Logix Controllers Comparison

Characteristic	1756 ControlLogix® 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75 1756 GuardLogix® 1756-L71S, 1756-L72S, 1756-L73S	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
Controller tasks: • Continuous • Periodic • Event	• 32; • 100 programs/task	• 32; • 100 programs/task	• 32; • 100 programs/task	• 32; • 100 programs/task
Event tasks	Consumed tag, EVENT instruction triggers, Module Input Data changes, and motion events	Consumed tag, EVENT instruction triggers and motion events	Consumed tag, EVENT instruction triggers and motion events	Consumed tag, EVENT instruction triggers and motion events
User memory	• 1756-L71: 2 MB • 1756-L72: 4 MB • 1756-L73: 8 MB 1756-L73XT: 8 MB • 1756-L74: 16 MB • 1756-L75: 32 MB • 1756-L71S: 2 MB + 1 MB safety • 1756-L72S: 4 MB +2 MB safety • 1756-L73S: 8 MB +4 MB safety	• 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
Memory card	Secure Digital	Secure Digital	Secure Digital	Secure Digital
Built-in ports	1 port USB Client	• Dual-port EtherNet/IP • 1 port USB Client	• Dual-port EtherNet/IP • 1 port USB Client	• Dual-port EtherNet/IP • 1 port USB Client
Communication options	• EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • USB Client	• EtherNet/IP – Embedded switch – Single IP address • DeviceNet • USB Client	• EtherNet/IP – Embedded switch – Single IP address • DeviceNet • USB Client	• EtherNet/IP – Embedded switch – Single IP address • USB Client
Controller connections	500	256	256	256
Network connections	Per network module: • 40 ControlNet (CNB) • 100 ControlNet (CN2/A) • 128 ControlNet (CN2/B) • 128 EtherNet/IP; 64 TCP (ENBT) • 256 EtherNet/IP; 128 TCP (EN2*x*) • 256 Ethernet (ENxT(R))	• 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM: 16 EtherNet/IP; 120 TCP • 1769-L33ER, 1769-L33ERM: 32 EtherNet/IP; 120 TCP • 1769-L36ERM: 48 EtherNet/IP; 120 TCP	• 1769-L24ER-QB1B: 8 EtherNet/IP; 120 TCP • 1769-24ER-BFC1B: 8 EtherNet/IP; 120 TCP • 1769-L27ERM-QBFC1B: 16 EtherNet/IP; 120 TCP	• 1769-L16ER-BB1B 4 EtherNet/IP; 120 TCP • 1769-L18ER-BB1B: 8 EtherNet/IP; 120 TCP • 1769-L18ERM-BB1B: 8 EtherNet/IP; 120 TCP
Controller redundancy	Full support	Backup via DeviceNet	Backup via DeviceNet	None
Simple motion	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Servo via DeviceNet • Analog or Networked AC drive	• Servo via DeviceNet • Analog or Networked AC drive	Analog or Networked AC drive
Integrated motion	• EtherNet/IP • SERCOS interface • Analog options: – Encoder input – LDT input – SSI input	EtherNet/IP: 1769-L30ERM, 1769-L33ERM, 1769-L36ERM	EtherNet/IP: 1769-L27-ERM-QBFC1B	EtherNet/IP: 1769-L18ERM-BB1B
Programming languages	• Relay ladder • Structured text • Function block • Sequential function chart • Safety task: relay ladder, safety application instructions	• Relay ladder • Structured text • Function block • Sequential function chart	• Relay ladder • Structured text • Function block • Sequential function chart	• Relay ladder • Structured text • Function block • Sequential function chart

ControlLogix Controllers

The ControlLogix controller provides a scalable controller solution capable of addressing a large number of I/O points.

The controller can be placed into any slot of a ControlLogix chassis and multiple controllers can be installed in the same chassis. Multiple controllers in the same chassis communicate with each other over the backplane (just as controllers can communicate over networks) but operate independently.

ControlLogix controllers can monitor and control I/O across the ControlLogix backplane, and over I/O links. ControlLogix controllers can communicate over EtherNet/IP, ControlNet, DeviceNet, DH+, Remote I/O, and RS-232-C (DF1/DH-485 protocol) networks and many third-party process and device networks. To provide communication for a ControlLogix controller, install the appropriate communication interface module into the chassis.

Cat. No.	Description	User Memory
1756-L71	ControlLogix controller, 1 built-in USB port(1)	2 MB
1756-L72		4 MB
1756-L73		8 MB
1756-L74		16 MB
1756-L75		32 MB
1756-L73XT	ControlLogix-XT controller, extreme environment	8 MB
1756-L71S	GuardLogix safety controllers	2 MB standard 1 MB safety
1756-L72S		4 MB standard 2 MB safety
1756-L73S		8 MB standard 4 MB safety
1756-L7SP	GuardLogix safety partner (one is required for each GuardLogix L7 controller)	—

(1) The USB port is intended only for temporary local programming purposes and not intended for permanent connection. Do not use the USB port in hazardous locations.

For detailed specifications, see the 1756 ControlLogix Controllers Specifications Technical Data, publication 1756-TD001.

GuardLogix Controllers

A GuardLogix controller is a ControlLogix controller that also provides safety control.

Application	Description
SIL 1, 2, 3	The 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 the following: • GuardLogix Controllers Systems Safety Reference Manual, publication 1756-RM093. • GuardLogix Controllers User Manual, publication 1756-UM020. • GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095.

The GuardLogix system is a dual controller solution. You must use a primary controller and a safety partner to achieve SIL 3/PLe/Cat. 4.

Primary Controller	Safety Partner
1756-L71S, 1756-L72S, 1756-L73S	1756-L7SP
1756-L73SXT	1756-L7SPXT

During development, safety and standard have the same rules, multiple programmers, online editing, and forcing are all allowed. Once the project is tested and ready for final validation, you set the Safety Task to a SIL 3 integrity level, which the GuardLogix controller enforces. 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.

Use Guard I/O modules for field device connectivity on Ethernet or DeviceNet networks, and 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 different cells/areas.

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

Feature	1756-LSP, 1756-L71S, 1756-L72S, 1756-L73S, 1756-L7SP, 1756-L73SXT, 1756-L7SPXT
Safety communication options	Standard and safety • EtherNet/IP • ControlNet • DeviceNet
Network connections, per network module	• 256 EtherNet/IP; 128 TCP (1756-EN2*x*, 1756-EN3*x*) • 128 EtherNet/IP; 64 TCP (1756-ENBT) • 128 ControlNet (1756-CN2/B, 1756-CN2R/B) • 64 DeviceNet (1756-DNB)
Controller redundancy	Not supported
Safety Task Programming languages	Relay ladder