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	• 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	• 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM: 1MB • 1769-L33ER, 1769-L33ERM: 2 MB • 1769-L36ERM: 3 MB	• 1769-L24ER: 750 KB • 1769-L27ERM: 1 MB	• 1769-L16ER: 384 KB • 1769-L18ER, 1769-L18ERM: 512 KB	• 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	• EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard and safety) • DH+ • Remote I/O • SynchLink	• Dual-port EtherNet/IP(1) • DeviceNet	• Dual-port EtherNet/IP(1) • DeviceNet	• Dual-port EtherNet/IP(1)	• EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard)
Controller connections	500	256	256	256	250
Network connections	Per module: • 128 ControlNet (CN2/B) • 40 ControlNet (CNB) • 256 EtherNet/IP; 128 TCP (EN2*x*) • 128 EtherNet/IP; 64 TCP (ENBT)	• 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	• 1769-L24ER: 256 EtherNet/IP; 120 TCP • 1769-L27ERM: 256 EtherNet/IP; 120 TCP	• 1769-L16ER: 256 EtherNet/IP; 120 TCP • 1769-L18ER, 1769-L18ERM: 256 EtherNet/IP; 120 TCP	Per module: • 48 ControlNet • 128 EtherNet/IP; 64 TCP
EtherNet/IP nodes in a single Logix Designer application, max	N/A	• 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM: 16 • 1769-L33ER, 1769-L33ERM: 32 • 1769-L36ERM: 48	• 1769-L24ER: 8 • 1769-L27ERM: 16	• 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	• 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	• Standard task: all languages • Safety task: relay ladder, safety application instructions	• Relay ladder • Structured text • Function block • SFC	• Relay ladder • Structured text • Function block • SFC	• Relay ladder • Structured text • Function block • SFC	• 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	• 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	• 1769-L16ER-BB1B: 384 KB • 1769-L18ER-BB1B, 1769-L18ERM-BB1B: 512 KB	• 1769-L24ER-QB1B, 1769-L24ER-QBFC1B: 750 KB • 1769-L27ERM-QBFC1B: 1 MB	• 1769-L30ER, 1769-L30ERM, 1769-L30ER-NSE: 1MB • 1769-L33ER, 1769-L33ERM: 2 MB • 1769-L36ERM: 3 MB	• 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	• 2 EtherNet/IP(2) • 1 USB	• 2 EtherNet/IP(2) • 1 USB	• 2 EtherNet/IP(2) • 1 USB	• 1 port RS- 232 serial (DF1 or ASCII)
Communication options	• Dual-port EtherNet/IP	• Dual-port EtherNet/IP • DeviceNet	• Dual-port EtherNet/IP • DeviceNet	• 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	• 1784-SD1 (1 GB), shipped with controller • 1784-SD2 (2 GB)		
Communication ports	• 2 EtherNet/IP • 1 USB		
Embedded I/O	• 16 sinking 24V DC digital input points • 16 sourcing 24V DC digital output points		
EtherNet/IP connections	• 256 EtherNet/IP • 120 TCP	• 256 EtherNet/IP • 120 TCP	• 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	• 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 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.

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-SM2 module for a Modbus RTU interface
1769-L27ERM-QBFC1B	
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.