

Other Connectivity Options

Option	Consideration
USB connection	The ControlLogix controllers have a USB port in place of the serial port. ⁽¹⁾ If your application requires RS-232 functionality, see the many Encompass Partners' products at http://www.rockwellautomation.com/encompass .
DH-485 network	The controller serial port is compatible with DH-485 communication. The DH-485 connection does support remote programming and monitoring via the Logix Designer application. Or, add a 1756-DH485 communication module.
SynchLink™ network	The SynchLink communication module (1756-SYNCH) provides time synchronization and data broadcasting capabilities for distributed motion and coordinated drive control. The module connects a ControlLogix chassis to a SynchLink fiber-optic communication link.

(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.

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](#).

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	<ul style="list-style-type: none"> • 32 • 1000 programs/task 	<ul style="list-style-type: none"> • 32 • 100 programs/task (with V23 and earlier) • 1000 programs/task (with V24 and later) 	<ul style="list-style-type: none"> • 32 • 100 programs/task (with V23 and earlier) • 1000 programs/task (with V24 and later) 	<ul style="list-style-type: none"> • 32 • 100 programs/task 	<ul style="list-style-type: none"> • 32 • 100 programs/task 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 1756-L83E: 10 MB • 1756-L85E: 40 MB 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 1756-L71EROM: 2 MB • 1756-L71EROMS: 2 MB + 1 MB safety • 1756-L72EROM: 4 MB • 1756-L72EROMS: 4 MB + 2 MB safety 	<ul style="list-style-type: none"> • 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 	<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 • 1769-L19ER-BB1B: 1 MB
Built-in ports	<ul style="list-style-type: none"> • Single-port EtherNet/IP™ • 1 port USB client 	1 port USB Client	<ul style="list-style-type: none"> • Dual-port EtherNet/IP • 1 port USB client 	<ul style="list-style-type: none"> • Dual-port EtherNet/IP • 1 port USB Client 	<ul style="list-style-type: none"> • Dual-port EtherNet/IP • 1 port USB Client 	<ul style="list-style-type: none"> • Dual-port EtherNet/IP • 1 port USB Client
Communication options	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet™ • DeviceNet™ • Data Highway Plus™ • Remote I/O • SynchLink™ • USB Client 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • USB Client 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • USB Client 	<ul style="list-style-type: none"> • EtherNet/IP <ul style="list-style-type: none"> – Embedded switch – Single IP address • DeviceNet • USB Client 	<ul style="list-style-type: none"> • EtherNet/IP <ul style="list-style-type: none"> – Embedded switch – Single IP address • DeviceNet • USB Client 	<ul style="list-style-type: none"> • EtherNet/IP <ul style="list-style-type: none"> – Embedded switch – Single IP address • USB Client
Controller resources	<ul style="list-style-type: none"> • 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 Integrated Motion

The Logix architecture supports motion control components that work in a wide variety of machine architectures:

- Integrated Motion on the EtherNet/IP network supports a connection to Ethernet drives.
- The Kinetix® integrated-motion solution uses a SERCOS or EtherNet/IP interface to perform multi-axis, synchronized motion.
- Logix integrated motion supports the analog family of servo modules for controlling drives/actuators.
- Networked motion provides connection via the DeviceNet network to one axis drive to perform point-to-point indexing.

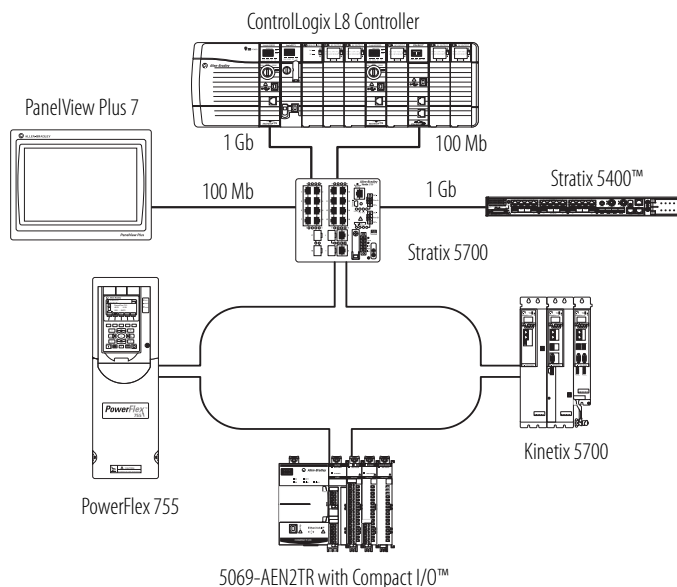
For detailed specifications on motion interface modules, see the 1756 ControlLogix Integrated Motion Modules Specifications Technical Data, publication [1756-TD004](#).

For more information, see these publications:

- Motion Analyzer CD to size your motion application and to make final component selection
Download the software from <https://motionanalyzer.rockwellautomation.com/>
- Kinetix Motion Control Selection Guide, publication [GMC-SG001](#), to verify drive, motor, and accessory specifications

Integrated Motion on an EtherNet/IP Network

Product	Consideration
Drive that supports EtherNet/IP connections	Unlimited velocity, torque, and VHz configured drives: <ul style="list-style-type: none"> • Kinetix 6500 drives • Kinetix 5700 drives • Kinetix 5500 drives • Kinetix 350 drives • PowerFlex 755 drives • PowerFlex 527 drives
ControlLogix controller	<ul style="list-style-type: none"> • 1756-L7: as many as 100 drives per controller • 1756-L8: as many as 256 drives per controller
ControlLogix EtherNet/IP communication module	<ul style="list-style-type: none"> • 1...8 position loop axes that are configured with the 1756-EN2T or 1756-EN2TR modules • 1...128 position loop axes that are configured with the 1756-EN3TR module



Standard ControlLogix Controllers

The ControlLogix controller is part of the Logix5000 family of controllers. A ControlLogix system includes the following:

- The ControlLogix controller, available in different combinations of user memory
- Studio 5000 environment
- 1756 ControlLogix I/O modules that reside in a 1756 chassis
- Separate communication modules for network communication



Feature	1756-L71, 1756-L72, 1756-L73, 1756-L74, 1756-L75	1756-L83E, 1756-L85E
Controller tasks	<ul style="list-style-type: none"> • 32 tasks • 1000 programs/task⁽²⁾ • Event tasks: all event triggers 	<ul style="list-style-type: none"> • 32 tasks • 1000 programs/task • Event tasks: all event triggers
Built-in communication ports	1 port USB Client	<ul style="list-style-type: none"> • 1 port USB client • Single-port EtherNet/IP
Communication options	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • Third-party process and device networks 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • Third-party process and device networks
Controller resources, max	500 connections	<ul style="list-style-type: none"> • 1756-L83E: 100 EtherNet/IP nodes⁽³⁾ • 1756-L85E: 300 EtherNet/IP nodes⁽³⁾
Network connections, per network module ⁽¹⁾	<ul style="list-style-type: none"> • 256 EtherNet/IP; 128 TCP (1756-EN2x, 1756-ENxT(R)) • 128 EtherNet/IP; 64 TCP (1756-ENBT) • 128 ControlNet (1756-CN2/B) • 100 ControlNet (1756-CN2/A) • 64 EtherNet/IP; 32 TCP (5069-AENTR) • 40 ControlNet (1756-CNB) 	<ul style="list-style-type: none"> • 256 EtherNet/IP; 128 TCP (1756-EN2x, 1756-ENxT(R)) • 128 EtherNet/IP; 64 TCP (1756-ENBT) • 128 ControlNet (1756-CN2/B) • 100 ControlNet (1756-CN2/A) • 64 EtherNet/IP; 32 TCP (5069-AENTR) • 40 ControlNet (1756-CNB)
Controller redundancy	Full support	None
Integrated motion	<ul style="list-style-type: none"> • EtherNet/IP connection • SERCOS interface • Analog options (encoder input, LDT input, SSI input) 	<ul style="list-style-type: none"> • EtherNet/IP connection
Programming languages	<ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • Sequential function chart (SFC) 	<ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • Sequential function chart (SFC)

(1) For the 1756-L83E and 1756-L85E controllers, the total number of devices cannot exceed the total number of devices that the controller supports. The number of connections per network module shown is the maximum designed capacity of the modules. The device data size and requested data rate determines the actual device capacity.

(2) Studio 5000, version 23 and earlier, is limited to 100 Programs/Task.

(3) This is the maximum number of EtherNet/IP nodes supported by the controller, which includes the front port and communication modules.