

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.

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)

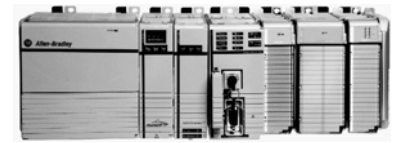
(1) 1768 controllers are compatible with only version 20 or earlier of the RSLogix 5000 software.

(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 your application, see Logix5000 Controllers Execution Time and Memory Use Reference Manual, publication [1756-RM087](#).

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		

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.

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

