

Controllers

CompactLogix Controllers Overview

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, publication 1769-TD005

	1769-L23x Controllers	1769-L3x Controllers	1768-L4x Controllers	1768-L4xS Controllers	5370 Controllers
Controller application	Small applications Embedded I/O modules	General purpose	Integrated motion	Integrated safety Integrated motion	<ul style="list-style-type: none"> • Small to mid-size applications • General purpose • Integrated motion
Controller tasks	<ul style="list-style-type: none"> • 3 tasks • 16 programs/task (1 continuous) • Event tasks: consumed tag and EVENT instruction triggers 	4, 6, or 8 tasks (1 continuous) <ul style="list-style-type: none"> • Event tasks: consumed tag and EVENT instruction triggers 	<ul style="list-style-type: none"> • 16 tasks (1 continuous) • Event tasks: consumed tag, EVENT instruction, axis, and motion event triggers 	<ul style="list-style-type: none"> • 16 tasks (1 continuous) • Event tasks: consumed tag, EVENT instruction, axis, and motion event triggers 	<ul style="list-style-type: none"> • 32 tasks • 100 programs/task
User memory	512 KB	512 kB to 1.5 MB	2 MB or 3 MB	<ul style="list-style-type: none"> • 2 MB standard, 0.5 MB safety • 3 MB standard, 1 MB safety 	384 kB to 3 MB
Built-in communication port options	<ul style="list-style-type: none"> • 1 EtherNet/IP port, 1 RS-232 serial port • 2 RS-232 serial ports 	<ul style="list-style-type: none"> • 2 RS-232 ports • 1 ControlNet port, 1 RS-232 serial port • 1 EtherNet/IP port, 1 RS-232 serial port 	<ul style="list-style-type: none"> • 1 RS-232 serial port 	<ul style="list-style-type: none"> • 1 RS-232 serial port 	<ul style="list-style-type: none"> • 2 EtherNet/IP • 1 USB
Communication options	<ul style="list-style-type: none"> • EtherNet/IP • DeviceNet 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet 	<ul style="list-style-type: none"> • EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard) 	<ul style="list-style-type: none"> • Dual-port EtherNet/IP • DeviceNet

Environmentals and Certifications

CompactLogix Controllers Environmental Specifications

	L23x Controllers	L3x Controllers	L4x Controllers	L4xS Controllers	5370 Controllers
Operating Temperature	0...60 °C (32...140 °F)				L1: -20...60 °C (-4...140 °F) L2, L3 : 0...60 °C (32...140 °F)
Nonoperating Temperature	-40...85 °C (-40...185 °F)				
Relative Humidity	5...95% noncondensing				
Vibration	2 g at 2...500 Hz	5 g at 10...500 Hz			L1, L2: 2 g at 10...500 Hz L3 : 5 g at 10...500 Hz
Operating Shock	30 g				L1, L2: 30 g L3 : DIN mount - 20 g Panel mount - 30 g
Nonoperating Shock	50 g				L1, L2: 50 g L3 : DIN mount - 30 g Panel mount - 40 g

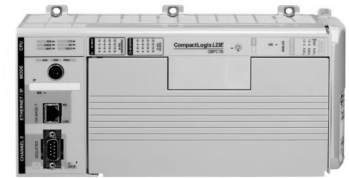
ComctLogix Controllers Certifications

Certifications: (When product is marked.) C-Tick, c-UL-us, CE, CI, EtherNet/IP, Ex, KC, certified by TÜV for functional safety.

See the Product Certifications link at ab.rockwellautomation.com/ for Declarations of Conformity, Certificates, and other certification details. For TÜV and SIL certification details, see the Safety Certificates and SIL link.

1769 Packaged Controllers with Embedded I/O

The 1769-L23x CompactLogix system is a packaged controller for smaller, machine-level control applications. The controller comes preconfigured with combinations for embedded digital, analog, and high-speed counter I/O.



The 1769-L23x controller includes:

- a built-in power supply.
- either two serial ports or one serial and one EtherNet/IP port.
- a combination of embedded digital, analog, and high-speed counter I/O.
- a 1769-ECR right-end cap.

Characteristics

Specifications [PDF]

Characteristic	1769-L23-QBFC1B	1769-L23E-QB1B	1769-L23E-QBFC1B
User Memory	512 kB	512 kB	512 kB
CompactFlash card	None	None	None
Communication Ports	2 RS-232 serial ports (isolated DF1 or ASCII; nonisolated DF1 only)	1 EtherNet/IP port 1 RS-232 port (DF1 or ASCII)	1 EtherNet/IP port 1 RS-232 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	Up to two additional 1769 modules	Up to three additional 1769 modules	Up to two additional 1769 modules
Embedded power supply	24V DC	24V DC	24V DC

1769 Modular Controllers

The 1769-L3x CompactLogix system is a Logix solution for low-end to medium applications. Typically, these applications are machine-level control applications that require limited I/O quantities and limited communication capabilities.



The 1769-L3x CompactLogix system provides:

- a built-in RS-232 serial port on every L3x controller.
- built-in communication ports for EtherNet/IP or ControlNet networks.
- a 1769-SDN communication interface module for I/O control and remote device configuration over DeviceNet.
- Compact I/O modules providing a Compact, DIN-rail or panelmounted I/O system.

Characteristics

Specifications [PDF]

Characteristic	1769-L31	1769-L32C	1769-L32E	1769-L35CR	1769-L35E
User Memory	512 kB	750 kB	750 kB	1.5 MB	1.5 MB
CompactFlash card	<ul style="list-style-type: none"> • 1784-CF64 • 1784-CF128 	<ul style="list-style-type: none"> • 1784-CF64 • 1784-CF128 	<ul style="list-style-type: none"> • 1784-CF64 • 1784-CF128 	<ul style="list-style-type: none"> • 1784-CF64 • 1784-CF128 	<ul style="list-style-type: none"> • 1784-CF64 • 1784-CF128
Communication Ports	2 RS-232 ports (isolated DF1 or ASCII; non-isolated DF1 only)	1 ControlNet port 1 RS-232 serial port (DF1 or ASCII)	1 EtherNet/IP port: (DF1 or ASCII) 1 RS-232 port (DF1 or ASCII)	1 redundant ControlNet port 1 RS-232 serial port (DF1 or ASCII)	1 EtherNet/IP port: (DF1 or ASCII) 1 RS-232 port (DF1 or ASCII)
Module expansion capacity	16 - 1769 Modules	16 - 1769 Modules	16 - 1769 Modules	30 - 1769 Modules	30 - 1769 Modules
Power supply distance rating	4 modules	4 modules	4 modules	4 modules	4 modules

CompactLogix 5370 Controllers

CompactLogix 5370 controllers expand the scalability of the Logix family of controllers, offer a wider variety of options, and provide best-fit alternatives for your specific application requirements. Coupled with Kinetix® 350, the controllers provide high performance in a compact and affordable integrated motion package for a variety of machine applications, all on one common network - EtherNet/IP.

The CompactLogix 5370 system provides:

- Two EtherNet/IP ports
- One USB port
- Support for local expansion modules
- Control of local and distributed I/O modules
- Use of 1784-SD1 or 1784-SD2 secure digital (SD) card for nonvolatile flash memory
- Internal energy storage solution eliminating the need for a battery

Characteristics

CompactLogix 5370 L1 Controllers

The CompactLogix 5370 L1 controller comes with a built-in 24V DC power supply and embedded digital I/O (16 DC inputs, 16 DC outputs). Up to eight 1734 POINT I/O expansion modules are supported.



Characteristic	1769-L16ER-BB1B	1769-L18ER-BB1B	1769-L18ERM-BB1B
User Memory	384 kB	512 kB	512 kB
Secure Digital Memory Card	1 GB (standard) 2 GB (optional)		
Communication Ports	DualPort Ethernet DLR, USB		
Embedded I/O	<ul style="list-style-type: none"> • 16 DC inputs • 16 DC outputs 		
Module expansion capacity	6 expansion modules and 4 Ethernet nodes	8 expansion modules and 8 Ethernet nodes	8 expansion modules and 8 Ethernet nodes
Motion Support	—	—	2 axis CIP motion
Power supply distance rating	NA		

CompactLogix 5370 L2 Controllers

The CompactLogix 5370 L2 controller comes with a built-in 24V DC power supply and a combination of embedded digital, analog, and high-speed counter I/O. Up to four 1769 I/O expansion modules are supported.



Characteristic	1769-L24ER-QB1B	1769-L24ER-QBFC1B	1769-L27ERM-QBFC1B
User Memory	0.75 MB	0.75 MB	1 MB
Secure Digital Memory Card	1 GB (standard) 2 GB (optional)		
Communication Ports	DualPort Ethernet DLR, USB		
Communication Options	DeviceNet with 1769-SDN		
Embedded I/O	<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 universal analog inputs • 2 universal analog outputs • 4 high-speed counters 	<ul style="list-style-type: none"> • 16 DC inputs • 16 DC outputs • 4 universal analog inputs • 2 universal analog outputs • 4 high-speed counters
Module expansion capacity	4 expansion modules and 8 Ethernet nodes	4 expansion modules and 8 Ethernet nodes	4 expansion modules and 16 Ethernet nodes
Motion Support	—	—	4 axis CIP motion
Power supply distance rating	NA		

CompactLogix 5370 L3 Controllers

A CompactLogix 5370 L3 controller system consists of a 1769-L3 controller, 1769 power supplies, and 1769 I/O modules. The I/O modules can be placed to the left and the right of the power supply. You can install I/O modules in as many as three banks, that is, the local bank and two additional banks. As many as eight I/O modules can be placed on each side of the power supply in the additional banks.



Characteristic	1769-L30ER	1769-L30ERM	1769-L30ER-NSE	1769-L33ER	1769-L33ERM	1769-L36ERM
User Memory	1 MB			2 MB		3 MB
Secure Digital Memory Card	1 GB (standard) 2 GB (optional)					
Communication Ports	DualPort Ethernet DLR, USB					
Communication Options	DeviceNet with 1769-SDN					
Embedded I/O	None					
Module expansion capacity	Up to 8 Compact I/O modules and 16 Ethernet nodes			Up to 16 Compact I/O modules and 32 Ethernet nodes		Up to 30 Compact I/O modules and 48 Ethernet nodes
Motion Support	—	4 axis CIP motion	—	—	8 axis CIP motion	16 axis CIP motion
Power supply distance rating	4 modules					

For more information see publication 1769-td005, CompactLogix Controllers Specifications

1768 CompactLogix Controllers

The 1768-L4x 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 and more complex communication requirements than the other CompactLogix controllers.

The 1768-L4x system provides

- both a 1768 backplane and a 1769 backplane.
- 1768 backplane support of the 1768 controller, the 1768 power supply, and a maximum of four 1768 modules.
- 1769 backplane support of a maximum of thirty 1769 I/O modules.
- one RS-232 serial port.



Characteristics

Specifications [PDF]

Characteristic	1768-L43	1768-L45
User Memory	2 MB	3 MB
CompactFlash card	<ul style="list-style-type: none">• 1784-CF64• 1784-CF128	<ul style="list-style-type: none">• 1784-CF64• 1784-CF128
Communication Options	<ul style="list-style-type: none">• EtherNet/IP• ControlNet• DeviceNet	<ul style="list-style-type: none">• EtherNet/IP• ControlNet• DeviceNet
Serial communication port	1 RS-232 port	1 RS-232 port
Module expansion capacity	<ul style="list-style-type: none">• 2 - 1768 Modules• 16 - 1769 Modules	<ul style="list-style-type: none">• 4 - 1768 Modules• 30 - 1769 Modules
Power supply distance rating	—	—
Programming languages	<ul style="list-style-type: none">• Relay ladder• Structured text• Function block• Sequential function chart	<ul style="list-style-type: none">• Relay ladder• Structured text• Function block• Sequential function chart

1768 GuardLogix Controllers

The Compact GuardLogix controller is a 1768-L4xS CompactLogix controller that provides safety control up to and including SIL 3 according to IEC 61508, and applications up to and including PLe/Cat.4 according to ISO 13849-1.

Safety and standard tasks have the same rules during project development—multiple programmers, online editing, and forcing are all allowed. Once the project is tested and ready for final validation, the Safety Task is set to SIL 3, which is then enforced by the GuardLogix controller. When safety memory is locked and protected, the safety logic cannot be modified and all safety functions operate with SIL 3. 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 allowed.

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.

Ethernet or ControlNet networks can be used for safety interlocking between GuardLogix controllers. Multiple GuardLogix controllers can share safety data for zone to zone interlocking, or a single GuardLogix controller can use remote distributed safety I/O between different cells/areas. Field device connectivity can be established over Ethernet or DeviceNet networks.

For additional information on GuardLogix refer to [GuardLogix Integrated Safety System](#).

1768 GuardLogix Features

The 1768-L4xS system provides

- both a 1768 backplane and a 1769 backplane.
- 1768 backplane support of the 1768 controller, the 1768 power supply, and a maximum of four 1768 modules.
- 1769 backplane support of up to thirty 1769 modules.
- one RS-232 serial port.
- Safety Integrity Level 3 (SIL 3) protection.

Characteristics

Specifications [PDF]



Characteristic	1768-L43S	1768-L45S
User Memory	2 MB standard 0.5 MB safety	3 MB standard 1 MB safety
CompactFlash card	<ul style="list-style-type: none"> • 1784-CF64 • 1784-CF128 	<ul style="list-style-type: none"> • 1784-CF64 • 1784-CF128
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)
Serial communication port	1 RS-232 serial port	1 RS-232 serial port
Module expansion capacity	<ul style="list-style-type: none"> • 2 - 1768 modules • 16 - 1769 modules 	<ul style="list-style-type: none"> • 4 - 1768 modules • 30 - 1769 modules
Power supply distance rating	—	—
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

Accessories—Controllers

1784 Industrial CompactFlash Cards

CompactFlash cards offer nonvolatile memory (flash) to permanently store a user program and tag data. You install the 1784 CompactFlash card in a socket on the controller. You can manually trigger the controller to save to or load from nonvolatile memory or configure the controller to load from nonvolatile memory on powerup.

The CompactFlash card offers nonvolatile memory (flash) to permanently store a user program and tag data on a controller. The 1769-L3x, 1768-L4x, and 1768-L4xS controllers support a CompactFlash card.

Attribute	1784-CF64	1784-CF128
Memory	128 MB	128 MB
Weight, approx.	14.2 g (0.5 oz)	

1769 CompactLogix Batteries

The 1769-L23x and 1769-L3x controllers come with one 1769-BA lithium battery. The 1768 controller does not require a battery. The controller uses internal flash memory to store its program during shutdown. Energy stored in the 1768 power supply maintains controller power long enough to store the program to internal flash memory (not the external CompactFlash card).

Attribute	1769-BA
Description	Lithium battery (0.59 g)
CompactLogix controllers	1769-L23-QBFC1B, 1769-L23E-QB1B, 1769-L23E-QBFC1B 1769-L31 1769-L32C, 1769-L35CR 1769-L32E, 1769-L35E