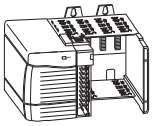
Logix Controllers Comparison

Characteristic	**ControlLogix®** 1756-L83E, 1756-L85E	**ControlLogix** 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75 **GuardLogix®** 1756-L71S, 1756-L72S, 1756-L73S	**Armor™ ControlLogix** 1756-L71EROM, 1756-L72EROM **Armor™ GuardLogix®** 1756-L71EROMS, 1756-L72EROMS	**CompactLogix™** 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM, 1769-L33ER, 1769-L33ERM, 1769-L36ERM **Compact GuardLogix** 1769-L30ERMS, 1769-L33ERMS, 1769-L36ERMS	**CompactLogix** 1769-L24ER-BB1B, 1769-L24ER-QBFC1B, 1769-L27ERM-QBFC1B	**CompactLogix** 1769-L16ER-BB1B, 1769-L18ER-BB1B, 1769-L18ERM-BB1B, 1769-L19ER-BB1B
Controller tasks: • Continuous • Periodic • Event	• 32 • 1000 programs/task	• 32 • 100 programs/task (with V23 and earlier) • 1000 programs/task (with V24 and later)	• 32 • 100 programs/task (with V23 and earlier) • 1000 programs/task (with V24 and later)	• 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, Module Input Data changes, and motion events	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-L83E: 10 MB • 1756-L85E: 40 MB	• 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	• 1756-L71EROM: 2 MB • 1756-L71EROMS: 2 MB + 1 MB safety • 1756-L72EROM: 4 MB • 1756-L72EROMS: 4 MB + 2 MB safety	• 1769-L30ER, 1769-L30ER-NSE, 1769-L30ERM: 1 MB • 1769-L33ER, 1769-L33ERM: 2 MB • 1769-L36ERM: 3 MB • 1769-L30ERMS: 1 MB + 0.5 MB safety • 1769-L33ERMS: 2 MB + 1 MB safety • 1769-L36ERMS: 3 MB + 1.5 MB safety	• 1769-L24ER: 750 KB • 1769-L27ERM: 1 MB	• 1769-L16ER: 384 KB • 1769-L18ER, 1769-L18ERM: 512 KB • 1769-L19ER-BB1B: 1 MB
Built-in ports	• Single-port EtherNet/IP™ • 1 port USB client	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	• 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 • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • USB Client	• 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 resources	• 1756-L83E: 100 EtherNet/IP nodes • 1756-L85E: 300 EtherNet/IP nodes	500 connections	500 connections	256 connections	256 connections	256 connections
Controller redundancy	None	Full support	None	Backup via DeviceNet	Backup via DeviceNet	None
Integrated motion	EtherNet/IP	EtherNet/IP	EtherNet/IP	EtherNet/IP	EtherNet/IP	EtherNet/IP

Select a ControlLogix System

Step 1
ControlLogix I/O Modules



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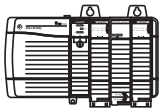
Select:
- I/O modules—Some modules have field-side diagnostics, electronic fusing, or individually isolated inputs/outputs
- A remote terminal block (RTB) or wiring system for each I/O module

Step 2
ControlLogix Integrated Motion



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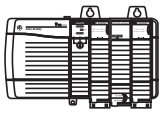
Select:
- An EtherNet/IP communication module for Integrated Motion
- Associated cables
- Select drives, motors, and accessories (use the Motion Analyzer software)

Step 3
ControlLogix Communication Modules



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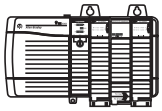
Select:
- Networks
- Communication modules
- Associated cables and network equipment
- Sufficient modules and cables if you are planning a redundant system

Step 4
ControlLogix Controllers



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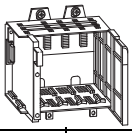
Select a controller:
- Standard ControlLogix controller
- Redundant ControlLogix controller
- Safety GuardLogix controller
- Extreme environment ControlLogix controller
- Standard Armor ControlLogix controller
- Safety Armor GuardLogix controller

Step 5
ControlLogix Chassis



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Select:
- A chassis with sufficient slots
- Slot fillers for empty slots

Step 6
ControlLogix Power Supplies

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Select:
- One power supply for each chassis, if you are using standard power supplies
- A power supply bundle if you are planning a redundant power supply system

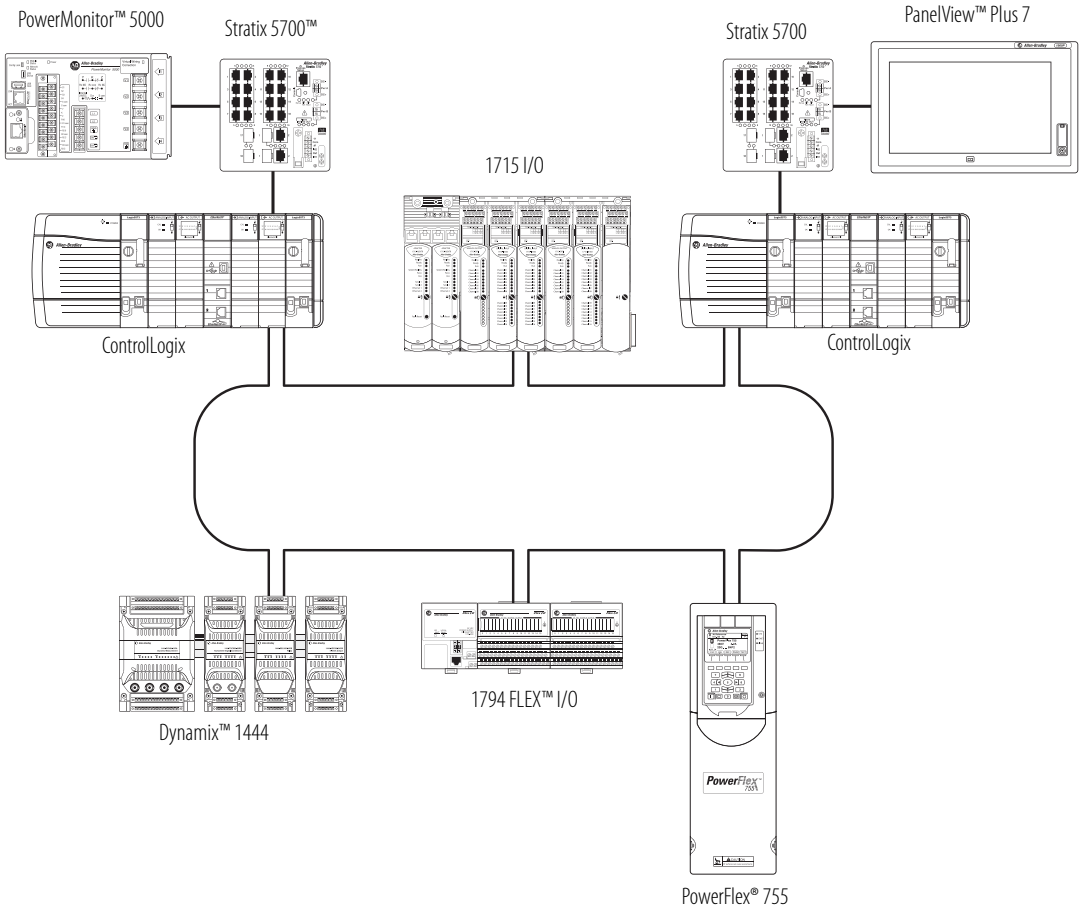
ControlLogix System Overview

The ControlLogix system provides discrete, drives, motion, process, and safety control together with communication and state-of-the-art I/O in a small, cost-competitive package. The system is modular, so you can design, build, and modify it efficiently with significant savings in training and engineering.

Example Configuration—ControlLogix System

A simple ControlLogix system consists of a standalone controller and I/O modules in one chassis. For a more comprehensive system, use the following:

- Multiple controllers in one chassis
- Multiple controllers joined across networks
- I/O in multiple platforms that are distributed in many locations and connected over multiple I/O links



Conformal Coating

A conformal coating solution is offered on select ControlLogix products. Conformal coating helps protect the assembly by providing a layer of protection against contaminants and humidity to extend product life in harsh, corrosive environments. Conformally coated products have a 'K' suffix at the end of the catalog number, such as 1756-A4K. Conformally coated, Allen-Bradley® products meet or exceed these requirements:

- ANSI/ISA 71.04.2013 G3 Environment (10-year exposure)
- IEC 61086-3-1 Class 2
- IPC-CC-830
- MIL-I-46058C
- EN600068-2-52 salt mist test, severity level 3

The most current list of conformally coated products can be found by contacting your local Rockwell Automation distributor, sales office, or at the following location:

http://www.ab.com/en/epub/catalogs/12762/2181376/2416247/360807/ControlLogix-System.html

ControlLogix-XT System

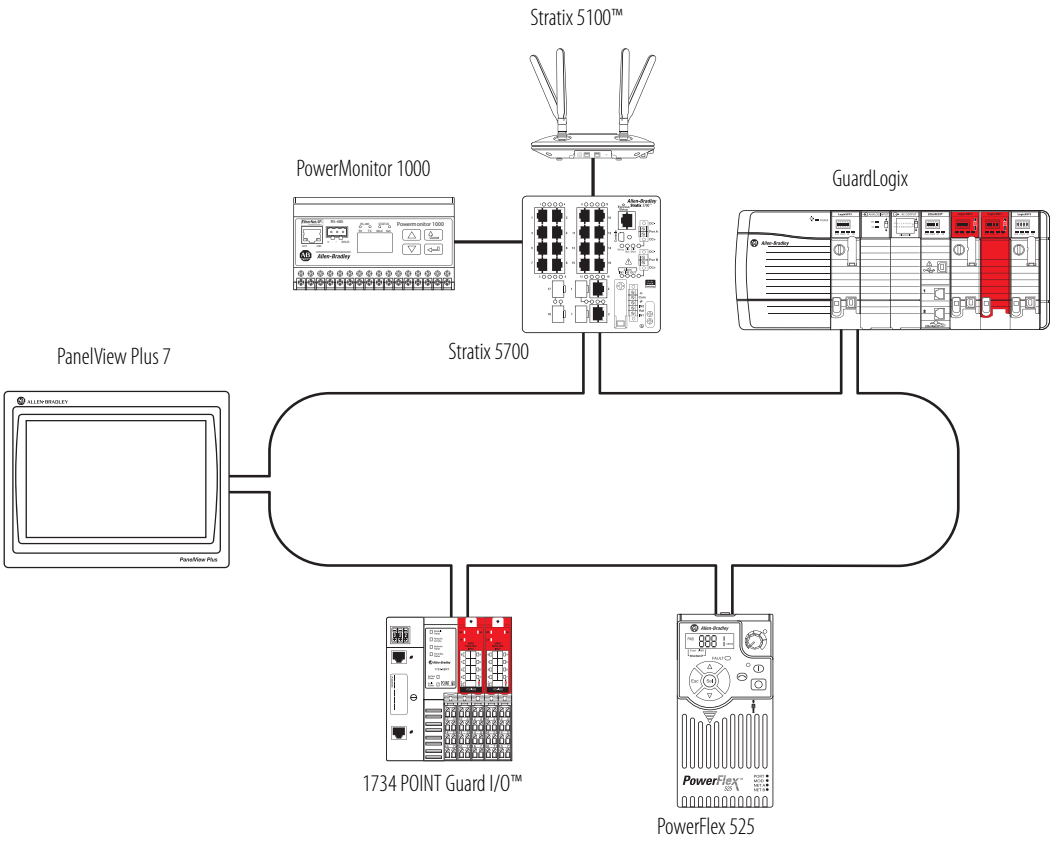
ControlLogix-XT™ (Extended Temperature) controllers function the same way as traditional ControlLogix controllers with an extended temperature range. The ControlLogix-XT products include control and communication system components that are conformally coated to extend product life in harsh, corrosive environments:

- The standard ControlLogix system can withstand temperature ranges from 0…60 °C (33…140 °F).
- When used independently, the ControlLogix-XT system can withstand temperature ranges from -25…70 °C (-13…158 °F).

GuardLogix Safety System

A GuardLogix controller is a ControlLogix controller that also provides safety control. The GuardLogix system is a dual controller solution—you must use a GuardLogix controller with the appropriate safety partner to achieve SIL 3/PLe/Cat. 4. A major benefit of this system is that it is still one project, safety, and standard together. The safety partner controller is a part of the system, is automatically configured, and requires no user setup.

Application	Description
Up to and including SIL 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 category (PLe/Cat. 4), according to ISO 13849-1. For more information, see the following: • GuardLogix 5570 Controllers User Manual, publication 1756-UM022, provides information on how to install, configure, and operate GuardLogix 5570 controllers in the Studio 5000 Automation Engineering & Design Environment™ projects, version 21 or later. • GuardLogix 5570 Controller System Safety Reference Manual, publication 1756-RM099, provides information on how to meet safety application requirements for GuardLogix 5570 controllers in Studio 5000® projects, version 21 or later. • GuardLogix Controllers User Manual, publication 1756-UM020, provides information on how to install, configure, and operate GuardLogix 5560 and GuardLogix 5570 controllers in RSLogix 5000® projects, version 20 or earlier. • GuardLogix Controller Systems Safety Reference Manual, publication 1756-RM093, provides information on how to meet safety application requirements for GuardLogix 5560 and GuardLogix 5570 controllers in RSLogix 5000 projects, version 20 or earlier. • GuardLogix Safety Application Instruction Set Safety Reference Manual, publication 1756-RM095, provides programmers with details about the GuardLogix safety application instruction set.
SIL 2	Components of the ControlLogix system are type-approved and certified for use in SIL 2 applications, according to IEC 61508. For a list of ControlLogix system components that meet SIL 2 requirements, see the Using ControlLogix in SIL 2 Applications Safety Reference Manual, publication 1756-RM001.



ControlLogix Controllers

The ControlLogix controller provides a scalable controller solution capable of addressing many 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-L83E	ControlLogix controller, 1 built-in USB port(1), single port EtherNet/IP	10 MB
1756-L85E		40 MB
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)	—
1756-L71EROM	Armor ControlLogix controllers, EtherNet/IP dual port	2 MB
1756-L72EROM		4 MB
1756-L71EROMS	Armor GuardLogix controllers, EtherNet/IP dual port	2 MB standard 1 MB safety
1756-L72ERMOS		4 MB standard 2 MB safety

(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 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 5570 Controllers User Manual, publication 1756-UM022. Provides information on how to install, configure, and operate GuardLogix 5570 Controllers in Studio 5000, Version 21 or later projects. • GuardLogix 5570 Controller Systems Safety Reference Manual, publication 1756-RM099. Provides information on how to meet safety application requirements for GuardLogix 5570 Controllers in Studio 5000, Version 21 or later projects.

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 cannot 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