
| 1768-ENBT | 1768 EtherNet/IP communication bridge module | 10/100 Mbps | 128 EtherNet/IP connections | 64 |
| 1768-EWEB | 1768 Ethernet web server module | 10/100 Mbps | 128 EtherNet/IP connections | 64 |

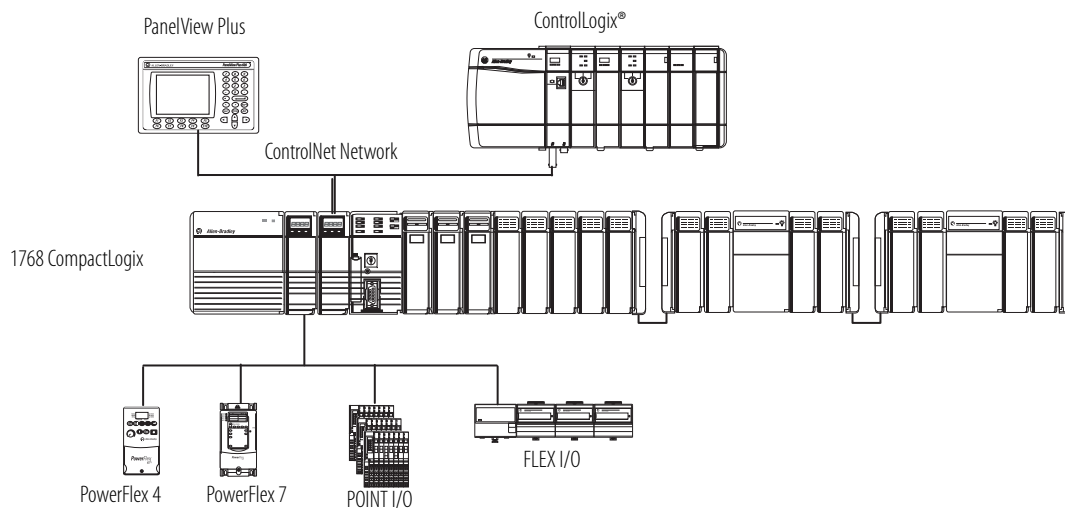
(1) The number of nodes listed for CompactLogix 5370 controllers represents the maximum number of EtherNet/IP nodes you can include in a Logix Designer application project for those controller. For example, in a Logix Designer application project that uses a 1769-L18ERM-BB1B controller, you can add as many as 8 EtherNet/IP nodes to the project.

ControlNet Communication Options for 1768 CompactLogix Controllers

The ControlNet network is an open, control network for real-time, high-throughput applications. The ControlNet network uses the Common Industrial Protocol (CIP) to combine the functionality of an I/O network and a peer-to-peer network providing high-speed performance. The ControlNet network gives you deterministic, repeatable transfers of all mission-critical control data and supporting transfers of non-time-critical data. I/O updates and controller-to-controller interlocking take precedence over program uploads and downloads and messaging.

| Cat. No. | Description | Communication Rate | Logix Connections |
|-----------|---|--------------------|-------------------|
| 1768-CN8 | 1768 CompactLogix controller, ControlNet communication bridge module, single media | 5 Mbps | 48 |
| 1768-CNBR | 1768 CompactLogix controller, ControlNet communication bridge module, redundant media | 10/100 Mbps | 48 |

1768 CompactLogix Controllers on a ControlNet Network



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 | Compact I/O DeviceNet scanner module | 125 Kbps (500 m max) 250 Kbps (250 m max) | 64 |
| 1769-ADN | Compact I/O DeviceNet adapter module | 500 Kbps (100 m max) | |

Serial Communication Options

These CompactLogix controllers support serial communication.

| Cat. No. | Serial Options |
|--|--|
| 1769-L16ER-BB1B, 1769-L18ER-BB1B, 1769-L18ERM-BB1B | 1734-232ASC module for an RS-232 serial interface 1734-485 ASC module for an RS-422 and RS-485 serial device |
| 1769-L24ER-BB1B, 1769-L24ER-QBFC1B | 1769-ASCII module for an ASCII interface to RS-232, RS-422, and RS-485 devices |
| 1769-L27ERM-QBFC1B | 1769-SM2 module for a Modbus RTU interface |
| 1769-L30ER, 1769-L30ERM | |
| 1769-L33ER, 1769-L33ERM | |
| 1769-L36ERM | |
| 1768-L43, 1768-L43S, 1768-L45, 1768-L45S | Built-in serial port 1769-ASCII module for an ASCII interface to RS-232, RS-422, and RS-485 devices 1769-SM2 module for a Modbus RTU interface |

Modbus Support

To access a Modbus TCP network, connect through the embedded Ethernet port of the CompactLogix 5370 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, connect through the serial port (if available) and execute a ladder-logic routine. For more information, see Using Logix5000 Controllers as Masters or Slaves on Modbus Application Solution, publication [CIG-AP129](#).

CompactLogix Integrated Motion

The Logix architecture supports motion control components that work in a wide variety of machine architectures.

- Integrated motion on EtherNet/IP supports a connection to Ethernet drives.
- The Kinetix integrated-motion solution uses a SERCOS interface module to perform multi-axis, synchronized motion.
- Logix integrated motion supports the analog family of servo modules for controlling drives/actuators.
- Networked motion provides the ability to connect via the DeviceNet network to one axis drive to perform point-to-point indexing.

| Motion Feature | CompactLogix 5370 L3 | CompactLogix 5370 L2 | CompactLogix 5370 L1 | 1768-L43, 1768-L43S CompactLogix and Compact GuardLogix | 1768-L45, 1768-L45S CompactLogix and Compact GuardLogix |
|---|---|---|---|--|--|
| EtherNet/IP sequence of events for software registration | Yes | Yes | Yes | Yes | Yes |
| Kinematics | Yes | Yes | Yes | No | No |
| Integrated motion on an EtherNet/IP network | Yes ⁽¹⁾ | Yes ⁽²⁾ | Yes ⁽³⁾ | No | No |
| Indexing | Yes with AMCI 1769-3602 pulse-train output module | Yes with AMCI 1769-3602 pulse-train output module | Yes with one of these pulse-train output modules: <ul style="list-style-type: none"> • AMCI 1734-3401 • AMCI 1734-3401L | — | — |
| Load observer (with only Kinetix 6500 drives) | Yes | Yes | Yes | No | No |
| Total axis count | 100 | 100 | 100 | 12 <ul style="list-style-type: none"> • 4 position • 2 feedback • 6 virtual | 16 <ul style="list-style-type: none"> • 8 position • 2 feedback • 6 virtual |
| Virtual axis, max. | 100 | 100 | 100 | 6 | 6 |
| EtherNet/IP axis, max. | 16 | 4 | 2 | None | None |
| EtherNet/IP feedback, VHz, torque, or velocity axis, max. | 48 | 16 | 8 | None | None |

(1) In the CompactLogix 5370 L3 controller family, only the 1769-L30ERM, 1769-L33ERM, 1769-L36ERM controllers support Integrated Motion on an EtherNet/IP network.

(2) In the CompactLogix 5370 L2 controller family, only the 1769-L27ERM-QBFC1B controller supports Integrated Motion on an EtherNet/IP network.

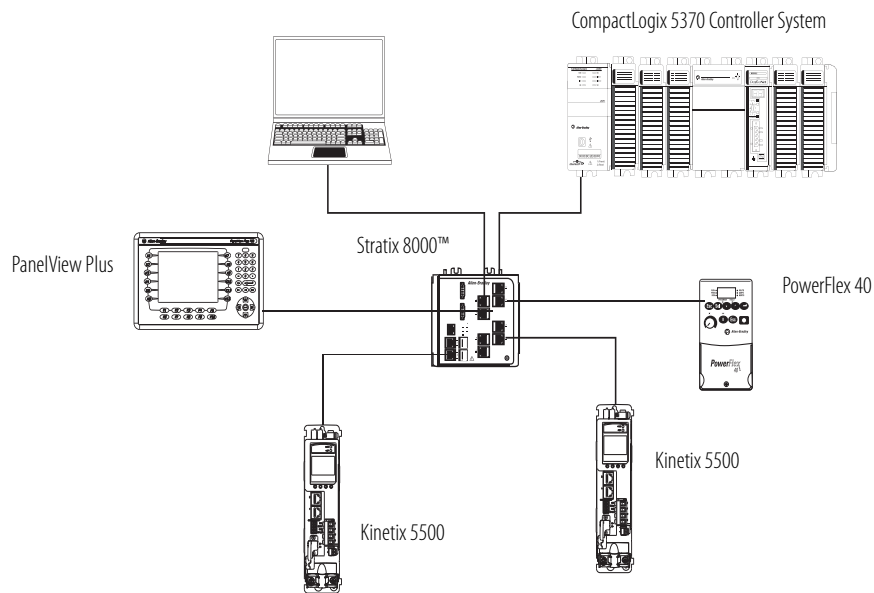
(3) In the CompactLogix 5370 L1 controller family, only the 1769-L18ERM-BB1B controller supports Integrated Motion on an EtherNet/IP network.

For more information, see the:

- 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.

Some CompactLogix 5370 controllers support integrated motion on an EtherNet/IP network. Select the controller with sufficient axis-support for your application.

Integrated Motion on an EtherNet/IP Network Example Configuration



SERCOS Interface Modules

■ Important: SERCOS interface modules are compatible with only version 20 or earlier of the RSLogix 5000 software.

The 1768 CompactLogix controller supports a SERCOS interface.

| Cat. No. | Description | Number of Axis |
|------------|--|----------------|
| 1768-M04SE | 1768 CompactLogix SERCOS interface modules | 4 |

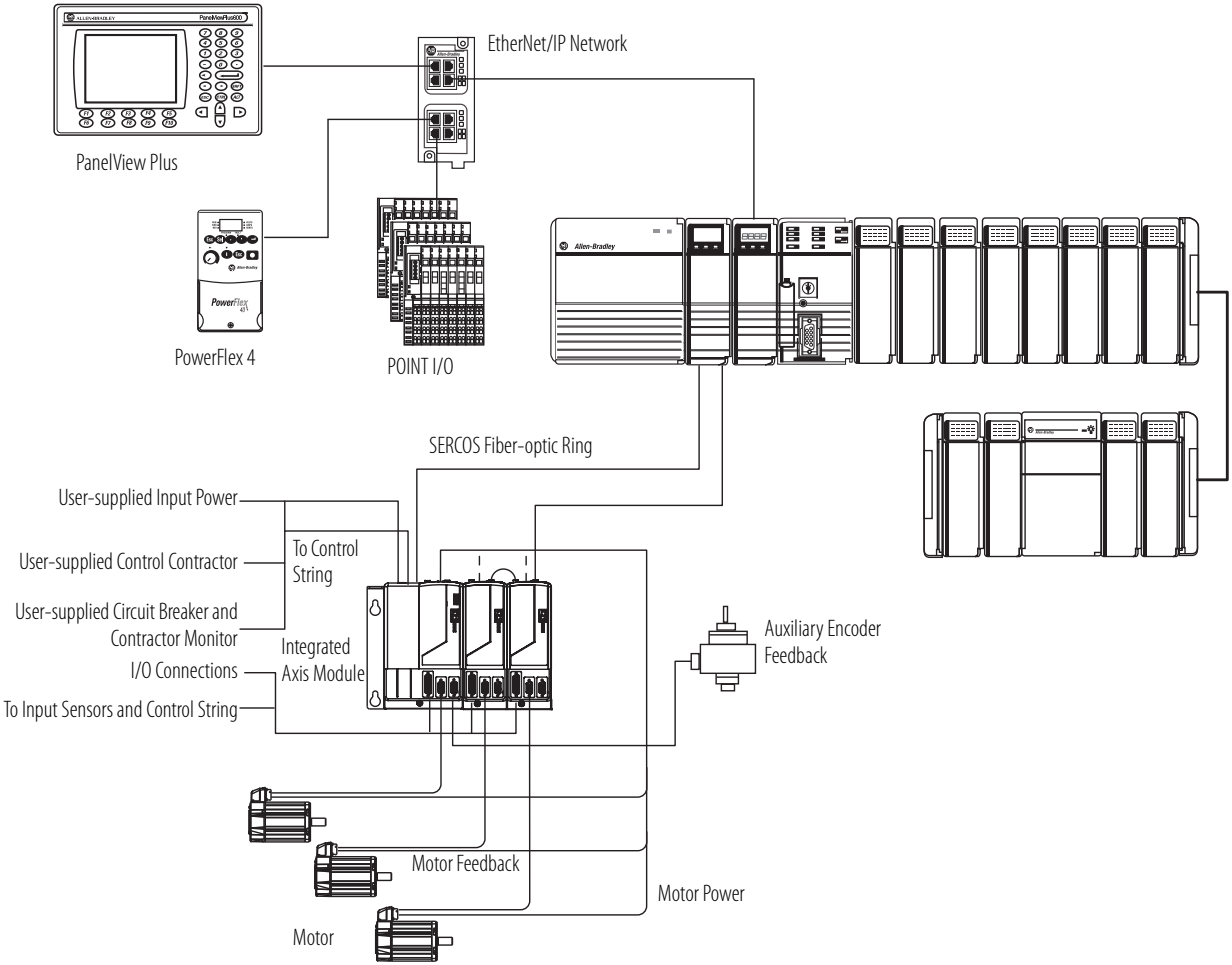
The SERCOS interface module can connect to these servo drives:

- 2093 Kinetix 2000 servo drive
- 2094 Kinetix 6000 servo drive
- 2094 Kinetix 6000M integrated drive-motor system
- 2099 Kinetix 7000 high-power servo drive
- 2098 Ultra™ 3000 SERCOS servo drive
- 1394C SERCOS drive
- 8720MC spindle

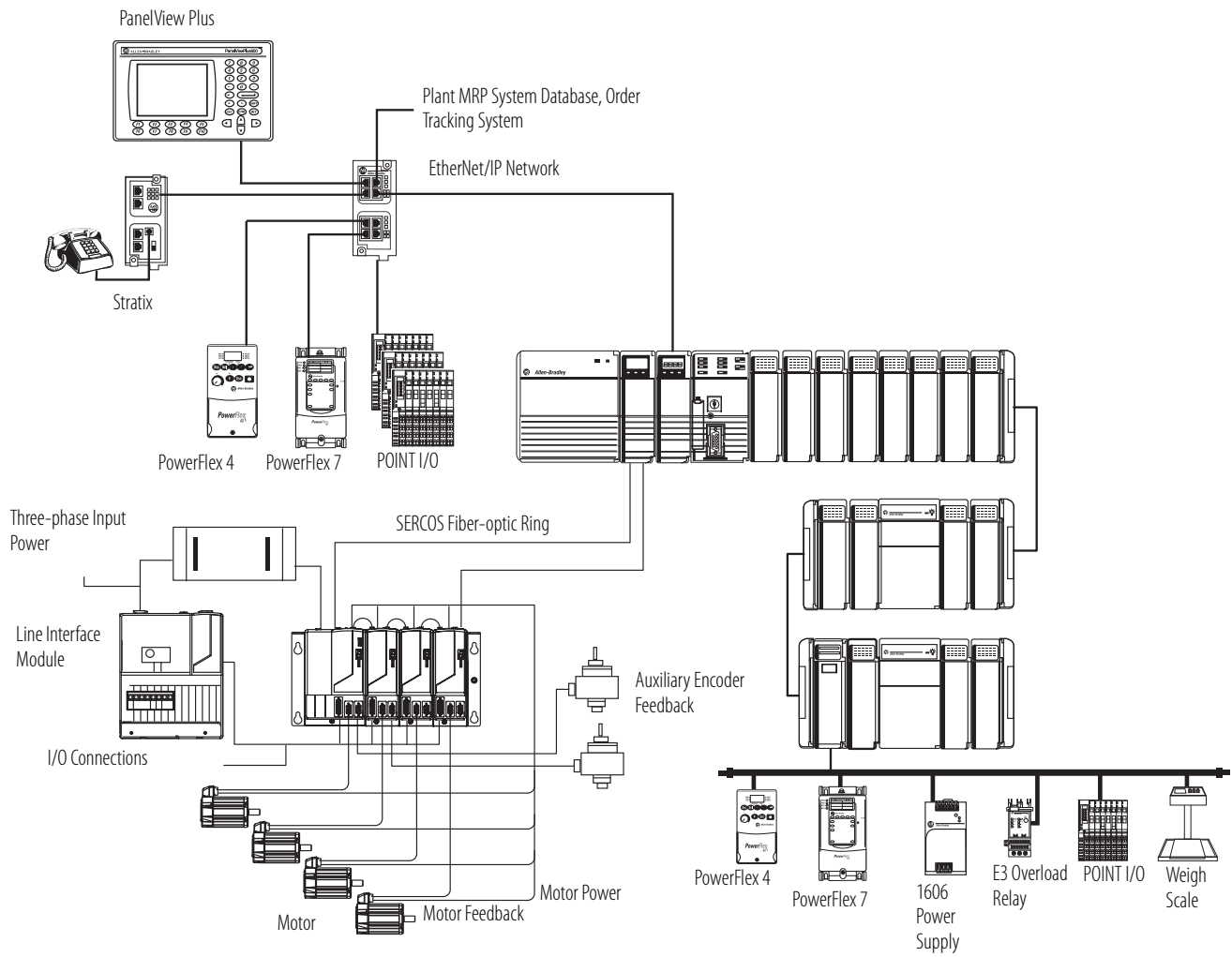
For detailed SERCOS specifications, see CompactLogix Integrated Motion Specifications Technical Data, publication [1768-TD001](#).

| With this controller | You can have |
|----------------------|---|
| 1768-L43 | <ul style="list-style-type: none"> • Four axis • Two feedback axis • Six virtual axis • execution of 4 axes per 1 ms. • velocity bandwidth > 400 Hz and current loop bandwidth > 1000 Hz. • high resolution, unlimited travel, and absolute feedback features. • two feedback ports per Kinetix drive |
| 1768-L45 | <ul style="list-style-type: none"> • Eight axis • Four feedback axis • Six virtual axis • execution of 4 axes per 1 ms. • velocity bandwidth > 400 Hz and current loop bandwidth > 1000 Hz. • high resolution, unlimited travel, and absolute feedback features. • two feedback ports per Kinetix drive. • optional 2094 Line Interface Module (LIM) as the incoming power source for an entire control panel |

1768 CompactLogix Controller and Three-axis Integrated Motion with Kinetix Servo Drives



1768 CompactLogix Controller and Four-axis Integrated Motion with Kinetix Drives and LIM Interface



Compact GuardLogix Integrated Safety

The Compact GuardLogix controller is a 1768-L4xS CompactLogix controller that 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 | <p>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:</p> <ul style="list-style-type: none"> • GuardLogix Controllers Systems Safety Reference Manual, publication 1756-RM093. • Compact GuardLogix Controllers User Manual, publication 1768-UM002. • GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095. |

During development, safety and standard have the same rules, multiple programmers, online editing, and forcing are all possible. Once the project is tested and ready for final validation, you apply the safety application signature and safety-lock the application to set the safety task to a SIL 3 integrity level, which is enforced by the GuardLogix® controller. When safety memory is locked and protected, the safety logic can't be modified and all safety functions operate with SIL 3 integrity. On the standard side of the GuardLogix controller, all functions operate like a regular Logix controller. Thus online editing, forcing, and other activities are all possible.

With this level of integration, safety memory can be read by standard logic and external devices, like HMIs or other controllers, eliminating the need to condition safety memory for use elsewhere. The result is easy system-wide integration and the ability to display safety status on displays or marquees. Use Guard I/O modules for field device connectivity. For safety interlocking between GuardLogix controllers use Ethernet or ControlNet networks. Multiple GuardLogix controllers can share safety data for zone to zone interlocking, or one GuardLogix controller can use remote distributed safety I/O between cells/areas.

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

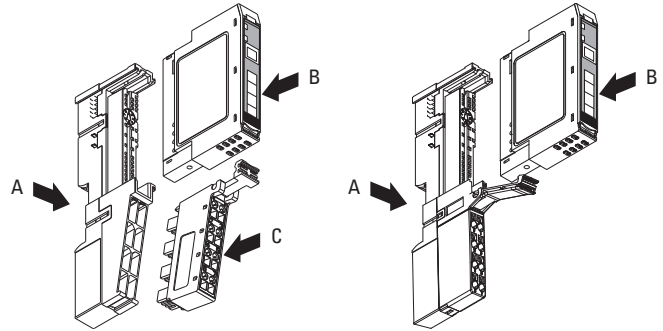
| Characteristic | 1768-L43S | 1768-L45S |
|-----------------------|---|---|
| Available user memory | 2 MB standard 0.5 MB safety | 3 MB standard 1 MB safety |
| Communication options | <ul style="list-style-type: none"> • EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard) | <ul style="list-style-type: none"> • EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard) |
| Programming languages | <ul style="list-style-type: none"> • Standard task: all languages • Safety task: relay ladder, safety application instructions | <ul style="list-style-type: none"> • Standard task: all languages • Safety task: relay ladder, safety application instructions |

Additional Local I/O Modules

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.

The base (A) mounts onto the DIN rail and provides the backplane. The POINT I/O module (B) snaps into the base. The removable terminal block (C) also snaps into the base and 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-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-IM4 | 4 inputs, nonisolated, sink | | | |
| 1734-OA2 | 2 outputs, nonisolated, source | 120/220V AC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-OA4 | 4 outputs, nonisolated, source | | | |

1734 DC Digital Modules

| Cat. No. | Inputs/Outputs | Voltage Category | Wiring Base | POINTBus Current @ 5V DC |
|-----------|----------------------------|------------------|--|--------------------------|
| 1743-IB2 | 2 inputs, sink | 24V DC | 1734-TB, 1734-TBS | 75 mA |
| 1734-IB4 | 4 inputs, sink | | | |
| 1734-IB4D | 4 inputs, sink, diagnostic | 24V DC | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 50 mA |
| 1734-IB8 | 8 inputs, sink | 24V DC | 1734-TB, 1734-TBS | 75 mA |
| 1734-IB8S | 8 inputs, sink, safety | 24V DC | 1734-TB, 1734-TOP | 175 mA |
| 1734-IV2 | 2 inputs, source | 24V DC | 1734-TB, 1734-TBS | 75 mA |
| 1734-IV4 | 4 inputs, source | | | |
| 1734-IV8 | 8 inputs, source | | | |

| Cat. No. | Inputs/Outputs | Voltage Category | Wiring Base | POINTBus Current @ 5V DC |
|-----------|--|------------------|-------------------|--------------------------|
| 1734-OB2 | 2 outputs, nonisolated, source | 12/24V DC | 1734-TB, 1734-TBS | 75 mA |
| 1734-OB2E | 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-TOP | 190 mA |
| 1734-OV2E | 2 outputs, nonisolated protected, sink | 12/24V DC | 1734-TB, 1734-TBS | 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 48V DC @ 0.5 A 125V DC @ 0.25 A 125V DC @ 2.0 A 240V AC @ 2.0 A | 1734-TB, 1734-TBS | 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 0...20 mA | 16 bits over 0...21 mA 0.32 μ A/cnt | 1734-TB, 1734-TBS | 75 mA |
| 1734-IE2V | 2 single-ended, nonisolated, voltage | 0...10V (-0.0V under, +0.5V over) \pm 10V (-0.5V under, +0.5V over) | 15 bits plus sign 320 μ V/cnt in unipolar or bipolar mode | | |
| 1734-IE4C | 4 single-ended, nonisolated, current | 4...20 mA 0...20 mA | 16 bits - over 0...21 mA 0.32 μ A/cnt | | |
| 1734-IE4S | 4 inputs, single-ended, safety rated | 0...20 mA, 4...20 mA \pm 5V, 0...5V, \pm 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 0...20 mA | 16 bits - over 0...21 mA 0.32 μ A/cnt | 1734-TB, 1734-TBS | 75 mA |
| 1734-IR2 | 2 single-ended, nonisolated | 0...600 Ω | 16 bits 9.5 m Ω /cnt 0.03 $^{\circ}$ C/cnt (Pt385 @ 25 $^{\circ}$ C) [0.05 $^{\circ}$ F/cnt (Pt385 @ 77 $^{\circ}$ F)] | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 220 mA |
| 1734-IR2E | 2 single-ended, nonisolated, protected | 0...220 Ω | 16 bits 2.4 m Ω /cnt 0.006 $^{\circ}$ C/cnt (Pt385 @ 25 $^{\circ}$ C) [0.0114 $^{\circ}$ F/cnt (Pt385 @ 77 $^{\circ}$ F)] | | |

Select a CompactLogix System

| Cat. No. | Inputs/Outputs | Range | Resolution | Wiring Base | POINTBus Current @ 5V DC |
|-----------|---------------------------------------|--|---|---|--------------------------|
| 1734-IT2I | 2 differential, individually isolated | Sensors B, C, E, J, K, N, R, S, T | 15 bits plus sign 2.5 μ V/cnt | 1734-TBCJC | 175 mA |
| 1734-OE2C | 2 single-ended, nonisolated, current | 4...20 mA 0...20 mA | 13 bits over 0...21mA 2.5 μ A/cnt (average) 3...2.7 μ A/cnt (typical range) | 1734-TB, 1734-TBS, 1734-TB3, 1734-TB3S | 75 mA |
| 1734-OE2V | 2 single-ended, nonisolated, voltage | 0...10V (-0.0V under, +0.5V over) \pm 10V (-0.5V under, +0.5V over) | 14 bits (13 plus sign) 1.28 mV/cnt in unipolar or bipolar mode | | |
| 1734-OE4C | 4 single-ended, nonisolated, current | 4...20 mA 0...20 mA | 16 bits over 0...21 mA 0.32 μ A/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 500 kHz encoder X2 (no filter) 250 kHz encoder X4 (no filter) | 1734-TB, 1734-TBS, 1734-TB3, 1734-TB3S | 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 |

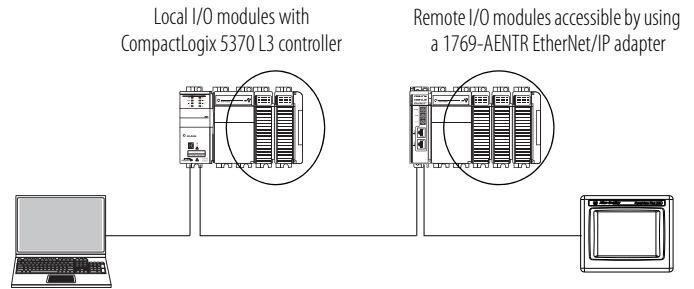
1734 Communication and Specialty Modules

| Cat. No. | Description | Wiring Base | POINTBus Current |
|----------------------------|---|---|------------------|
| 1734-AENT | The single port adapter connects POINT I/O modules to the Ethernet network. | N/A | N/A |
| 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. | N/A | N/A |
| 1734-232ASC 1734-485ASC | 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 | 75 mA |
| 1734-ARM | The 1734-ARM address reserve module reserves 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. | 1734-TB, 1734-TBS | 75 mA |
| 1734-CTM 1734-VTM | 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 provide support for higher density (8 channel) POINT I/O modules. | 1734-TB, 1734-TBS, 1734-TOP, 1734-TOPS | 75 mA |
| 1734-SSI | The 1734-SSI module collects serial data from absolute-position, encoding sensors that use standard Synchronous Serial Interface (SSI) protocol. | 1734-TB, 1734-TBS | 110 mA |

1769 Compact I/O Modules

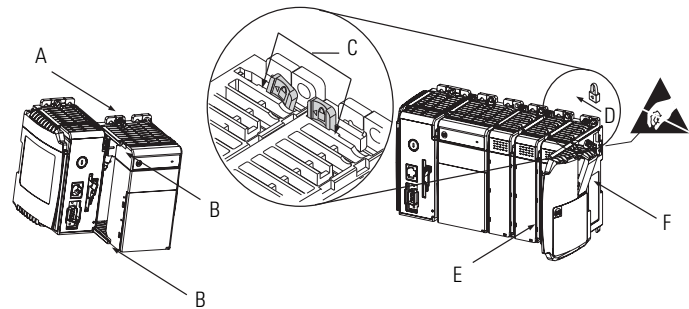
The 1769 Compact I/O modules can be used with the CompactLogix 5370 L2 and L3 controllers and 1768 CompactLogix controllers as follows:

- Local I/O modules
- Remote I/O modules accessible by using a 1769-AENTR EtherNet/IP adapter



The modules mechanically lock together by means of 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 finger-safe 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 each module's specification table for the power supply distance rating. This 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 | 8 inputs, individually isolated | 100/120V AC | 79...132V AC, 47...63 Hz | 90 mA @ 5.1V ⁽¹⁾ | 8 |
| 1769-IA16 | 16 inputs | 100/120V AC | 79...132V AC, 47...63 Hz | 115 mA @ 5.1V | 8 |
| 1769-IM12 | 12 inputs | 200/240V AC | 159...265V AC, 47...63 Hz | 100 mA @ 5.1V | 8 |
| 1769-OA8 | 8 outputs | 100/240V AC | 85...265V AC 47...63 Hz | 145 mA @ 5.1V | 8 |
| 1769-OA16 | 16 outputs | 100/240V AC | 85...265V AC 47...63 Hz | 225 mA @ 5.1V | 8 |

(1) Maximum is 190 mA.

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 | 16 inputs | 24V DC sink/source | 10...30V DC @ 30 °C (86 °F) 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) 10...26.4V DC @ 60 °C (140 °F) | 100 mA @ 5.1V | 8 |
| 1769-IQ32 | 32 inputs | 24V DC sink/source | 10...30V DC @ 30 °C (86 °F) 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 4 outputs | 24V DC sink/source input AC/DC normally open relay contact outputs | 10...30V DC @ 30 °C (86 °F) 10...26.4V DC @ 60 °C (140 °F) | 105 mA @ 5.1V 50 mA @ 24V | 8 |
| 1769-OB8 | 8 outputs | 24V DC source | 20.4...26.4V DC | 145 mA @ 5.1V | 8 |
| 1769-OB16 | 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 | 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 |

1769 Contact Output Modules

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

1769 Analog Modules

| Cat. No. | Inputs/Outputs | Range | Resolution | Backplane Current | Power Supply Distance Rating |
|----------------|---|---|---|-------------------------------|------------------------------|
| 1769-IF4 | 4 inputs, differential or single-ended | ±10V 0...10V 0...5V 1...5V 0...20 mA 4...20 mA | 14 bits (unipolar) 14 bits plus sign (bipolar) | 120 mA @ 5.1V 60 mA @ 24V | 8 |
| 1769-IF4I | 4 inputs, differential or single-ended, individually isolated | ±10V 0...10V 0...5V 1...5V 0...20 mA 4...20 mA | 16 bits (unipolar) 15 bits plus sign (bipolar) | 145 mA @ 5.1V 125 mA @ 24V | 8 |
| 1769-IF8 | 8 inputs, differential or single-ended | ±10V 0...10V 0...5V 1...5V 0...20 mA 4...20 mA | 16 bits (unipolar) 15 bits plus sign (bipolar) | 120 mA @ 5.1V 70 mA @ 24V | 8 |
| 1769-IF16C | 16 inputs, single-ended | 0...20 mA 4...20 mA | 16 bits (unipolar) 15 bits plus sign (bipolar) | 190 mA @ 5.1V 70 mA @ 24V | 8 |
| 1769-IF16V | 16 inputs, single-ended | ±10V 0...10V 0...5V 1...5V | 16 bits (unipolar) 15 bits plus sign (bipolar) | 190 mA @ 5.1V 70 mA @ 24V | 8 |
| 1769-IF4XOF2 | 4 differential or single-ended inputs 2 single-ended outputs | 0...10V 0...20 mA | Input: 8 bits plus sign Output: 8 bits plus sign | 120 mA @ 5.1V 160 mA @ 24V | 8 |
| 1769-IF4FXOF2F | 4 fast differential or single-ended inputs 2 fast single-ended outputs | ±10V 0...10V 0...5V 1...5V 0...20 mA 4...20 mA | Input: 14 bits (unipolar) 14 bits plus sign (bipolar) Output: 13 bits (unipolar) 13 bits plus sign (bipolar) | 220 mA @ 5.1V 120 mA @ 24V | 8 |
| 1769-OF2 | 2 outputs, single-ended | ±10V 0...10V 0...5V 1...5V 0...20 mA 4...20 mA | 14 bits (unipolar) 14 bits plus sign (bipolar) | 120 mA @ 5.1V 120 mA @ 24V | 8 |
| 1769-OF4 | 4 outputs, single-ended | ±10V 0...10V 0...5V 1...5V 0...20 mA 4...20 mA | 15 bits plus sign unipolar and bipolar | 120 mA @ 5.1V 170 mA @ 24V | 8 |
| 1769-OF4CI | 4 outputs, differential, individually isolated | 0...20 mA 4...20 mA | 16 bits (unipolar) | 165 mA @ 5V 110 mA @ 24V | 8 |

Select a CompactLogix System

| Cat. No. | Inputs/Outputs | Range | Resolution | Backplane Current | Power Supply Distance Rating |
|------------|--|-------------------------------------|-----------------------------|-------------------------------|------------------------------|
| 1769-OF4VI | 4 outputs, differential, individually isolated | ±10V 0...10V 0...5V 1...5V | 15 bits plus sign (bipolar) | 145 mA @ 5.1V 75 mA @ 24V | 8 |
| 1769-OF8C | 8 outputs, single-ended | 0...20 mA 4...20 mA | 16 bits (unipolar) | 140 mA @ 5.1V 145 mA @ 24V | 8 |
| 1769-OF8V | 8 outputs, single-ended | ±10V 0...10V 0...5V 1...5V | 16 bits plus sign (bipolar) | 145 mA @ 5.1V 125 mA @ 24V | 8 |

1769 Analog RTD and Thermocouple Modules

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

(1) 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

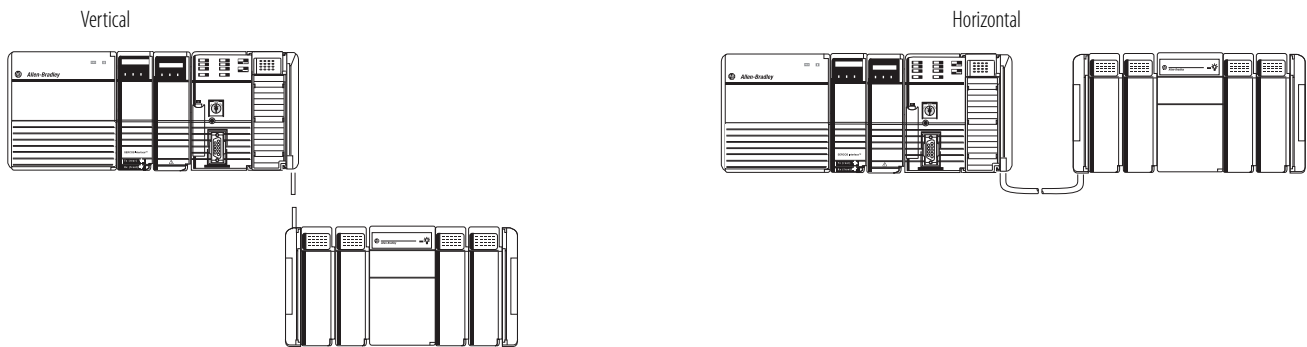
| Cat. No. | Description | Backplane Current | Power Supply Distance Rating |
|--------------|--|-------------------|------------------------------|
| 1769-AENTR | The adapter connects 1769 I/O modules to a linear or DLR network and uses two copper network ports to connect to the network. | 500 mA @ 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 once you 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 based on an input's transition. 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 |

| Cat. No. | Description | Backplane Current | Power Supply Distance Rating |
|----------|---|-------------------|------------------------------|
| 1769-HSC | Use the 1769-HSC when you need: <ul style="list-style-type: none"> • a counter module that is capable of reacting to high-speed input signals. • to generate rate and time-between-pulses (pulse interval) data. • 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/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 RS485 HVAC adapters. | 350 mA @ 5.1V | 4 |

1769 Expansion Cables

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

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



How you orient I/O banks determines the expansion cables 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-CRLx |
| | Right to right | 1769-CRRx |
| Third bank | Right to left | 1769-CRLx |
| | Right to right | 1769-CRRx |
| | Left to left | 1769-CLLx |

(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
- Left end cap, catalog number 1769-ECL

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 pre-wired 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 pre-wired 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. describes the kits.

| Cat. Nos. | Controllers Supported | Description |
|---------------|--|--|
| 1769-RTB45 | CompactLogix 5370 L1 | <ul style="list-style-type: none"> • Four 10-pin connectors used to connect wiring to the controllers' embedded digital I/O module. • One 5-pin connector used to connect an external 24V DC power source to the controller. |
| 1769-RTB40DIO | CompactLogix 5370 L2 | Four 10-pin connectors used to connect wiring to the controllers' embedded digital I/O module. |
| 1769-RTB40AIO | 1769-L24ER-QBFC1B and 1769-L27ERM-QBFC1B | Four 10-pin connectors used to connect wiring to the controllers' embedded analog I/O module. |

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 | <ul style="list-style-type: none"> One 1769 power supply for the controller and local I/O modules One 1769 power supply for each additional bank of I/O modules |
| CompactLogix 5370 L2 controller | No power supply as it is integral to the controller package |
| CompactLogix 5370 L1 controller | No power supply as it is integral to the controller package |
| 1768 CompactLogix controller | <ul style="list-style-type: none"> One 1768 power supply for the controller and 1768 modules One 1769 power supply for each additional bank of I/O modules |

Power Supplies

| Cat. No. | Description | Voltage Category | Operating Voltage Range |
|----------|---|------------------|---|
| 1769-PA2 | 1769 Compact I/O expansion power supply | 120V/220V AC | 85...265V AC |
| 1769-PB2 | | 24V DC | 19.2...31.2V DC |
| 1769-PA4 | | 120V/220V AC | 85...265V AC or 170...265V AC (switch selectable) 47...63 Hz |
| 1769-PB4 | | 24V DC | 19.2...31.2V DC |
| 1768-PA3 | 1768 CompactLogix power supply | 120V/220V AC | 85...265V AC or 108...132V DC |
| 1768-PB3 | | 24V DC | 16.8...31.2V DC |

For detailed specifications, see Compact Power Supplies Specifications Technical Data, publication [1769-TD008](#).

Programming Software

Your selection of modules and network configuration determines what software packages you need to configure and program your system.

Studio 5000 Environment

The Studio 5000 Automation Engineering & Design Environment™ combines engineering and design elements into a common environment. The first element in the Studio 5000® environment is the Studio 5000 Logix Designer™ application. The Logix Designer application is the rebranding of RSLogix™ 5000 software and continues to be the product to program Logix5000™ controllers for discrete, process, batch, motion, safety, and drive-based solutions.



The Studio 5000 environment is the foundation for the future of Rockwell Automation® engineering design tools and capabilities. This environment is the one place for design engineers to develop all elements of their control system.

The Studio 5000 environment does not support the following controllers.

- 1768 CompactLogix controllers
- 1769-L23x Packaged CompactLogix controllers
- 1769-L3x Modular CompactLogix controllers

You must use RSLogix 5000 software, version 20 or earlier, with the previously listed controllers.

CompactLogix System Software

| If you have | You need | Order |
|--|---|--|
| CompactLogix controller 1768-M04SE SERCOS motion module | Studio 5000 Logix Designer™ application | 9324 series ⁽¹⁾ |
| 1768-CNB, 1768-CNBR ControlNet communication module | RSNetWorx™ for ControlNet software | 9324 series ⁽²⁾ or 9357-CNETL3 (RSNetWorx for ControlNet) |
| 1769-SDN DeviceNet communication module | RSNetWorx for DeviceNet software | 9324 series ⁽²⁾ or 9357-DNETL3 (RSNetWorx for DeviceNet) |
| 1768-ENBT, 1768-EWEB EtherNet/IP communication module EtherNet/IP ports (CompactLogix 5370 controllers) | RSLin® software or BOOTP/DHCP server utility to set IP addresses Optional RSNetWorx for EtherNet/IP software | 9324 series ⁽²⁾ or Optional 9357-ENETL3 (RSNetWorx for EtherNet/IP) |
| Communication card in a workstation | RSLin software | 9324 series ⁽¹⁾ |

(1) All 9324 packages include RSLinx Classic Light software.

(2) Comes with some editions of Studio 5000 environment.

Notes:

Allen-Bradley, Compact GuardLogix, Compact I/O, CompactBlock Guard I/O, CompactLogix, ControlLogix, FactoryTalk, GuardLogix, Integrated Architecture, Kinetix, Logix5000, PanelView, POINT Guard I/O, POINT I/O, POINTBus, PowerFlex, Rockwell Software, Rockwell Automation, RSLinx, RSLogix, RSNetWorx, SCANport, SoftLogix, Stratix 6000, Stratix 8000, Studio 5000, Studio 5000 Automation Engineering & Design Environment, Studio 5000 Logix Designer, and Ultra are trademarks of Rockwell Automation, Inc.

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