FlexLogix Selection Guide

1794-L34

Rockwell Automation

Logix Controllers Comparison

Common Characteristics	1756 ControlLogix	1769 CompactLogix	1789 SoftLogix5800	1794 FlexLogix	PowerFlex 700S with DriveLogix
controller tasks: • continuous • periodic • event	• 32 tasks (only 1 continuous) • event tasks: supports all event triggers	• 1769-L35x: 8 tasks • 1769-L32x: 6 tasks • 1769-L31: 4 tasks • only 1 continuous • event tasks: supports consumed tag trigger and EVENT instruction	• 32 tasks (only 1 continuous) • event tasks: supports all event triggers, plus outbound and Windows events	• 8 tasks (only 1 continuous) • event tasks: supports consumed tag trigger and EVENT instruction	• 8 tasks (only 1 continuous) • event tasks: supports axis and motion event triggers
user memory	1756-L55M12: 750 Kbytes 1756-L55M13: 1.5 Mbytes 1756-L55M14: 3.5 Mbytes 1756-L55M16: 7.5 Mbytes 1756-L55M22: 750 Kbytes 1756-L55M23: 1. 5 Mbytes 1756-L55M24: 3.5Mbytes 1756-L61: 2 Mbytes 1756-L62: 4 Mbytes 1756-L63: 8 Mbytes	1769-L31: 512 Kbytes 1769-L32x: 750 Kbytes 1769-L35x: 1.5 Mbytes	1789-L10: 2 Mbytes 3 slots no motion 1789-L30: 64 Mbytes 5 slots 1789-L60: 64 Mbytes 16 slots	1794-L34: 512 Kbytes	256 Kbytes 768 Kbytes with memory expansion
nonvolatile user memory	1756-L55M12: none 1756-L55M13: none 1756-L55M14: none 1756-L55M16: none 1756-L55M22: yes 1756-L55M23: yes 1756-L55M24: yes 1756-L6x: CompactFlash	CompactFlash	none	yes	yes (expansion memory)
built-in communication ports	1 port RS- 232 serial (DF1 or ASCII)	• 1769-L31 has 2 RS-232 ports (one DF1 only, other DF1 or ASCII) • 1769-L32C, -L35CR has 1 ControlNet port and 1 RS-232 serial port (DF1 or ASCII) • 1769-L32E, -L35E has 1 EtherNet/IP port and 1 RS-232 serial port (DF1 or ASCII)	depends on personal computer	• 1 port RS-232 serial (DF1 or ASCII) • 2 slots for 1788 communication cards	• 1 port RS-232 serial (DF1 or ASCII) • 1 slot for 1788 communication cards
communication options (these options have specific products and profiles for their platform - other options are available via 3rd party products and generic profiles)	EtherNet/IP ControlNet DeviceNet Data Highway Plus Universal Remote I/ O serial Modbus via ladder routine DH-485 SynchLink	EtherNet/IP ControlNet DeviceNet serial Modbus via ladder routine DH-485	EtherNet/IP ControlNet DeviceNet serial	EtherNet/IP ControlNet DeviceNet serial Modbus via ladder routine DH-485	EtherNet/IP ControlNet DeviceNet serial Modbus via ladder routine DH-485
connections	64 over ControlNet (48 recommended) 128 over EtherNet/IP	32 over ControlNet 32 over EtherNet/IP	64 over ControlNet (48 recommended) EtherNet/IP limited by type and number of cards	32 over ControlNet 32 over EtherNet/IP	32 over ControlNet 32 over EtherNet/IP
controller redundancy	full redundancy support	not applicable	not applicable	controller hot backup via DeviceNet	not applicable
native I/O	1756 ControlLogix I/O	1769 Compact I/O	none	1794 FLEX I/O 1797 FLEX Ex I/O	1794 FLEX I/O 1797 FLEX Ex I/O
simple motion	stepper servo via DeviceNet analog ac drive	stepper servo via DeviceNet analog ac drive	stepper servo via DeviceNet analog ac drive	stepper servo via DeviceNet analog ac drive	stepper servo via DeviceNet analog ac drive
integrated motion	SERCOS interface analog interface with options: • quadrature encoder input • LDT input • SSI input	not applicable	SERCOS interface analog interface with options: • quadrature encoder input • LDT input • SSI input	not applicable	1 full servo 1 feedback axis
mounting and/or installation options	1756 chassis	panel mount DIN rail	none	panel mount DIN rail	embedded
programming languages	• 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 • external routines (Windows DLLs developed using C/C++)	• relay ladder • structured text • function block • sequential function chart	• relay ladder • structured text • function block • sequential function chart

Logix Platforms

Allen-Bradley Logix platforms provide a single integrated control architecture for sequential, drives, motion, and process control.

The Logix platforms provide a common control engine, programming software environment, and communication support across multiple hardware platforms. All Logix controllers operate with a multitasking, multiprocessing operating system and support the same set of instructions in multiple programming languages. One RSLogix 5000 programming software package programs all Logix controllers. And, as part of the Integrated Architecture, all Logix controllers offer the benefits of the Common Industrial Protocol (CIP) to communicate via EtherNet/IP, ControlNet, and DeviceNet networks.

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FlexLogix System Overview

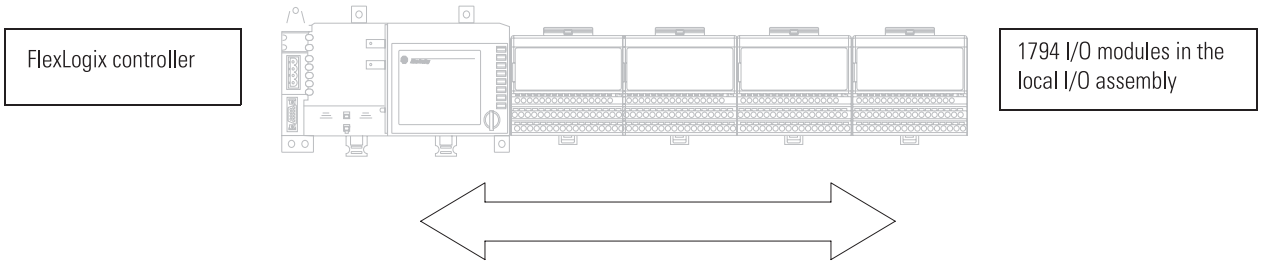
What's New in Version 15:

- *support for 1794-IB16D and 1794-OB16D I/O modules*
- *support for 1797-IE8H and 1797-OE8H I/O modules*
- *discontinued support for the 1794-L33 controller*
- *discontinued support for Windows NT*

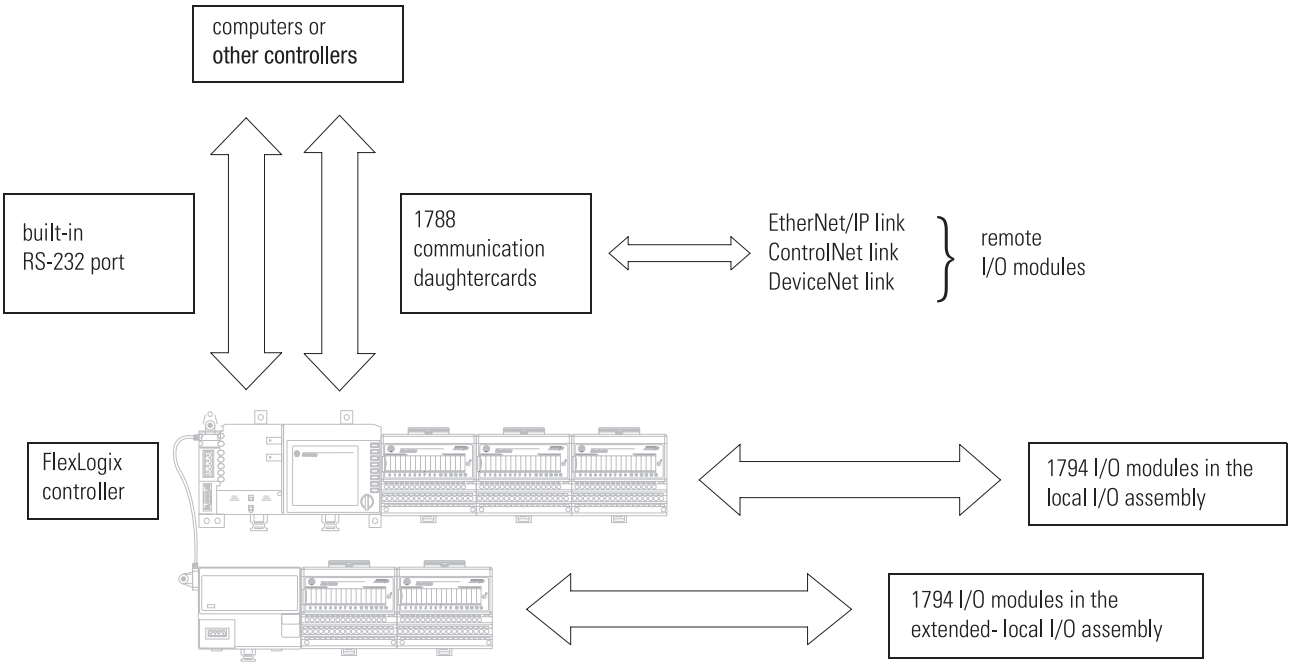
A FlexLogix system provides a multi-purpose programmable controller. You can distribute I/O to locations close to sensors/actuators. Connect multiple FlexLogix controllers in networks for distributed processing.

Because it has a Logix control engine, a FlexLogix controller supports the Logix instruction set, tasking model, and data model. A FlexLogix controller and other Logix controllers have a common approach to programming and configuring I/O with RSLogix 5000 programming software. The 1794 I/O products offer a range of digital and analog I/O (including intelligent I/O) in a rugged modular assembly.

A simple FlexLogix system can consist of a single, stand-alone assembly with one controller and as many as eight I/O modules.



In a more complex FlexLogix system, use multiple controllers across networks. Distribute the I/O platforms over multiple I/O links.



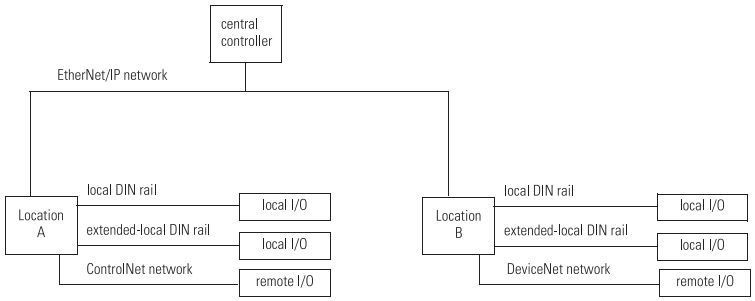
Layout the System

As you layout a system, determine the network configuration and the placement of components in each location. Decide at this time whether each location will have its own controller.

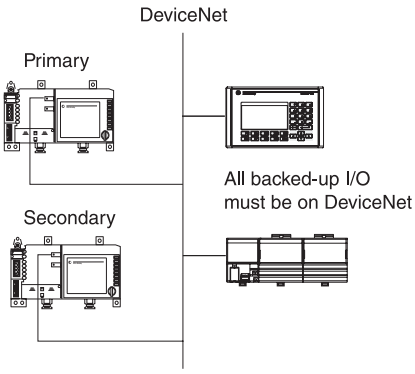
If you use multiple FlexLogix systems, use a central controller, such as a ControlLogix controller, to coordinate the FlexLogix controllers. If the FlexLogix controller uses remote I/O, place it on its own network. If you plan to share I/O, make sure the I/O is on a network that each controller can access locally.

Each FlexLogix controller can support:

- 8 local I/O modules
- 8 extended-local I/O modules
- 32 connections per communication card over ControlNet or EtherNet/IP (two communication cards per controller maximum)
- 496 input bytes and 492 output bytes over DeviceNet



Layout a FlexLogix backup system



FlexLogix backup on DeviceNet is a simple, low-cost, backup system targeted towards smaller applications that require fast switchovers from a primary to a secondary controller. FlexLogix backup is faster that a software-implemented switchover and lower cost than ControlLogix redundancy.

FlexLogix backup is suited for RTU (remote terminal unit) and power generation applications. It is also suited for small process applications where environmental control is critical.

Requires:

- RSLogix 5000 software must be version 10 or greater and FlexLogix firmware must be revision 10 or higher.
- The primary controller and the secondary controller each need their own 1788-DNBO scanner. The 178-DNBO firmware must be at revision 2.x or higher.
- The DeviceNet network should be set up with both the primary and secondary 1788-DNBO node addresses set to 0.
- All the I/O and operator interface devices that require backup must be on DeviceNet.

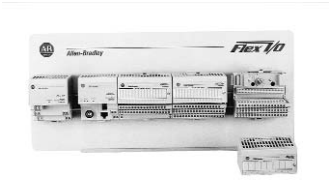
Specify a FlexLogix System

Follow these steps as you specify your FlexLogix system:

✓	Step	See	
	1 Select I/O devices Use a spreadsheet to record: • location of the device • number of points needed • appropriate catalog number • number of points available per module • number of modules **Important:** You must verify backplane current use to make sure the controller can support the proposed system. See the worksheet at the back of this guide.	I/O module specifications Place I/O modules Isolate FLEX Ex I/O modules How I/O modules operate Select controller ownership	page 5 page 12 page 13 page 14 page 14
	2 Select communication cards To the I/O spreadsheet, add the number of required communication cards.	Network overview EtherNet/IP specifications ControlNet specifications DeviceNet specifications Serial specifications DH-485 specifications	page 15 page 17 page 19 page 20 page 21 page 22
	3 Select controllers Select the appropriate controller based on: • required controller tasks • number of I/O points needed • number of communication cards needed • required controller memory	Controller specifications Control devices Communicate with other devices Connection information	page 23 page 24 page 25 page 27
	4 Select power supplies If power consumption exceeds the maximum for a single power supply, install additional power supplies.	Power supply specifications	page 33
	5 Select the number of DIN rails Determine whether to panel mount or DIN rail mount the system.	Plan the DIN rails	page 35
	6 Select software Based on the system design, determine the software products you need to configure and program your application.	Available software products Programming software Communication software Network configuration software Emulation software Visualization software and products	page 37 page 38 page 40 page 41 page 42 page 43

Step 1 - Select:

- *I/O modules*
- *terminal bases*
- *extender cables*
- *1794-FLA adapter for an extended-local rail, if needed*
- *1797-BIC and 1797-CEC, if using FLEX Ex I/O modules*



Select I/O Modules

The FlexLogix controller adds control to the flexible, low-cost, modular FLEX I/O system. Use FlexLogix controllers to meet the needs of your distributed and stand-alone applications.

When planning I/O communications, consider:

- which FLEX I/O modules to use
- where to place FLEX I/O modules
- how FLEX I/O modules operate

The FlexLogix controller supports FLEX and FLEX Ex I/O modules. FLEX and FLEX Ex I/O modules are packaged I/O modules that plug into terminal bases. The terminal base makes the backplane and provides the terminal connection points for wiring the I/O module.

This family of I/O modules	Provides
FLEX I/O	FLEX I/O builds an I/O interface onto a terminal strip. Use the terminal strip on the terminal base to wire field devices directly.
FLEX Ex I/O	FLEX Ex adds galvanic isolation to the modularity of FLEX I/O. Dual-fault, intrinsically-safe circuits let you install I/O or connect to field devices in a hazardous area while maintaining a high degree of safety.

Important: If you use FLEX Ex I/O modules, only connect the intrinsically-safe I/O modules to other intrinsically-safe apparatus to maintain the integrity of the intrinsically-safe system.

Do not mix regular FLEX I/O and FLEX Ex I/O on the same ControlNet network segment. You must separate the modules on different ControlNet segments using either a fiber hub (1786-RPA, -RPFM and 1797-RPA, -RPFM) or a ControlNet coax barrier (1797-BCNR).

You can connect FLEX Ex modules only on the local rail (not the extended-local rail) of a FlexLogix system using a 1797-BIC and 1797-CEC module pair.

1794 FLEX Digital I/O Modules

FLEX digital ac input modules

Cat. No.	Number of Outputs	Voltage, On-State Output, Nom.	Operating Voltage	Current per Output, Max.	Current per Module, Max.	Terminal Base Unit✞	FLEXBus Current (mA)	External AC Power Supply Voltage, Nom.	Power Dissipation, Max.
1794-OA8	8	120V ac	85...132V ac	750 mA @ 35°C (5 mA minimum)	4 A	**1794-TBNF,** 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN	80 mA	120V ac	4.1 W @ 0.5 A 6.3 W @ 0.75 A 6.3 W @ 1.0 A
1794-OA8I	8 individually isolated	120V ac	85...132V ac	750 mA @ 35°C (5 mA minimum)	4 A	**1794-TBNF,** 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN	80 mA	120V ac	4.1 W @ 0.5 A 6.3 W @ 0.75 A 6.3 W @ 1.0 A
1794-OA16	16	120V ac	74...132V ac	500 mA @ 35°C (50 mA minimum)	4 A	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TBN❄	80 mA	120V ac	4.7 W @ 0.5 A
1794-OM8	8	220V ac	159...264V ac	500 mA @ 35°C (50 mA minimum)	4 A	**1794-TBNF,** 1794-TBN	60 mA	120V ac	5 W @ 0.5 A

✞Recommended terminal base is in bold text.
❄Auxiliary terminal strips are required when using the 1794-TBN for the 1794-OA16.

FLEX digital ac output modules

Cat. No.	Number of Inputs	Voltage, On-State Input, Nom.	Operating Voltage Range	Default Signal Delay	Current, Off-State Input, Max.	Terminal Base Unit✞	FLEXBus Current (mA)	External AC Power Supply Surge Current Capability, Max.	Power Dissipation, Max.
1794-IA8	8	120V ac	85...132V ac	on = 8.6 ms off = 26.6 ms‡	2.9 mA	**1794-TBN,** 1794-TB2, 1794-TB3, 1794-TB3S	30 mA	—	4.5 W @ 132V ac
1794-IA8I	8 individually isolated	120V ac	85...132V ac	on = 8.6 ms off = 26.6 ms‡	2.9 mA	**1794-TBN,** 1794-TB2, 1794-TB3, 1794-TB3S	30 mA	—	4.5 W @ 132V ac
1794-IA16	16	120V ac	74...132V ac	on = 7.5 ms off = 26.5 ms§	2.9 mA	**1794-TB3,** 1794-TB3S, 1794-TBN❄	20 mA	—	6.4 W @ 132V ac
1794-IM8	8	220V ac	159...264V ac	on = 7.5 ms off = 26.5 ms§	2.6 mA	**1794-TBN**	30 mA	—	4.7 W @ 264V ac

✞Recommended terminal base is in bold text.
❄Auxiliary terminal strips are required when using the 1794-TBN for the 1794-IA16.
‡On = 8.6 ms by default. Selectable for 8.6, 9, 10, 12, 16, 24, 40, or 72 ms. Off = 26.6 ms by default. Selectable for 27, 28, 30, 34, 42, 58, or 90 ms.
§On = 7.5 ms by default. Selectable for 8.6, 9, 10, 12, 16, 24.5, or 42 ms. Off = 26.5 ms by default. Selectable for 27, 28, 29, 31, 35, 44, or 60.5 ms.

FLEX digital dc combination input/output modules

	Inputs					Outputs					
Cat. No.	Number of Inputs	Voltage, On-State Input, Nom.	Voltage Category	Default Signal Delay	Current, Off-State Input, Max.	Number of Outputs	Current per Output, Max.	Terminal Base Unit✞	FLEXBus Current (mA)	External DC Power Supply Voltage, Nom.	Power Dissipation, Max.
1794-IB10XOB6	10 Sink	24V dc	19.2...31.2V dc	0.25 ms	1.5 mA	6 Source	200 mA	**1794-TB3,** 1794-TB3S	35 mA	19 mA @ 24V dc	6.0 W @ 31.2V dc
1794-IB16XOB16P	16 Sink	24V dc	10...31.2V dc	0.25 ms	1.5 mA	16 Source, protected	500 mA	**1794-TB32,** TB32S	80 mA	28 mA @ 24V dc	7.0 W @ 31.2V dc

✞Recommended terminal base is in bold text.

FLEX digital dc input modules

Cat. No.	Number of Inputs	Voltage, On-State Input, Nom.	Voltage Category	Default Signal Delay	Current, Off-State Input, Max.	Terminal Base Unit✞	FLEXBus Current (mA)	External DC Power Supply Voltage, Nom.	Power Dissipation, Max.
1794-IB8	8 Sink	24V dc	19.2...31.2V dc	256 µs	1.5 mA	**1794-TB3,** 1794-TB3S	20 mA	24V dc	3.1 W @ 31.2V dc
1794-IB16	16 Sink	24V dc	19.2...31.2V dc	512 µs	1.5 mA	**1794-TB3,** 1794-TB3S	30 mA	24V dc	6.1 W @ 31.2V dc
1794-IB16D	16 Sink	24V dc	19.2...31.2V dc	512 µs	1.5 mA	**1794-TB32,** 1794-TB32S	30 mA	24V dc	8.5 W @ 31.2V dc
1794-IB32	32 Sink, isolated in 2 groups of 16	24V dc	19.2...31.2V dc	0.25 ms	1.5 mA	**1794-TB32,** 1794-TB32S	35 mA	24V dc	6.0 W @ 31.2V dc
1794-IV16	16 Source	24V dc	19.2...31.2V dc	256 µs	1.5 mA	**1794-TB2,** 1794-TB3, 1794-TB3S	30 mA	24V dc	5.7 W @ 31.2V dc
1794-IC16	16 Sink	48V dc	30...60V dc	256 µs	1.5 mA	**1794-TB3,** 1794-TB3S	25 mA	48V dc	6.4 W @ 60V dc

✞Recommended terminal base is in bold text.

FLEX digital dc output modules

Cat. No.	Number of Outputs	Voltage Category	Current per Output, Max.	Current per Module, Max.	Terminal Base Unit✞	FLEXBus Current (mA)	External DC Power Supply Current, Nom.	Power Dissipation, Max.
1794-OB8	8 Source	19.2...31.2V dc	500 mA	4 A	**1794-TB2,** 1794-TB3, 1794-TB3S	60 mA	25 mA @ 24V dc	3.3 W @ 31.2V dc
1794-OB8EP	8 Source, electronically fused	19.2...31.2V dc	2 A	10 A	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TBN	73 mA	80 mA @ 24V dc	5.5 W @ 31.2V dc
1794-OB16	16 Source	19.2...31.2V dc	500 mA	8 A	**1794-TB2,** 1794-TB3, 1794-TB3S	80 mA	49 mA @ 24V dc	5.3 W @ 31.2V dc
1794-OB16D	16 Source	19.2...31.2V dc	500 mA	8 A	**1794-TB3,** 1794-TB3S	60 mA	—	4.8 W @ 31.2V dc
1794-OB16P	16 Source, protected	19.2...31.2V dc	500 mA	8 A	**1794-TB2,** 1794-TB3, 1794-TB3S	60 mA	60 mA @ 24V dc	5.0 W @ 31.2V dc
1794-OB32P	32 Source, protected, isolated in 2 groups of 16	31.2V dc	500 mA	14 A	**1794-TB32,** 1794-TB32S	80 mA	49 mA @ 24V dc	5.3 W @ 31.2V dc
1794-OV16	16 Sink	19.2...31.2V dc	500 mA	8 A	**1794-TB3,** 1794-TB3S	80 mA	60 mA @ 24V dc	4.2W @ 31.2V dc
1794-OV16P	16 Sink, protected	19.2...31.2V dc	500 mA	8 A	**1794-TB3,** 1794-TB3S	80 mA	49 mA @ 24V dc	4.2 W @ 31.2V dc
1794-OC16	16 Source	30...60V dc	500 mA	8 A	**1794-TB3,** 1794-TB2, 1794-TB3S	80 mA	21 mA @ 24V dc	3.7 W @ 60V dc

✞Recommended terminal base is in bold text.

FLEX digital contact output modules

Cat. No.	Number of Outputs	Voltage Category	Current per Output, Max.	Current per Module, Max.	Terminal Base Unit✞	FLEXBus Current (mA)	External DC Power Supply Current, Max.	Power Dissipation, Max.
1794-OW8	8 individually isolated, N.O. relay contact	5…240V dc	3 A @ 250V ac resistive	16 A	**1794-TBNF**, 1794-TBN, 1794-TB2, 1794-TB3, 1794-TB3S	70 mA	125 mA	5.5 W @ 31.2V dc

✞Recommended terminal base is in bold text.

1794 FLEX Analog I/O Modules

Cat. No.	Number of Inputs	Number of Outputs	Input Signal Range	Sensors Supported	Terminal Base Unit✠	FLEXBus Current (mA)	External DC Power Supply Current	Power Dissipation, Max.
1794-IE4XOE2	4 single-ended	2 single-ended	4…20 mA 0…20 mA ±10V 0…10V	—	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TB3T, 1794-TB3TS	20 mA	70 mA @ 24V dc	4.0 W @ 31.2V dc
1794-IF2XOF2I	2 isolated	2 isolated	4…20 mA 0…20 mA ±20 mA ±10V 0…10V ±5V 0…5V	—	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBN	50 mA	150 mA @ 24V dc	3.3 W @ 31.2V dc
1794-IE8	8 single-ended	—	4…20 mA 0…20 mA ±10V 0…10V	—	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TB3T, 1794-TB3TS	20 mA	60 mA @ 24V dc	3 W @ 31.2V dc
1794-IF4I	4 isolated	—	4…20 mA 0…20 mA ±20 mA ±10V 0…10V ±5V 0…5V	—	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBN	50 mA	80 mA @ 24V dc	2.0 W @ 31.2V dc
1794-IR8	8 single-ended, RTD	—	1…433 Ω	Resistance: 100 Ω Pt μ = 0.00385 Euro (-200…+870 °C) 100 Ω Pt μ = 0.003916 U.S. (-200…+630 °C) 200 Ω Pt μ = 0.00385 Euro (-200…+630 °C) 500 Ω Pt μ = 0.00385 U.S. (-200…+630 °C) 100 Ω Nickel μ = 0.00618 (-60…+250 °C) 120 Ω Nickel μ = 0.00672 (-60…+250 °C) 200 Ω Nickel μ = 0.00618 (-60…+250 °C) 500 Ω Nickel μ = 0.00618 (-60…+250 °C) 10 Ω Copper μ = 0.00427 (-200…+260 °C)	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TB3T, 1794-TB3TS	20 mA	140 mA @ 24V dc	3 W @ 31.2V dc
1794-IRT8	8 single-ended, thermocouple or RTD	—	-40…+100 mV dc for thermocouples 0…325 mV dc for RTDs 0…500 Ω for resistance range	—	**1794-TB3G,** 1794-TB3GS	40 mA	85 mA @ 24V dc	3 W @ 31.2V dc
1794-IT8	8 single-ended, thermocouple	—	±76.5 mV	—	**1794-TB3T,** 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3TS❄	20 mA	150 mA @ 24V dc	3 W @ 31.2V dc
1794-OE4	—	4 single-ended	—	—	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBN	20 mA	70 mA @ 24V dc‡	4.5 W @ 31.2V dc
1794-OF4I	—	4 isolated	—	—	**1794-TB3,** 1794-TB2, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBN	50 mA	210 mA @ 24V dc	4.7 W @ 31.2V dc

✠Recommended terminal base is in bold text.
❄You can use a 1794-TB2, 1794-TB3, or 1794-TB3S for mV inputs only.
‡Not including outputs.

1794 FLEX Counter I/O Modules

Cat. No.	Number of Inputs	Number of Outputs	Input Frequency, Max.	Terminal Base Unit❄	FLEXBus Current (mA)	External DC Power Supply Current	Power Dissipation, Max.
1794-ID2	2 , 2 groups of A, B, Z, G inputs	—	100 kHz	**1794-TB3,** 1794-TB3S, 1794-TBN, 1794-TBNF‡	5 mA@ 5V dc	150 mA @ 12V dc 75 mA @ 24V dc	5 W @ 26.4V dc
1794-IJ2	2 counters, each with 2 digital inputs	2 counters, each with 1 digital output	1…32 kHz w/sine wave; 1…32 kHz w/square wave input	**1794-TB3G,** 1794-TB3GS	30 mA	220 mA @ 19.2V dc; 180 mA @ 24V dc; 140 mA @ 31.2V dc	4.6 W @ 31.2V dc
1794-IP4	4 pulse counters, each with 2 inputs	—	100	**1794-TB3,** 1794-TB3S, 1794-TBN, 1794-TBNF‡	5 mA	150 mA @ 12V dc 75 mA @ 24V dc	5 W @ 26.4V dc
1794-VHSC✞	2 counters, each with digital inputs	2 channels, each with 1 digital output	1.0 MHz counter and encoder X1 (no filters) 500 kHz encoder X2 (no filters) 250 kHz encoder X4 (no filters)	**1794-TB3G,** 1794-TB3GS§	75 mA♣	100 mA @ 24V dc Does not represent power required to supply the inputs or outputs.	5 W @ 31.2V dc

✞As of firmware revision 11, you can install the 1794-VHSC module (and any other module that uses extended data transfers) on the local or extended-local DIN rails of a FlexLogix system. Previous revisions of the controller firmware support these modules only as remote ControlNet I/O.
❄Recommended terminal base is in bold text.
‡Auxiliary terminal strips are required when using the 1794-TBN or 1794-TBNF for this catalog number.
§For use with 1794-ACN15, 1794-ANCR15, and 1794-AENT only.
♣Flexbus Current = 75 mA with terminal base power off.

1797 FLEX Ex Digital I/O Modules

Cat. No.	Number of Inputs	Voltage, On-State Input, Nom.	Voltage Category	Default Signal Delay	Current, Off-State Input, Max.	Terminal Base Unit	Power Consumption (W) at 24V	Power Dissipation, Max.
1797-IBN16	16 Sink	NAMUR compatible	NAMUR compatible dc	1 ms	1.2 mA	1797-TB3, 1797-TB3S	2.8	2.8 W

Cat. No.	Number of Outputs	Voltage Category	Maximum Current per Output	Maximum Current per Module	Terminal Base Unit	Power Consumption (W) at 24V	Power Dissipation, Max.
1797-OB4D	4 Source	24V dc	45 mA	180 mA	1797-TB3, 1797-TB3S	7.5	5 W

1797 FLEX Ex Analog I/O Modules

Cat. No.	Number of Inputs	Number of Outputs	Input Signal Range	Terminal Base Unit	Power Consumption (W) at 24V	Power Dissipation
1797-IE8	8 single-ended	—	0…20 mA	1797-TB3, 1797-TB3S	7.5	5.2 W
1797-IE8H	8 single-ended, HART	—	0...20 mA 4...20 mA	1797-TB3 or -TB3S	7.5	5.2 W
1797-IE8NF	8 single-ended, noise filter	—	0…20 mA	1797-TB3, 1797-TB3S	7.5	5.2 W
1797-IRT8	8 single-ended, thermocouple or RTD	—	0…500Ω -40…100 mV TC RTD	1797-TB3, 1797-TB3S	1.6	1.6 W
1797-OE8	—	8 single-ended	—	1797-TB3, 1797-TB3S	6.3	5.4 W
1797-OE8H	—	8 single-ended, HART	—	1797-TB3 or -TB3S	6.3	5.4 W

1797 FLEX Ex Counter I/O Modules

Cat. No.	Number of Inputs	Number of Outputs	Input Frequency, Max.	Terminal Base Unit	Power Consumption (W) at 24V	Power Dissipation, Max.
1797-IJ2	2 channels, each with 2 digital NAMUR inputs	2 channels, each with 1 digital output	1.0 Hz...32,767 Hz	1797-TB3, 1797-TB3S	4.25	4.25 W

Terminal Bases

Terminal bases provide backplane connections to the controller and the I/O module and provide terminal connection points for an I/O module.

1794 FLEX terminal bases

Cat. No.	Number of Terminals	Special Features	Termination Type
1794-TB2	36	—	Cage-clamp
1794-TB3	52	—	Cage-clamp
1794-TB3S	52	—	Spring-clamp
1794-TB3T	52	cold-junction-compensation connections for thermocouple inputs	Cage-clamp
1794-TB3TS	52	cold-junction-compensation connections for thermocouple inputs	Spring-clamp
1794-TB3G	52	individual terminals for use with specific modules	Cage-clamp
1794-TB3GS	52	individual terminals for use with specific modules	Spring-clamp
1794-TB32	52	—	Cage-clamp
1794-TB32S	52	—	Spring-clamp
1794-TBKD	28	16 single-throw, single pole (SPST) knifeswitches	Cage-clamp
1794-TBN	20	cover for terminals	Screw-clamp
1794-TBNF	20	fused connection points for the I/O with cover for terminals	Screw-clamp
1203-FB1	—	required for the 1203-FM1 module	—

1797 FLEX Ex terminal bases

Cat. No.	Number of Terminals	Special Features	Terminal Type
1797-TB3	53	none	screw cage
1797-TB3S	53	none	spring clamp

1794-FLA Extended-Local I/O Adapter

The FlexLogix extended-local adapter lets you connect an additional DIN rail of local I/O to the FlexLogix controller. The extended-local rail can support as many as 8 I/O modules.

Cat. No.	Voltage, On-State Input, Max.	Cable	FLEXBus Current (mA)	Power Consumption, Max.	Power Supply
1794-FLA	19.2V...31.2V dc	1794-CE1 cable (1 ft) 1794-CE3 cable (3 ft)	653 mA	6.5 W (250 mA) maximum from external 24V dc power source	1794-PS3 or 1794-PS13 In applications that must be compliant with CSA requirements, use a Separated Extra-Low Voltage (SELV) power supply that is compliant with IEC 61010.1, Annex H.

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE, C-Tick

1794 Communication Adapter Modules

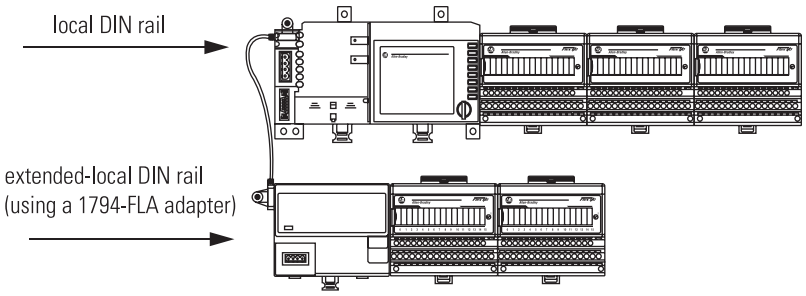
The FlexLogix controller can communicate with these adapter modules to control distributed FLEX I/O modules.

Cat. No.	Description	I/O Module Capacity	Number of I/O Points, Max.	Power Supply 24V Current Load (mA)	Power Consumption (W) at 24V	FLEXBus Current (mA)
1794-ACNR15 1794-ACNR15	FLEX I/O 24V dc ControlNet Media Adapter	8 modules	256	330	7.9 W	640 mA
1794-ADN	FLEX I/O 24V dc DeviceNet Media Adapter	8 modules	256	330	7.9 W	640 mA
1794-AENT	FLEX I/O 24V dc EtherNet/IP Adapter	8 modules	256	450	9.6 W	640 mA

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE, C-Tick

Place FLEX I/O Modules in a FlexLogix System

The FlexLogix controller supports a local DIN rail of as many as 8 I/O modules and an extended-local DIN rail of as many as 8 I/O modules.



When you create a project for a FlexLogix controller, the Controller Organizer for that project automatically displays both the local DIN rail and the extended DIN rail. If you do not use the extended-local DIN rail, inhibit that rail.

You must configure an RPI rate for each DIN rail. This rate applies to the I/O modules you install on the DIN rail.

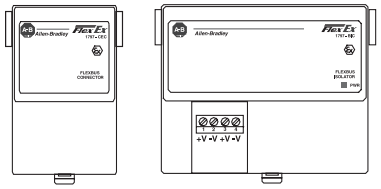
If you have a mix of analog and digital I/O modules, place the digital I/O modules on one DIN rail and place the analog I/O modules on the second DIN rail. You can then configure a faster RPI for the digital I/O and a more appropriate RPI for the analog I/O without impacting the digital I/O.

If you have:	The fastest recommended RPI is:
local rail of digital I/O modules	2 ms
local rail of analog I/O modules	5 ms
local rail of digital and analog I/O modules mixed	5 ms†
extended-local rail of digital I/O modules	5 ms if the local rail is populated 2 ms if the local rail is unpopulated
extended-local rail of analog I/O modules	5 ms
extended-local rail of digital and analog I/O modules mixed	5 ms†

†If the number of I/O modules is small, you can speed up the RPI using this equation: RPI = 2ms + (number of analog I/O modules x 0.5ms)

You can configure faster RPIs than listed above for digital and analog I/O modules, but the result might adversely affect other system performance, such as the serial port.

Isolate FLEX Ex I/O Modules



To maintain the intrinsic safety (IS) isolation of FLEX Ex I/O modules in a FlexLogix system, you must install:

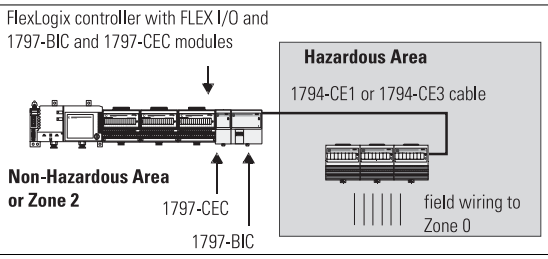
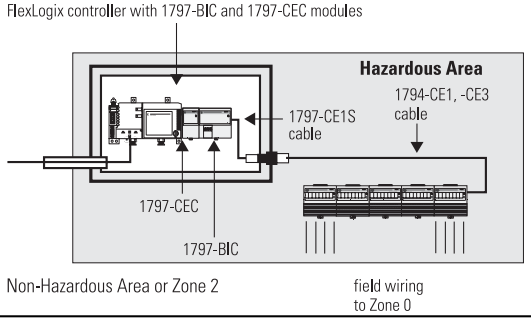
- the FLEX Ex I/O modules only on the local rail
- a 1797-BIC Flexbus isolator module and 1797-CEC connector module between the FlexLogix controller or FLEX I/O modules and the FLEX Ex modules

You can also use a 1797-BCNR ControlNet barrier module to interconnect between ControlNet and ControlNet Ex networks.

Cat. No.	Function	Cable	Power Consumption, Max.	Power Dissipation
1797-BIC	isolate FLEX Ex modules from FlexLogix system	1794-CE1 cable (1 ft) 1794-CE3 cable (3 ft)	0.15 A @ 18…32V dc	2.1 W
1797-CEC	connect FLEX Ex modules to FlexLogix system	—	—	—
1797-BCNR	interconnect ControlNet and ControlNet Ex networks	ControlNet coax	—	—

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE, FM

FLEX Ex system configurations

Application	Configuration
mixing systems in the safe area	
mixing systems in the hazardous area	

How FLEX I/O Modules Operate

The FlexLogix system follows a producer/consumer model for remote I/O. Input modules produce data for the system. Controllers, output modules, and intelligent modules produce and consume data. The producer/consumer model multicasts data. This means that multiple nodes can consume the same data at the same time from a single device.

The controller continually scans the control logic. One scan is the time it takes the controller to execute the logic once. Input data transfers to the controller and output data transfers to output modules asynchronous to the logic scan.

Select Controller Ownership

In a Logix system, modules multicast data. This means that multiple devices can receive the same data at the same time from a single device. When you choose a communication format for an I/O module, you have to choose whether to establish an owner or listen-only relationship with the module.

Relationship	Description
owner controller	The controller that creates the primary configuration and communication connection to a module. The owner controller writes configuration data and can establish a connection to the module.
listen-only connection	An owner provides the configuration data for the I/O module. A controller using a listen-only connection only monitors the module. It does not write configuration data and can only maintain a connection to the I/O module while the owner controller is actively controlling the I/O module.

Because of the distributed nature of a FlexLogix system, the FlexLogix controller must own its local I/O modules. No other Logix controller can listen to or own the local FlexLogix I/O. The FlexLogix controller must produce its local I/O data for any other controller to consume. The listen-only format works for remote I/O only.

Step 2 - Select:

- *networks*
- *communication cards (2 maximum per FlexLogix controller)*
- *associated cable(s) and network equipment*

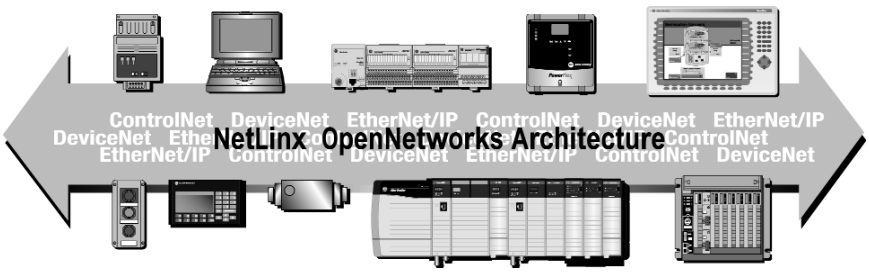
Select Network Communications

Separate communication interface cards are available for different networks. Each controller supports as many as two communication cards, in addition to its built-in port that can be configured for RS-232 serial (DF1 protocol) or DH-485 communications.

NetLinx Open Network Architecture

NetLinx Open Network Architecture is the Rockwell Automation strategy of using open networking technology for seamless, top-floor to shop-floor integration. The NetLinx-based networks – DeviceNet, ControlNet, and EtherNet/IP – all use the Common Industrial Protocol, so they speak a common language and share a universal set of communication services. NetLinx architecture, part of the Integrated Architecture, seamlessly integrates all the components in an automation system from a few devices on one network to multiple devices on multiple networks including access to the Internet – helping you to improve flexibility, reduce installation costs, and increase productivity.

- EtherNet/IP is an open industrial networking standard that supports implicit and explicit messaging and uses commercial, off-the-shelf Ethernet equipment and physical media.
- ControlNet allows intelligent, high-speed control devices to share the information required for supervisory control, work-cell coordination, operator interface, remote device configuration, programming, and troubleshooting.
- DeviceNet offers low-cost, high-speed access to plant-floor data from a broad range of plant-floor devices and a significant reduction in wiring.



Select a network

You can configure your system for information exchange between a range of devices and computing platforms and operating systems.

If your application requires:	Use this network:	Select:
• plant management (material handling) • configuration, data collection, and control on a single, high-speed network • time-critical applications with no established schedule • data sent regularly • Internet/Intranet connection	EtherNet/IP network	1788-ENBT
• high-speed transfer of time-critical data between controllers and I/O devices • deterministic and repeatable data delivery • intrinsic safety	ControlNet network	1788-CNC, -CNCR 1788-CNF, -CNFR
• connections of low-level devices directly to plant floor controllers, without interfacing them through I/O modules • data sent as needed • more diagnostics for improved data collection and fault detection • less wiring and reduced start-up time than a traditional, hard-wired system	DeviceNet network	1788-DNBO
• modems • supervisory control and data acquisition (SCADA)	serial network	built-in serial port
• connections to existing DH-485 networks	DH-485 network	built-in serial port with a 1761-NET-AIC

The FlexLogix system is designed to control distributed applications, not bridge data across networks. The FlexLogix controller supports only one connected and one unconnected message to a device on another NetLinx network.

Over the serial port, the FlexLogix controller supports 12 message buffers. At most, you can have 4 simultaneous connected messages and 8 simultaneous unconnected messages. Or if all the messages are unconnected, you can have 12 simultaneous messages. If a message is greater than 250 bytes, it is divided across enough buffers to carry the message, which reduces the number of buffers remaining for other simultaneous messages.

EtherNet/IP Network

Ethernet Industrial Protocol (EtherNet/IP) is an open industrial networking standard that supports both real-time I/O messaging and message exchange. It emerged due to the high demand for using the Ethernet network for control applications. EtherNet/IP uses off-the-shelf Ethernet communication chips and physical media.

EtherNet/IP product capability

	Recipient								
Originator	**EtherNet/IP PLC-5 or SLC 5/05 processor**	**PLC-5 processor via 1785-ENET**	**Logix5000 controller✞**	**1756-ENBT module✞**	**1794-AENT FLEX I/O adapter**	**1734-AENT POINT I/O adapter**	**PanelView EtherNet/IP terminal**	**RSLinx software**	**CompactLogix controller with 1761-NET-ENI interface**
EtherNet/IP PLC-5 or SLC 5/05 processor	information	information	information	na	not supported	not supported	information	information	information
PLC-5 processor via 1785-ENET	information	information	information	na	not supported	not supported	information	information	information
Logix controller✞	information	information	information I/O data interlocking	I/O data	I/O data	I/O data	information I/O data	information	information
PanelView EtherNet/IP terminal	information	information	information I/O data	na	na	na	na	na	information
RSLinx software	information	information	information	na	not supported	not supported	na	information	information
CompactLogix controller with 1761-NET-ENI interface❄	information	information	information	na	not supported	not supported	information	information	information

✞ For EtherNet/IP control:
- a ControlLogix controller requires a 1756-ENBT or 1756-ENET series B module
- a FlexLogix controller requires a 1788-ENBT card
- a CompactLogix controller must be a 1769-L32E or 1769-L35E controller
- the PC for a SoftLogix5800 controller requires appropriate hardware for Ethernet communications

❄To be an originator, the 1761-NET-ENI interface must connect to the other device through that device's RS-232 port.

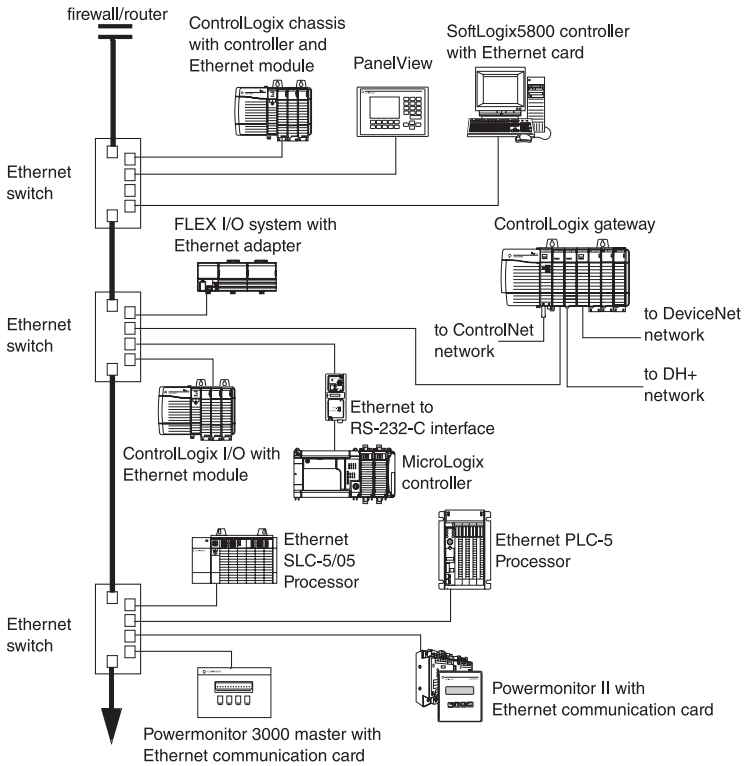
Select an EtherNet/IP interface

Select the appropriate Ethernet interface:

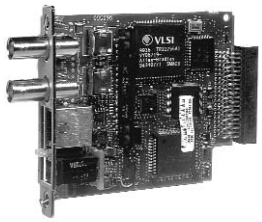
If your application does this:	Select this interface:	Description:
• controls I/O modules • requires an adapter for disibuted I/O on EtherNet/IP links • communicates with other EtherNet/IP devices (messages) • bridges EtherNet/IP links to route messages to devices on other networks	1788-ENBT	The EtherNet/IP communication module: • control I/O over an EtherNet/IP network • acts as an adapter for disitributed I/O on remote EtherNet/IP links • bridge EtherNet/IP links to route messages to devices on other networks

Cat. No.	Communication Rate	Connections	EtherNet/IP Cable	Power Dissipation, Max.	Backplane Current (mA) at 5V①
1788-ENBT	10/100 Mbps	32 connections per card (any mix of I/O and messaging) 4000 messages/second max. (limit 21 connections if maximum size of 126 DINTs used)	Twisted pair RJ-45	2.4 W	465 mA❄

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE, C-Tick
①To comply with UL restrictions, this equipment must be powered from a source compliant with Class 2 or Limited Voltage/Current, as defined in UL 508 Seventeenth Edition Section 32.



ControlNet Network

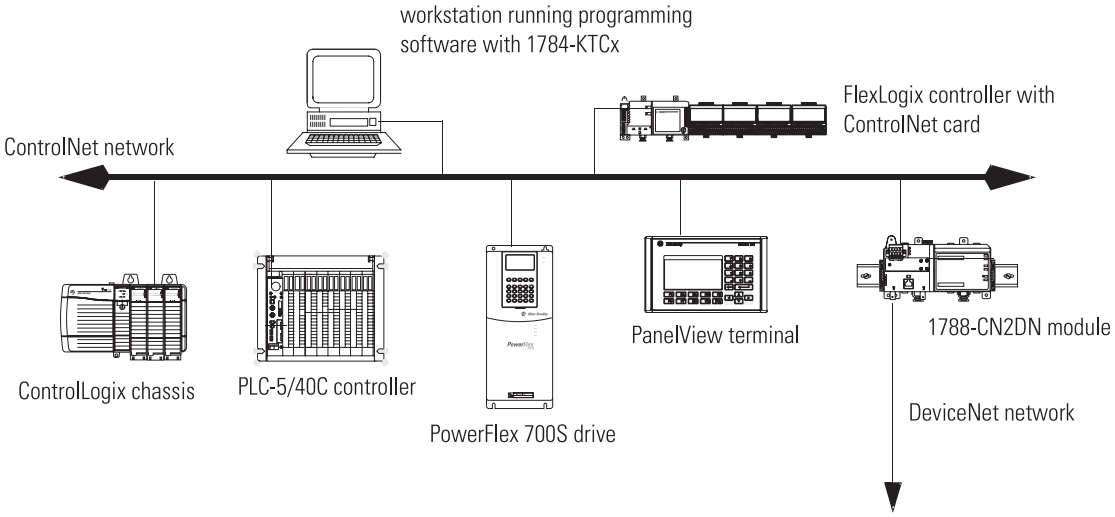


The ControlNet network is an open, state-of-the-art control network that meets the demands of real-time, high-throughput applications. The ControlNet network uses the proven Common Industrial Protocol (CIP) to combine the functionality of an I/O network and a peer-to-peer network providing high-speed performance for both functions.

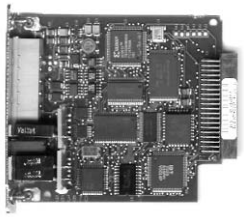
The ControlNet network gives you deterministic, repeatable transfers of all mission-critical control data in addition to supporting transfers of non-time-critical data. I/O updates and controller-to-controller interlocking always take precedence over program uploads and downloads and messaging.

Cat. No.	Communication Rate	Connections	Cable	Power Dissipation, Max.	Backplane Current (mA) at 5V
1788-CNC	5 Mbps	32 connections (depending on the RPI, as many as 22 connections can be scheduled) The remaining connections (or all 32, if you have no scheduled connections) can be used for unscheduled connections 1490 messages/second maximum	RG-6 coaxial cable 1786-RG6 (quad shield cable) 1786-RG6F (quad shield high flex coax cable) Choose taps: • 1786-TPR (T-tap right angle) • 1786-TPS (T-tap straight) • 1786-TPYR (Y-tap right angle) • 1786-TPYS (T-tap straight) • 1786-TCT2BD1 (IP67 tap)	2.25 W	450 mA
1788-CNCR (redundant media)				2.38 W	475 mA
1788-CNF			200/300 micron HCS (hard-clad silica) fiber optic cable Versalink V-system Choose a preterminated 200 micron HCS cable segment: • 1786-FS10 (10m) • 1786-FS20 (20m) • 1786-FS60 (60m) • 1786-FS100 (100m) • 1786-FS200 (200m) • 1786-FS300 (300m) Fiber media requires 1786-RPA and 1786-RPFS to convert fiber media back to coax.	2.20 W	440 mA
1788-CNFR (redundant media)				2.25 W	450 mA

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), UR, CE, C-Tick



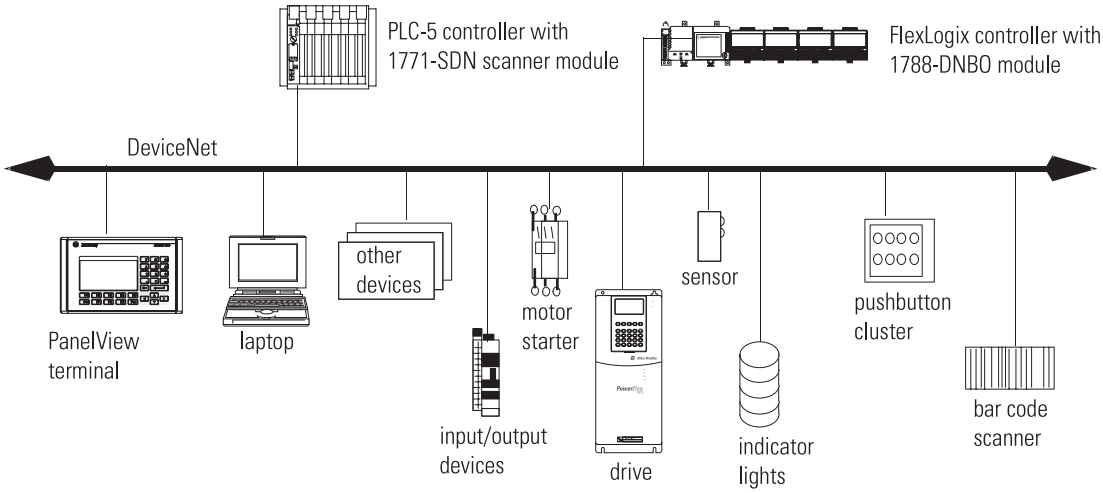
DeviceNet Network



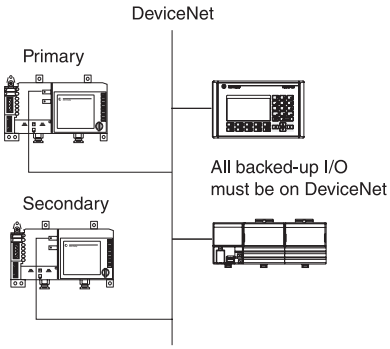
The DeviceNet network is an open low-level network that provides connections between simple industrial devices (such as sensors and actuators) and higher-level devices (such as PLC controllers and computers). The DeviceNet network uses the proven Common Industrial Protocol (CIP) to provide the control, configure, and data collection capabilities for industrial devices. The DeviceNet network is a flexible network that works with devices from multiple vendors.

Cat. No.	Communication Rate	Connections	Cable	Power Dissipation, Max.	Backplane Current (mA) at 5V
1788-DNBO	• 125 Kbps • 250 Kbps • 500 Kbps	requires 2 connections to a dedicated controller (for status and I/O)	5-pin DeviceNet cable provided with the card	1.3 W	450 mA

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE, FM, C-Tick



FlexLogix backup via DeviceNet



FlexLogix backup relies on the ability to have shared DeviceNet mastership of slave I/O devices. The heartbeat communications between the primary and secondary controllers determines which 1788-DNBO scanner is the master and which scanner is in standby.

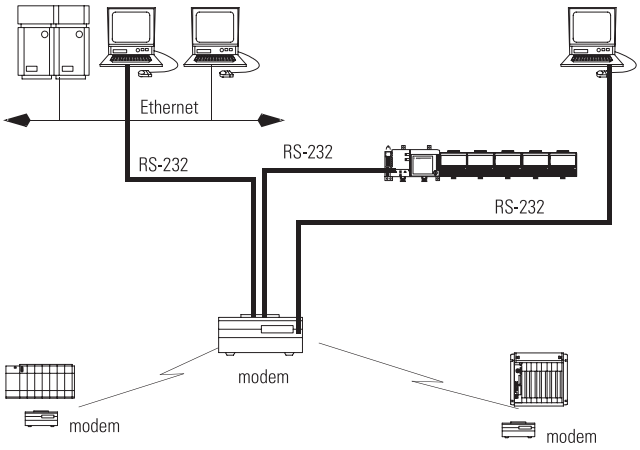
Requires:

- RSLogix 5000 software must be at version 10 or higher and FlexLogix firmware must be at revision 10 or higher.
- The primary controller and the secondary controller each need their own 1788-DNBO scanner. The 178-DNBO firmware must be at revision 2.x or higher.
- The DeviceNet network should be set up with both the primary and secondary 1788-DNBO node addresses set to 0.
- All the I/O and operator interface devices that require backup must be on DeviceNet.

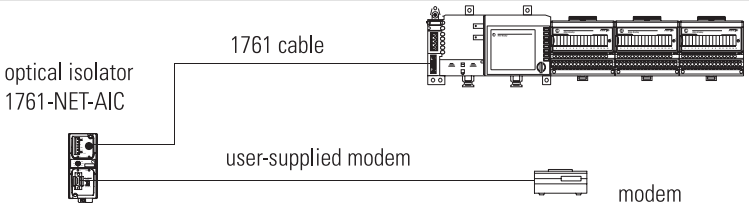
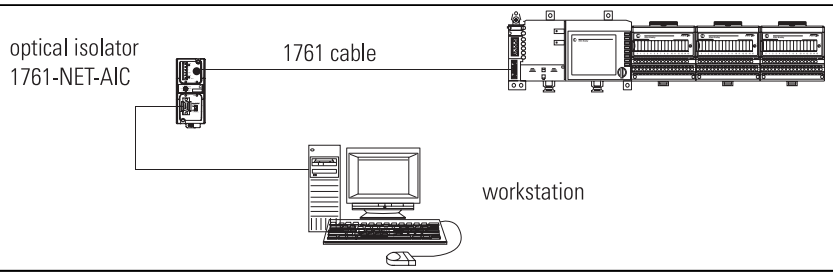
Serial Network

The serial port is compatible with RS-232 serial communication. The serial port supports the DF1 protocol to communicate with other devices on the serial link. You can select:

Use this DF1 mode:	For:
point to point	communication between a controller and other DF1-compatible devices using DF1 full-duplex protocol
DF1 master	control of polling and message transmission between the master and each slave using DF1 half-duplex polled protocol
DF1 slave	using the controller as a slave station in a master/slave serial network using DF1 half-duplex protocol
user mode (ASCII)	communication between a controller and an ASCII device, such as a bar code reader



The FlexLogix controller is grounded through its DIN rail and its grounding stud. An isolator is recommended between the controller and the workstation.

Application	Example Configuration
If you connect the controller to a modem or an ASCII device, install the optical isolator between the controller and end device.	
An optical isolator is recommended if you use the serial port to directly connect a programming workstation to the controller.	

Modbus support

To use Logix5000 controllers on Modbus, you connect through the serial port and execute a specific ladder logic routine. The controller project is available with RSLogix 5000 Enterprise programming software. For more information, see *Using Logix5000 Controllers as Masters or Slaves on Modbus Application Solution*, publication CIG-AP129.

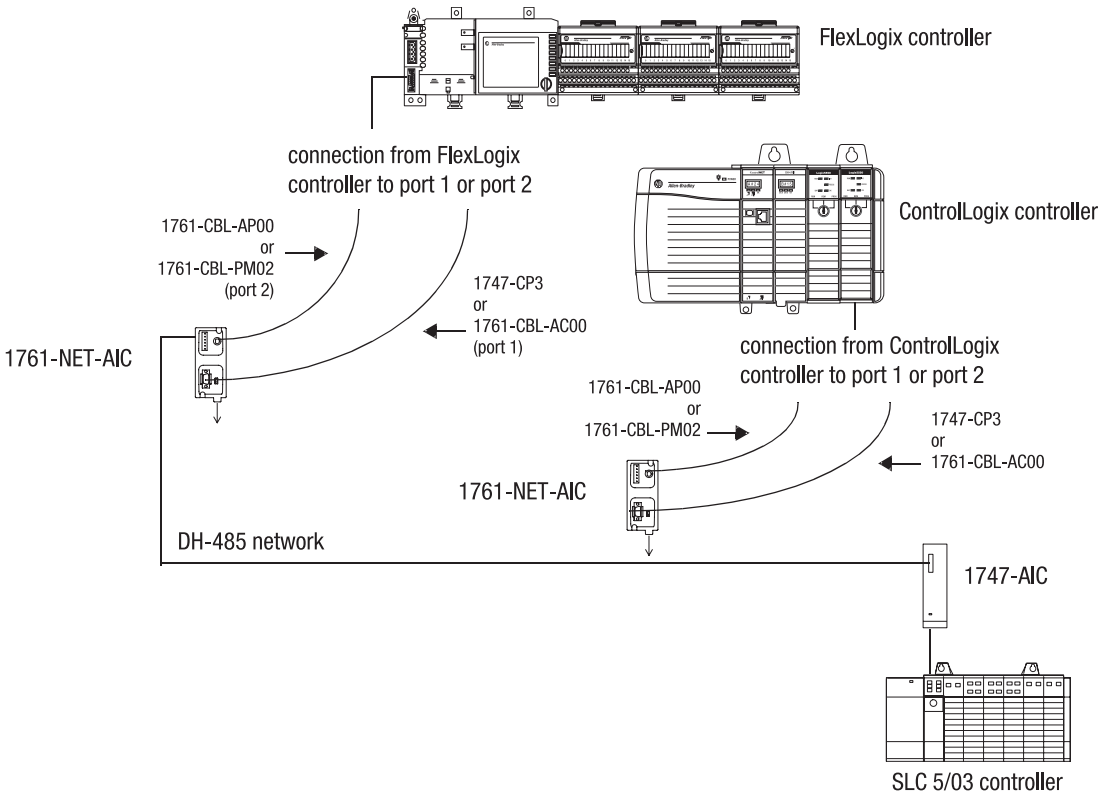
DH-485 Network

On the DH-485 network, the controller can send and receive messages to and from other controllers on the network. The DH-485 connection does support remote programming and monitoring via RSLogix 5000 software. However, excessive traffic over a DH-485 connection can adversely affect overall performance and can lead to timeouts and loss in RSLogix 5000 configuration performance.

Important: Only use Logix5000 controllers on DH-485 networks when you want to add controllers to an existing DH-485 network. For new applications with Logix5000 controllers, networks in the NetLinx architecture are the recommended networks.

You need a 1761-NET-AIC+ converter for each controller you want to put on the DH-485 network. You can have two controllers per one 1761-NET-AIC+ converter, but you need a different cable for each controller. Connect one controller to port 1 (9-pin connector) and one controller to port 2 (mini-DIN connector).

If you connect to this port:	Use this cable:
port 1 DB-9 RS-232, DTE connection	1747-CP3 or 1761-CBL-AC00
port 2 mini-DIN 8 RS-232 connection	1761-CBL-AP00 or 1761-CBL-PM02



Step 3 - Select:

- *a controller with sufficient memory*
- *replacement batteries*

Select Controllers

FlexLogix controllers can monitor and control I/O across the 1794 backplane, as well as over I/O links. FlexLogix controllers can communicate with computers or other processors across RS-232-C (DF1/DH-485 protocol), DeviceNet, ControlNet, and EtherNet/IP networks. To provide communication for a FlexLogix controller, install the appropriate communication interface module into the controller.

The multi-tasking operating system supports 8 configurable tasks that can be prioritized. One task can be continuous. The others must be periodic or event tasks. Each task can have as many as 32 programs, each with its own local data and logic, allowing virtual machines to operate independently within the same controller.

Specification	Description
FlexBus Output Current @ 5V dc	653 mA
Power Supply	1794-PS3 or 1794-PS13 In applications that must be compliant with CSA requirements, use a Separated Extra-Low Voltage (SELV) power supply that is compliant with IEC 610101, Annex H.
Battery	1756-BA1 (94194801) - comes with the controller
Programming Cable	1761-CBLPM02 to 1761-NET-AIC isolator 1761-CBLPA00 to 1761-NET-AIC isolator 1756-CP3 directly to controller 1747-CP3 directly to controller
Extended-Local I/O Cable	1794-CE1 cable (1 ft) 1794-CE3 cable (3 ft)

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE

FlexLogix Controllers

Cat. No.	User Memory✞		Power Dissipation, Max.	Thermal Dissipation, Max.	Backplane Current (mA) at 5V
	Battery-Backed Static RAM	Nonvolatile Memory			
1794-L34	512 Kbytes	512 Kbytes❄	3.5 W	11.6 BTU/hr	1.2 A

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE
✞Available user memory is the amount of memory available to the user after RSLogix 5000 Enterprise Series software is connected and a null program is loaded.
❄Must have a series B controller with firmware revision 11 or greater.

Determine Memory Requirements

The following equations provide an estimate of the memory needed for a controller. These numbers are rough estimates.

Controller tasks	_____ * 4000	=	_____ bytes (minimum 1 task)
Digital I/O points	_____ * 400	=	_____ bytes
Analog I/O points	_____ * 2600	=	_____ bytes
Communication cards✞	_____ * 5000	=	_____ bytes

✞When estimating memory use by communication modules, count all the communication modules in the system, not just those in the local chassis. This includes device connection modules, adapter modules, and ports on PanelView terminals.

Control Devices

The FlexLogix controller can control these devices:

I/O Modules	EtherNet/IP	ControlNet	DeviceNet
1756 ControlLogix	yes	yes	yes
1794 FLEX✞	yes	yes	yes
1797 FLEX Ex	yes‡	yes	yes‡
1734 POINT	yes	yes	yes
1734D POINTBlock	no	no	yes
1769 Compact	no	no	yes
1790 CompactBlock LDX	no	no	yes
1791 Standard Block	no	no	no
1791D CompactBlock	no	no	yes
1792 ArmorBlock	no	no	yes
1792D ArmorBlock MaXum	no	no	yes
1798 FLEX Armor	no	no	yes
1799 Embedded	no	no	yes
1746	no	no	no
1771	no	yes§	no

✞As of revision 11, you can install the 1794-VHSC module (or any other module that uses extended data transfers) on the local or extended-local DIN rails of a FlexLogix controller. Previous revisions of the controller firmware support these modules only as remote ControlNet I/O.
❄Requires RSLogix 5000 programming software version 11 or greater. Use the generic FLEX profile.
‡Install a 1797-BIC and 1797-CEC module pair to isolate the FLEX Ex modules from the non-intrinsically safe portion of the FlexLogix system.
§Use a 1771-ACN15, -ACNR15 adapter module. Version 10 and later of RSLogix 5000 Enterprise Series software supports 1771 digital, analog, and specialty I/O modules. Previous versions of the software support only 1771 digital I/O modules.

Display Devices	EtherNet/IP	ControlNet	DeviceNet	RS-232 (DF1)	DH-485
2711P PanelView Plus terminal	yes	yes	yes	yes	yes
6182H VersaView CE computer	yes	yes	yes	yes	yes
2711 PanelView terminal	yes	yes	yes	yes✞	yes✞
2711 e PanelView terminal	no	yes	no	no	no
2705 RediSTATION/RediPANEL operator module	no	no	yes	no	no
2706 InView message display	yes	yes	yes	yes	yes
2706 DL40 Dataliner message display	no	no	no	yes	no
2706 DL, DL50 DataLiner message display	no	no	no	yes	no
2707 DTAM Plus operator interface	no	no	yes	yes✞	yes✞

✞Use PLC/SLC mapping.

Communicate with Other Controllers and Communication Devices

The FlexLogix system takes advantage of several networks to allow communications with many different controllers and devices.

Controller	EtherNet/IP	ControlNet	DeviceNet	RS-232 (DF1)	DH-485
1756 ControlLogix	yes	yes	yes	yes	yes
1769 CompactLogix	yes	no	yes	yes	yes
1789 SoftLogix5800	yes	yes	yes	yes	no
1794 FlexLogix	yes	yes	yes	yes	yes
5720 PowerFlex 700S DriveLogix	yes	yes	yes	yes	no
1785 PLC-5	yes✞❄	yes	yes‡	yes	na
1747 SLC	yes§	yes	yes‡	yes	yes
1761 MicroLogix	yes	no	yes‡	yes	yes
1762 MicroLogix	yes	no	yes‡	yes	yes
1769 MicroLogix	yes	no	yes‡	yes	yes
1772 PLC-2	na	na	na	yes♣	na
1775 PLC-3	na	na	na	yes↗	na
5250 PLC-5/250	na	na	no	yes	na

✞The Ethernet PLC-5 processor must be one of these:
series C, revision N.1 or later
series D, revision E.1 or later
series E, revision D.1 or later
❄The 1785-ENET Ethernet communication interface module must be series A, revision D or later.
‡The PLC-5, SLC, and MicroLogix processors appear as I/O points to the Logix controller. Requires 1761-NET-DNI DeviceNet interface.
§Use a 1747-L55x controller with OS501 or greater.
♣The PLC-2 controller requires a 1771-KG module for serial (DF1) communications.
↗The PLC-3 controller requires a 1775-KA module for serial (DF1) communications.

Communication Device	EtherNet/IP	ControlNet	DeviceNet	RS-232 (DF1)	DH-485
9355 RSLinx software	yes	yes	yes	yes	no
1784-KTC, -KTCx, -KTCx15, -PCIC(S), -PCC	na	yes	na	na	na
1784-PCIDS, -PCD	na	na	yes	na	na
1788-CN2DN	na	yes	yes	na	na
1788-EN2DN	yes	na	yes	na	na
1788-CN2FF	na	yes	na	na	na
1203-CN1 ControlNet module	na	yes✞	na	na	na
1203-FM1/FB1 SCANport	na	yes❄	na	na	na

✞Use the generic module configuration to configure the 1203-CN1 module and a CIP generic MSG instruction to communicate with the module.
❄Use a CIP generic MSG instruction to communicate with the 1203-FM1 SCANport module on a DIN rail that is remote to the controller. The remote DIN rail also requires a 1794-ACN(R)15 ControlNet adapter module.

Program Equipment Phases

The PhaseManager option of RSLogix 5000 software gives you a state model for your equipment. It includes the following components:

- phase to run the state model
- equipment phase instructions for programming the phase
- PHASE data type to link the phase to other equipment and higher-level systems

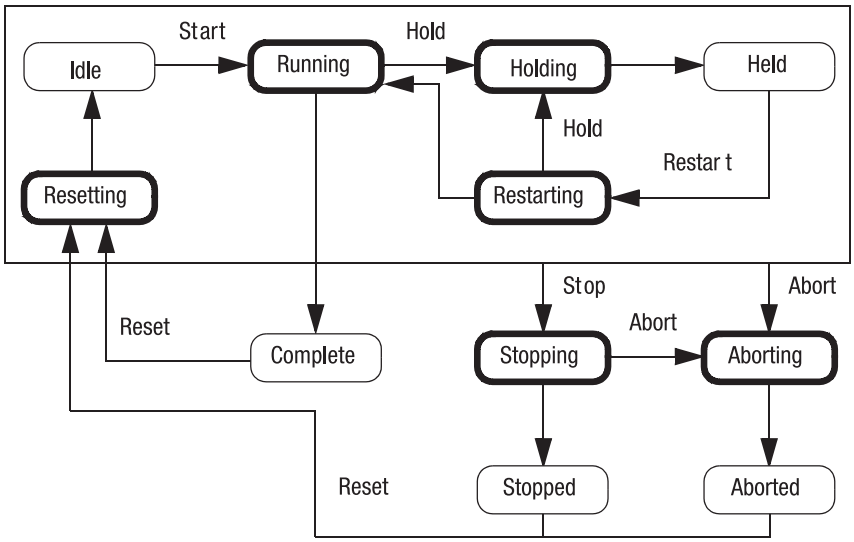
PhaseManager uses the following states:

Acting

Acting states represent the things your equipment does at a given time.

Waiting

Waiting states represent the condition of your equipment when it is in-between acting states.



To develop PhaseManager programs, you need:

- Logix5000 controller with firmware revision 15.0 or later
- communication path to the controller
- RSLogix 5000 software version 15.0 or later

How a Logix System Uses Connections

A Logix system uses a connection to establish a communication link between two devices. Connections can be:

- controller to local I/O modules or local communication modules
- controller to remote I/O or remote communication modules
- controller to remote I/O (rack-optimized) modules
- produced and consumed tags
- messages

You indirectly determine the number of connections the controller uses by configuring the controller to communicate with other devices in the system. Connections are allocations of resources that provide more reliable communications between devices than unconnected messages.

Method	Description
scheduled connection • level of determinism • unique to ControlNet	A scheduled connection is unique to ControlNet communications. A scheduled connection lets you send and receive data repeatedly at a predetermined interval, which is the requested packet interval (RPI). For example, a connection to an I/O module is a scheduled connection because you repeatedly receive data from the module at a specified interval. Other scheduled connections include connections to: • communication devices • produced/consumed tags On a ControlNet network, you must use RSNetWorx for ControlNet to enable all scheduled connections and establish a network update time (NUT).
unscheduled connection • deterministic • used by both ControlNet and EtherNet/IP	An unscheduled connection is a message transfer between controllers that is triggered by the requested packet interval (RPI) or the program (such as a MSG instruction). Unscheduled messaging lets you send and receive data when needed. All EtherNet/IP connections are unscheduled.
unconnected message • least deterministic	An unconnected message is a message that does not require connection resources. An unconnected message is sent as a single request/response.

The communication module you select determines the number of connections you have available for I/O and messages.

This module:	Supports this number of connections:
1788-CNx, -CNxR	32 connections depending on the RPI, as many as 22 connections can be scheduled The remaining connections (or all 32, if you have no scheduled connections) can be used for unscheduled connections
1788-ENBT	32 connections (all 32 connections are unscheduled)

How you configure connections determines how many remote devices a communication card can support. If you have two communication cards, use one for communication and the other for remote I/O. While one card can support both functions, performance can improve by separating these functions onto separate cards.

Determine Connections for Produced and Consumed Tags

The controller supports the ability to produce (broadcast) and consume (receive) system-shared tags over ControlNet or EtherNet/IP networks. Produced and consumed tags each require connections. Over ControlNet, produced and consumed tags are scheduled connections.

This type of tag:	Requires these connections:
produced	A produced tag allows other controllers to consume the tag, which means that a controller can receive the tag data from another controller. The local controller (producing) uses one connection for the produced tag and one connection for each consumer. The controller's communication device uses one connection for each consumer. As you increase the number of controllers that can consume a produced tag, you also reduce the number of connections the controller and communication device have available for other operations, like communications and I/O.
consumed	Each consumed tag requires one connection for the controller that is consuming the tag. The controller's communication device uses one connection for each consumer.

For two controllers to share produced or consumed tags, both controllers must be attached to the same control network (such as a ControlNet or Ethernet/IP network). You cannot bridge produced and consumed tags over two networks.

The total number of tags that can be produced or consumed is limited by the number of available connections.

Determine Connections for Messages

Messages transfer data to other devices, such as other controllers or operator interfaces. Some messages use unscheduled connections to send or receive data. These connected messages can leave the connection open (cache) or close the connection when the message is done transmitting. The following table shows which messages use a connection and whether or not you can cache the connection:

This type of message:	Using this communication method:	Uses a connection:
CIP data table read or write	CIP	✓
PLC-2, PLC-3, PLC-5, or SLC (all types)	CIP	
	CIP with Source ID	
	DH+	✓
CIP generic	CIP	your option†
block-transfer read or write	na	✓

†You can connect CIP generic messages, but for most applications we recommend you leave CIP generic messages unconnected.

Connected messages are unscheduled connections on both ControlNet and EtherNet/IP networks.

Each message uses one connection, regardless of how many devices are in the message path. To conserve connections, you can configure one message to read from or write to multiple devices.

If a message executes repeatedly, cache the connection. This keeps the connection open and optimizes execution time. Opening a connection each time the message executes increases execution time.

If a message executes infrequently, do not cache the connection. This closes the connection upon completion of the message, which frees up that connection for other uses.

Determine Connections for I/O Modules

A Logix system uses connections to transmit I/O data. These connections can be direct connections or rack-optimized connections.

Connection	Description
direct	A direct connection is a real-time, data transfer link between the controller and an I/O module. The controller maintains and monitors the connection between the controller and the I/O module. Any break in the connection, such as a module fault or the removal of a module while under power, causes the controller to set fault status bits in the data area associated with the module. Typically, analog I/O modules and specialty modules require direct connections.
rack-optimized	For digital I/O modules, you can select rack-optimized communication. A rack-optimized connection consolidates connection usage between the controller and all the digital I/O modules on a rack (or DIN rail). Rather than having individual, direct connections for each I/O module, there is one connection for the entire rack (or DIN rail).

Connections for local and extended-local I/O modules

The FlexLogix controller automatically assigns one rack-optimized connection for the local DIN rail and one rack-optimized connection for the extended-local DIN rail. You then configure each I/O module on a DIN rail to either use that rack-optimized connection or to use a direct connection. The rack-optimized connection for each DIN rail exists whether or not you configure the I/O modules to use that rack-optimized connection.

The rack-optimized connection lets you organize all the digital I/O modules on one DIN rail into one connection to the controller. Or you can choose to configure each I/O module to have a direct connection to the controller. Analog I/O modules must have a direct connection to the controller.

It's not as critical to manage the number of connections for local and extended-local I/O modules as it is for remote devices because the controller supports a direct connection for each possible local and extended-local I/O device.

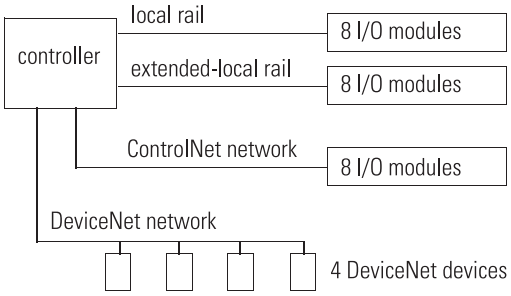
Connections for remote devices

To optimize the number of available connections, place remote, digital I/O in the same location and use a rack-optimized connection to the remote adapter that connects the remote I/O to the FlexLogix system.

If you have remote analog I/O modules, or want a direct connection to specific remote I/O modules, you do not have to create the rack-optimized connection to the remote adapter. To use direct connections to remote I/O, select "none" for the communication format of the remote communication device.

Connections Example

This example system has these details:



- I/O modules on the local rail are digital, so configure each module for a rack-optimized connection
- I/O modules on the extended-local rail are analog, so configure each module for a direct connection
- I/O modules on the ControlNet network are 4 digital and 4 analog, so configure each digital module for a rack-optimized connection and each analog module for a direct connection
- there are no produced or consumed tags
- the controller sends 2 cached CIP read/write messages to other devices on the ControlNet network
- the controller uses 2 connections to the 1788-DNBO module to collect data from the DeviceNet devices

Remote connections example

Connection Type	Device Quantity	Connections per Device	Total Connections
local 1788-CNx, -CNxR ControlNet communication card	1	0	0
remote DeviceNet communication adapter	1	2	2
remote ControlNet communication device configured as a rack-optimized connection	1	1	1
I/O module over ControlNet (direct connection)	4	1	4
I/O module over ControlNet (rack-optimized connection)	4	0	0
cached message	2	1	2
total connections used			9

The total number of remote connections for the ControlNet communication card is 9, which is within the total connections limit of 32. The total number of scheduled connections for I/O data is 5, which is also within the scheduled connections limit of 9. The total number of local connections (to local FLEX I/O and to the communication cards) is within the limits of the FlexLogix controller because the number of modules and communication cards is within the controller limit.

Determine Total Connection Requirements

The total connection requirements for a FlexLogix system include both local and remote connections. Tallying local controller connections is not an issue because the controller supports the maximum number of modules on both the local and extended-local DIN rails. It is important to tally remote connections through a communication card because the communication card you select determines how many remote connections are available for I/O and information. Use the following table to tally **remote** connections for a communication card:

Connection Type	Device Quantity	Connections per Device	Total Connections
remote ControlNet communication device (such as a 1794-ACN15, -ACNR15 or 1756-CNB module) configured as: • direct (none) connection • rack-optimized connection • listen-only rack-optimization (1756-CNB only)		 0 **or** 1 **or** 1	
remote I/O device over ControlNet (direct connection)		1	
remote EtherNet/IP communication device (such as a 1794-AEN adapter or 1756-ENBT module) configured as: • direct (none) connection • rack-optimized connection • listen-only rack-optimization (1756-ENBT only)		 0 **or** 1 **or** 1	
remote I/O device over EtherNet/IP (direct connection)		1	
remote device over DeviceNet (accounted for in rack-optimized connection for local 1788-DNBO module)		0	
produced tag		1	
each consumer		1	
consumed tag		1	
cached message		1	
total connections used			

After calculating the number of remote connections, make sure they do not exceed the limitations of the communication card:

- each ControlNet communication card supports 32 total connections, 22 of which can be scheduled (such as direct I/O connections and produced and consumed tags)
- the Ethernet/IP communication card supports 32 total connections of any type

Even if the total number of connections is within the card limitations, the total number of messages per second must also be within the card limitations. You can estimate the number of messages per second for a connection as (2 * 1000 ms) / RPI.

The communication cards support:

- each ControlNet communication card supports 1490 messages/second
- the EtherNet/IP communication card supports 4000 messages/second

Step 4 - Select:

- *if power consumption exceeds the maximum for a single power supply, install additional power supplies*

Select Power Supplies

In a FlexLogix system, select an Allen-Bradley power supply. In applications that must be compliant with CSA requirements, use a Separated Extra-Low Voltage (SELV) power supply that is compliant with IEC 61010.1, Annex H.

When selecting power supplies:

- Provide power for the controller separately from the power for the FLEX I/O modules. To provide power for FLEX I/O modules, follow the guidelines in the documentation for those modules.
- When providing power for the 1794-FLA extended-local I/O adapter, treat the adapter as a communication adapter, not as an I/O module.

The following power supplies are the Allen-Bradley offerings for the FlexLogix system.

Cat. No.	Input Voltage	Input Power	Apparent Input Power, Max.	Transformer Load, Max.	Output Current, Max.
1794-PS3	120V/220V ac	86 W	205 VA	250 VA	3.0 A
1794-PS13		36 W	53 VA	90 VA	1.3 A

Certifications: UL, CSA (Class I, Division 2, Group A, B, C, D), CE

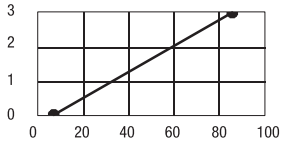
Power requirements and transformer sizing

These graphs display backplane power load.

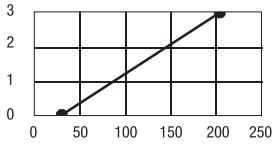
- Use the real power value in watts for determining the amount of heat dissipation you will have inside the enclosure.
- Use the apparent power value in VA for estimating power distribution sizing.
- Use the transformer load value in VA of each power supply plus all other loads on a transformer to determine the required transformer size.

1794-PS3 ac/dc

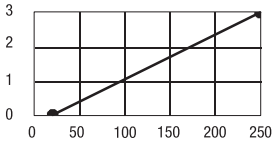
output current load



real power (Watts)



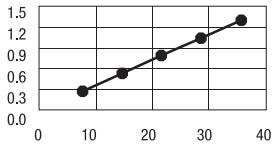
apparent power (Watts)



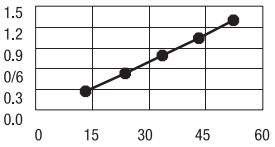
transformer load (VA)

1794-PS13 ac/dc

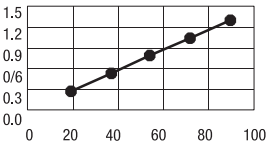
output current load (Amps)



real power (Watts)



apparent power (Watts)



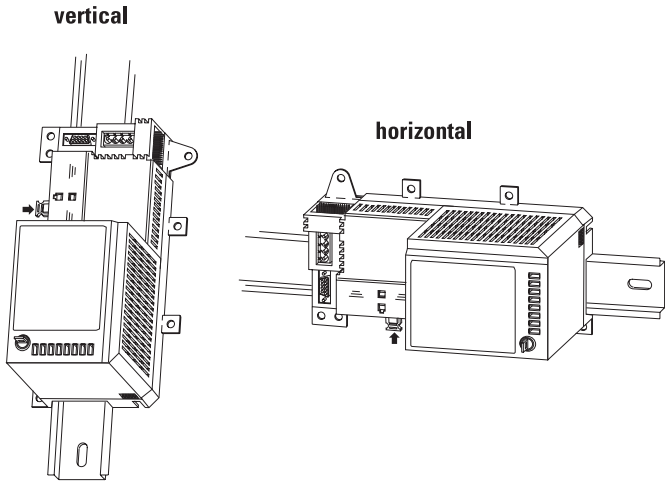
transformer load (VA) = real power (Watts) x 2.5

Step 5 - Select:

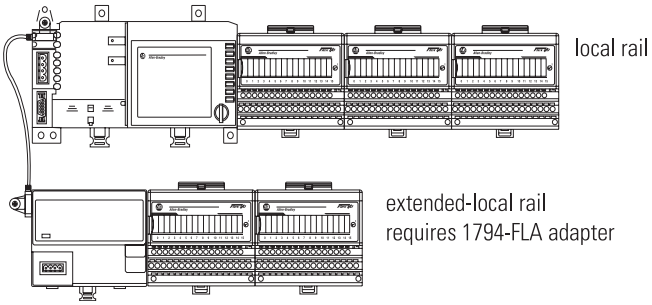
- *based on the number of modules and the physical locations of those modules, determine the quantity and placement of the DIN rails*

Plan the DIN Rails

You can horizontally or vertically mount the FlexLogix system on steel, 35 x 7.55mm DIN rails (A-B part number 199-DR1; 46277-3; EN 50022). The DIN rails for all FlexLogix system components, including all local and extended-local I/O modules, must be mounted on a common, conductive surface to ensure proper electromagnetic interference (EMI) performance.

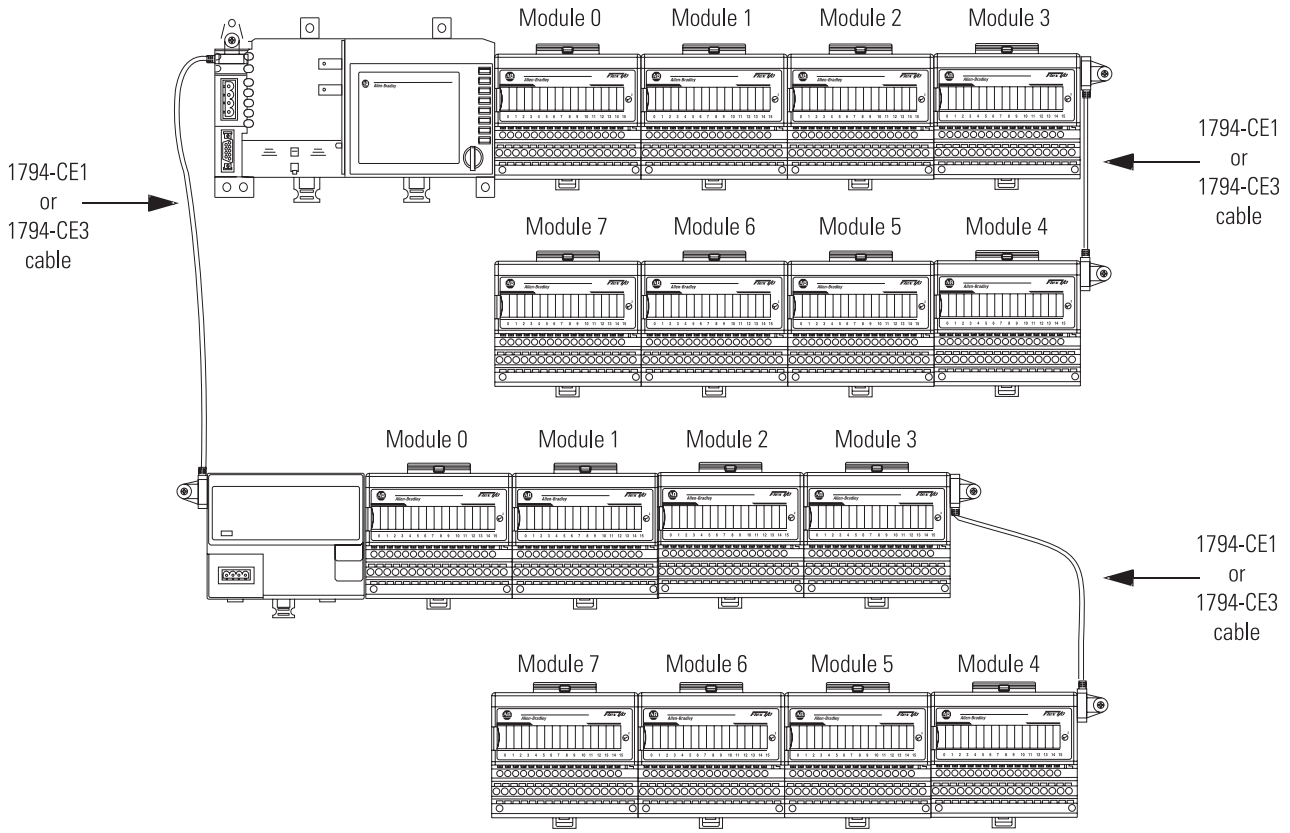


Use the optional 1794-CE1 (0.3m, 1ft) or 1794-CE3 (0.9m, 3ft) extender cable to add an extended-local rail of I/O to the controller. You can have as many as eight I/O modules on the local rail and eight modules on the extended-local rail.



Divide I/O modules across DIN rails

Use the optional 1794-CE1 (0.3m, 1ft) or 1794-CE3 (0.9m, 3ft) extender cable to arrange your system in two rows or split your system into horizontal and vertical orientation. The cable can be used between any module or adapter.



Step 6 - Select:

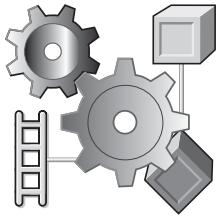
- *the appropriate package of RSLogix 5000 Enterprise Series software and any options*
- *other software packages for your application*

Select Software

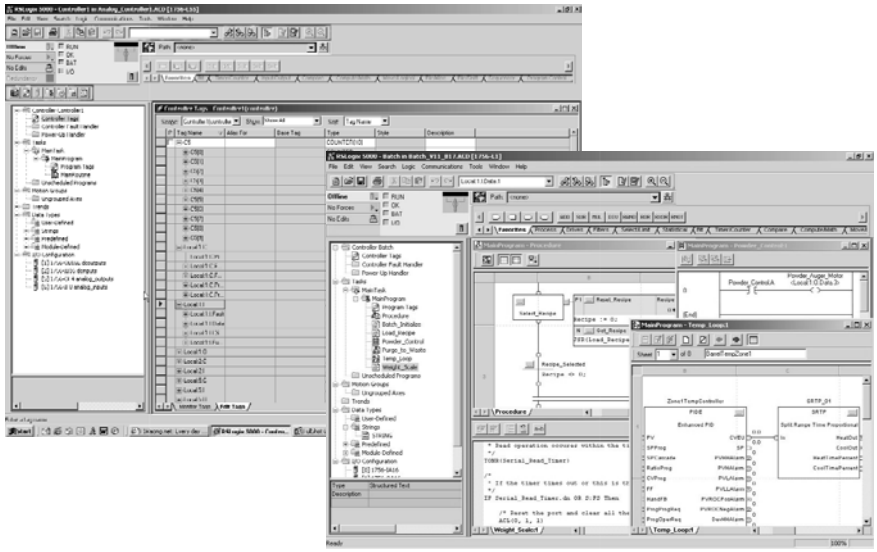
Your selection of modules and network configuration determines what software packages you need to configure and program your system.

If you have a:	You need:	Order this catalog number:
1794 FlexLogix controller	RSLogix 5000 Enterprise Series software	9324 series (RSLogix 5000 Enterprise Series software)
1788-CNx, -CNxR ControlNet communication card	RSNetWorx for ControlNet (comes with the standard/NetWorx option of RSLogix 5000 Enterprise Series software)	9324-RLD300NXENE (RSLogix 5000 Enterprise Series software plus RSNetWorx option) **or** 9357-CNETL3 (RSNetWorx for ControlNet)
1788-DNBO DeviceNet communication card	RSNetWorx for DeviceNet (comes with the standard/NetWorx option of RSLogix 5000 Enterprise Series software)	9324-RLD300NXENE (RSLogix 5000 Enterprise Series software plus RSNetWorx option) **or** 9357-DNETL3 (RSNetWorx for DeviceNet)
1788-ENBT EtherNet/IP communication card (set the IP address)	RSLinx software (RSLinx Lite and Bootp server come with RSLogix 5000 Enterprise Series software) Scheduling software is not required for EtherNet/IP	9324 series (RSLogix 5000 Enterprise Series software)
communication card in a workstation	RSLinx software (RSLinx Lite comes with RSLogix 5000 Enterprise Series software)	9324 series (RSLogix 5000 Enterprise Series software)
Logix-based system you want to emulate	RSLogix Emulate 5000	9310-WED200ENE
operator interface	RSView Enterprise series software	ViewAnyWare products

Programming Software



RSLogix 5000 Enterprise Series software is designed to work with Rockwell Automation's Logix platforms. RSLogix 5000 Enterprise Series software is an IEC 61131-3 compliant software package that offers relay ladder, structured text, function block diagram, and sequential function chart editors for you to develop application programs. RSLogix 5000 Enterprise Series software also includes axis configuration and programming support for motion control.



RSLogix 5000 Enterprise Series software requirements

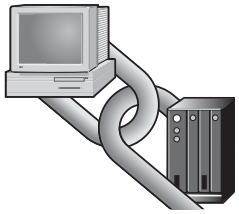
Description	Value
personal computer	Pentium II 450 MHz minimum Pentium III 733 MHz (or better) recommended
software requirements	Supported operating systems: • Microsoft Windows XP Professional version 2002 (with Service Pack 1 or 2) or XP Home version 2002 • Microsoft Windows 2000 Professional with Service Pack 1, 2, or 3 • Microsoft Windows Server 2003
RAM	128 Mbytes of RAM minimum 256 Mbytes of RAM recommended
hard disk space	100 Mbytes of free hard disk space (or more based on application requirements)
video requirements	256-color VGA graphics adapter 800 x 600 minimum resolution (True Color 1024 x 768 recommended)

Select the programming package

Available Features	Service Edition 9324-RLD000xxE✞❄	Mini Edition 9324-RLD200xxE✞	Lite Edition 9324-RLD250xxE✞✦	Standard Edition 9324-RLD300xxE✞	Standard/ NetWorx Edition 9324-RLD300NXxxE✞♣	Full Edition 9324-RLD600xxE✞‡	Professional Edition 9324-RLD700NXxxE✞♣
Logix5000 controllers supported	all	CompactLogix FlexLogix	CompactLogix FlexLogix	all	all	all	all
Relay ladder diagram editor§	view only	fully supported	fully supported	fully supported	fully supported	fully supported	fully supported
Function block diagram editor 9324-RLDFBDENE§	view only	upload/download only editor available separately	fully supported	upload/download only editor available separately	upload/download only editor available separately	fully supported	fully supported
Sequential function chart editor 9324-RLDSFCE§	view only	upload/download only editor available separately	fully supported	upload/download only editor available separately	upload/download only editor available separately	fully supported	fully supported
Structured text editor 9324-RLDSTXE§	view only	upload/download only editor available separately	fully supported	upload/download only editor available separately	upload/download only editor available separately	fully supported	fully supported
PhaseManager 9324-RLDPMENE❖	view only	available separately	available separately	available separately	available separately	included	included
Highly-integrated motion	view only	upload/download only	upload/download only	fully supported	fully supported	fully supported	fully supported
Graphical trending	fully supported	fully supported❖	fully supported❖	fully supported	fully supported	fully supported	fully supported
DriveExecutive™ Lite 9303-4DTE01ENE	available separately	available separately	available separately	included	included	included	included
PIDE autotune 9323-ATUNEENE	available separately	available separately	available separately	available separately	available separately	available separately	included
RSLogix Architect 9326-LGXARCHENE❖	available separately	available separately	available separately	available separately	available separately	available separately	included
RSLogix Emulate 5000 and RSTestStand Lite 9310-WED200ENE	available separately	na	na	available separately	available separately	available separately	included
RSMACC audit support	na	na	na	na	na	na	available separately
Logix CPU security tool	included	included	included	included	included	included	included
Routine source protection tool	included	included	included	included	included	included	included
RSMACC authenticate (security server) client	included	included	included	included	included	included	included
Standalone security server explorer	included	included	included	included	included	included	included
RSLinx	Lite included	Lite included	Lite included	Lite included	Lite included	Lite included	Professional included♣
RSNetWorx for ControlNet RSNetWorx for DeviceNet RSNetWorx for EtherNet/IP↗	available separately	available separately	available separately	available separately	included	available separately	included♣
FBD ActiveX faceplates	included	included	included	included	included	included	included
Tag data upload/download tool	included	included	included	included	included	included	included
RSLogix 5000 project compare tool	included	included	included	included	included	included	included
Tag custom data monitor tool	included	included	included	included	included	included	included
RSView demo (50 tags/2 hours)	available separately	available separately	available separately	available separately	available separately	available separately	included
Upgrades	to Standard: 9324-RLD0U3xxE to Full: 9324-RLD0U6xxE to Professional: 9324-RLD0U7xxE	to Standard: 9324-RLD2U3xxE to Professional: 9324-RLD2U7xxE	to Full: 9324-RLD25U6xxE to Professional: 9324-RLD25U7xxE	to Professional: 9324-RLD3U7xxE to Full: multi-language pack⌘	na	to Professional: 9324-RLD6U7xxE	na

✞Replace "xx" in the catalog number with the appropriate language designation: EN=English, FR=French, DE=German, IT=Italian, PT=Portuguese, and ES=Spanish.
❄As of RSLogix 5000 programming software version 12.
‡As of RSLogix 5000 programming software version 10.02.
§A multiple language editor package is available as 9324-RLDMLPE. It contains the function block, sequential function chart, and structured text editors at a reduced price.
♣To run RSLinx Professional on a PC, the RSLogix 5000 Professional activation key must be installed on the PC's hard drive. RSLinx will start in Lite mode if the RSLogix Professional activation key is installed on a different drive (i.e, floppy drive, or network drive).
↗RSNetWorx for ControlNet is available as 9357-CNETL3. RSNetWorx for DeviceNet is available as 9357-DNETL3. RSNetWorx for EtherNet/IP is available as 9357-ENETL3. They are available together as 9357-ANETL3.
⌘The multiple language editor package (9324-RLDMLPE) is not the same as an upgrade, but it extends the programming languages to match those in a Full package.
✦This package includes two activation keys: one for the Mini Edition (9324-RLD200xxE) and the other for the multiple language editor (9324-RLDMLPE)
❖As of RSLogix 5000 programming software version 15

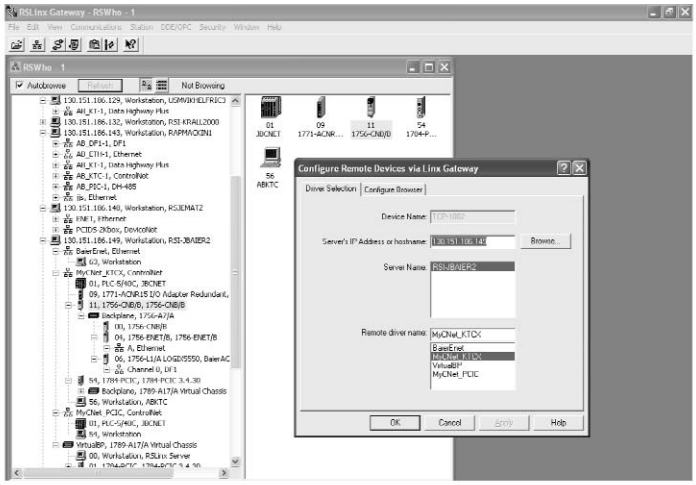
RSLinx Software



RSLinx software (9355 series) is a communication server package that provides plant-floor device connectivity for a wide variety of applications. RSLinx can support multiple software applications simultaneously communicating to a variety of devices on many different networks.

RSLinx provides a user-friendly graphical interface for navigating through your network. Select a device and click to access a variety of integrated configuration and monitoring tools. A complete set of communication drivers is provided for your networking needs, including legacy Allen-Bradley networks.

RSLinx is available in multiple packages to meet the demand for a variety of cost and functionality requirements.

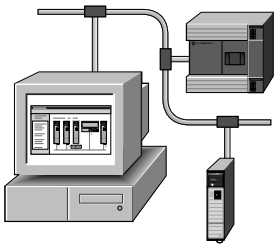


RSLinx system requirements

Description	Value
personal computer	Pentium100 MHz processor (faster processors will improve performance)
operating system	Supported operating systems: • Microsoft Windows XP • Microsoft Windows 2000 • Microsoft Windows NT version 4.0 with Service Pack 3 or greater • Microsoft Windows ME • Microsoft Windows 98
RAM	32 Mbytes of RAM minimum 64 Mbytes or more of RAM recommended
hard disk space	35 Mbytes of free hard disk space (or more based on application requirements)
video requirements	16-color VGA graphics display 800 x 600 or greater resolution

In most cases, RSLinx Lite software comes bundled with controller programming software packages.

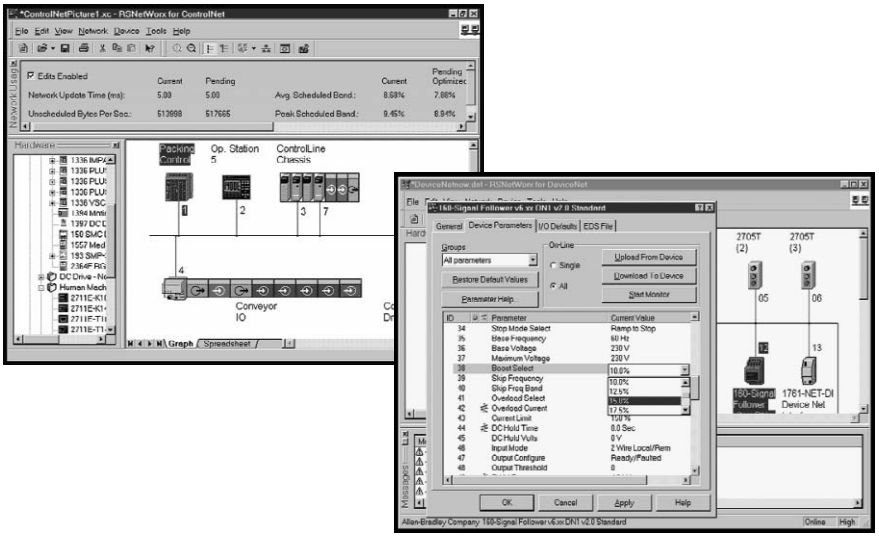
Network Configuration Software



RSNetWorx software is the configuration tool for your control network. With RSNetWorx software you can create a graphical representation of your network configuration and configure the parameters that define your network.

Use RSNetWorx for:

- ControlNet to schedule network components. The software automatically calculates network bandwidth for the entire network, as well as the bandwidth used by each network component. You must have RSNetWorx software to configure and schedule ControlNet networks.
- DeviceNet to configure DeviceNet I/O devices and create a scan list. The DeviceNet scanner stores the configuration information and scan list.
- EtherNet/IP to configure EtherNet/IP devices using IP addresses or host names.



RSNetWorx system requirements

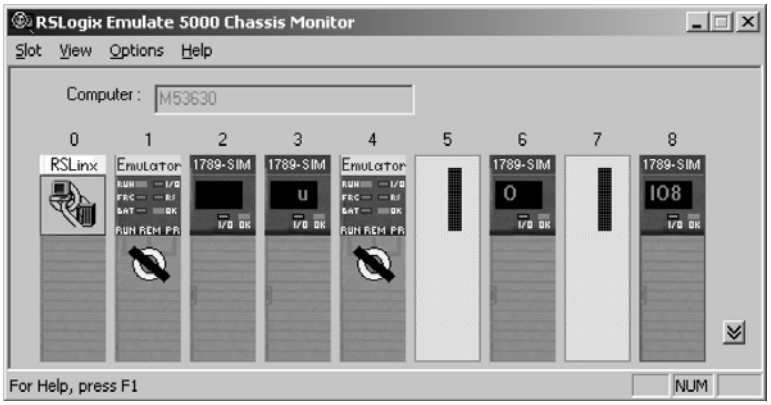
Description	ControlNet	DeviceNet	EtherNet/IP
personal computer	Intel Pentium or Pentium-compatible computer		
operating system	Supported operating systems: • Microsoft Windows XP • Microsoft Windows 2000 • Microsoft Windows 2000 Terminal Server • Microsoft Windows NT version 4.0 with Service Pack 6 or greater • Microsoft Windows ME • Microsoft Windows 98		
RAM	32 Mbytes of RAM minimum more memory is required for large networks		
hard disk space	minimum: 115 Mbytes (includes program files and hardware files) full support: 168...193 Mbytes (includes program files, online help, tutorial, and hardware files)	minimum: 190 Mbytes (includes program files and hardware files) full support: 230...565 Mbytes (includes program files, online help, tutorial, and hardware files)	minimum: 108 Mbytes (includes program files and hardware files) full support: 115...125 Mbytes (includes program files, online help, tutorial, and hardware files)
video requirements	16-color VGA graphics adapter 640 x 480 resolution minimum 800 x 600 resolution recommended		
other	RSLinx Lite 2.4 or later to use RSNetWorx online	RSLinx Lite 2.4 or later to use RSNetWorx online	RSLinx Lite 2.41 or later to use RSNetWorx online

In most cases, RSNetWorx software comes bundled with controller programming software packages.

RSLogix Emulate 5000 Software

RSLogix Emulate 5000 (9310-WED200ENE) is the software emulation package for the Logix5000 controllers. RSLogix Emulate 5000 used in conjunction with RSLogix 5000 software lets you run and debug your application code while at your computer. In addition, RSLogix Emulate 5000 also lets you test HMI screens, developed in RSView for example, without the need to connect to a real controller.

You can set tracepoint and breakpoint instructions (ladder diagram only) in your application code, use traces, and also vary the execution speed of the emulator. RSLogix Emulate 5000 supports all the programming languages (ladder diagram, function block diagram, structured text, and sequential function chart). RSLogix Emulate 5000 does not allow for control of real I/O.



RSLogix Emulate 5000 system requirements

Description	Value
personal computer	IBM-compatible Intel Pentium II 300 MHz or Celeron 300A (Pentium III 600 MHz recommended)
operating system	Supported operating systems: • Microsoft Windows XP with Service Pack 1or greater • Microsoft Windows 2000 with Service Pack 2 or greater • Microsoft Windows NT version 4.0 with Service Pack 6A or greater
RAM	128 Mbytes of RAM minimum
hard disk space	50 Mbytes of free hard disk space
video requirements	16-color VGA graphics display 800 x 600 or greater resolution

RSLogix Emulate 5000 includes RSTestStand Lite. RSTestStand Lite lets you create virtual operator consoles that can help test your application code. RSTestStand Lite can be upgraded to the standard version by ordering catalog number 9310-TSTNDENE.

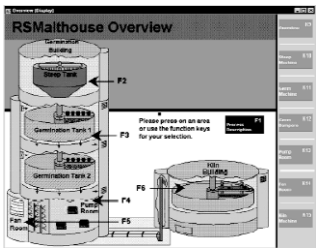
RSLogix Emulate 5000 and RSTestStand Lite are included with the RSLogix 5000 Professional edition.

ViewAnyWare

ViewAnyWare products, together with Logix for control and NetLinx architecture for communication, make up Rockwell Automation's Integrated Architecture strategy. The ViewAnyWare strategy combines Rockwell Automation's expertise in Allen-Bradley electronic operator interface and industrialized PC hardware with Rockwell Software's supervisory control software. Current ViewAnyWare products include:

- RSView Enterprise Series software
- PanelView Plus operator interface
- VersaView industrial computers and monitors
- VersaView CE industrial computer

RSView Enterprise Series software



RSView Enterprise Series from Rockwell Software is a line of HMI software products designed with a common look, feel, and navigation to help speed HMI application development and training time. With RSView Enterprise Series 3.0, you can reference existing Logix data tags. Any changes made to these referenced tags are automatically inherited by RSView. RSView Enterprise Series software includes:

- RSView Studio lets you create applications in a single design environment. It configures Supervisory Edition, Machine Edition, VersaView CE, and PanelView Plus. It supports editing and reusing projects for improved portability between embedded machine and supervisory HMI systems.
- RSView Machine Edition™ (ME) is a machine-level HMI product that supports both open and dedicated operator interface solutions. It provides a consistent operator interface across multiple platforms (including Microsoft Windows CE, Windows 2000/XP, and PanelView Plus solutions), and is ideal for monitoring and controlling individual machines or small processes.
- RSView Supervisory Edition™ (SE) is an HMI software for supervisory-level monitoring and control applications. It has a distributed and scalable architecture that supports distributed-server/multi-user applications. This highly scalable architecture can be applied to a stand-alone, one-server/one-user application or to multiple users interfacing with multiple servers.

RSView Enterprise Series Product Line	Cat. No.	Description
RSView Studio	9701-VWSTENE	RSView Studio for RSView Enterprise Series
	9701-VWSTMENE	RSView Studio for Machine Edition
RSView Machine Edition	9701-VWMR015AENE	RSView ME Station runtime for Windows 2000, 15 displays
	9701-VWMR030AENE	RSView ME Station runtime for Windows 2000, 30 displays
	9701-VWMR075AENE	RSView ME Station runtime for Windows 2000, 75 displays
RSView Supervisory Edition	9701-VWSCWAENE	RSView SE client
	9701-VWSCRAENE	RSView SE view client
	9701-VWSS025AENE	RSView SE server 25 displays
	9701-VWSS100AENE	RSView SE server 100 displays
	9701-VWSS250AENE	RSView SE server 250 displays
	9701-VWSS000AENE	RSView SE server unlimited display
	9701-VWB025AENE	RSView SE station 25 displays
	9701-VWB100AENE	RSView SE station 100 displays
	9701-VWB250AENE	RSView SE station 250 displays
	9701-VWSB000AENE	RSView SE station unlimited display

PanelView Plus operator interface

PanelView Plus is ideal for applications with a need to monitor, control, and display information graphically, allowing operators to quickly understand the status of their application. PanelView Plus is programmed with RSView Studio and has embedded RSView Machine Edition functionality. It combines the best features from the popular Allen-Bradley PanelView Standard and PanelView "e" operator interface products and adds new functionality including:

- multi-vendor communications
- trending
- expressions
- data logging
- animation
- RSView Studio direct browsing of RSLogix 5000 addresses

VersaView industrial computers and monitors

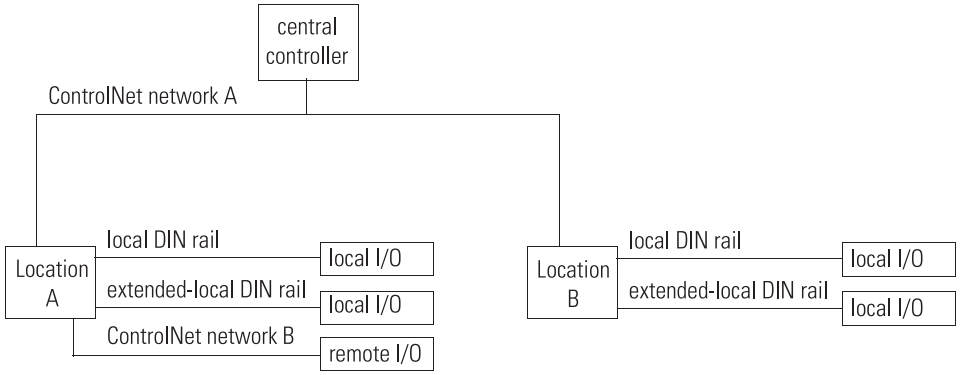
VersaView is a family of industrial computer and monitor solutions, comprised of integrated display computers, workstations, non-display computers and flat panel monitors. VersaView products offer effortless management of changing technology, a rugged but cost-effective design, and easier product configuration. All VersaView products provide the latest industrial solution available, optimized for visualization, control, information processing, and maintenance application.

VersaView CE industrial computers

VersaView CE is an open Windows CE terminal with a Windows desktop environment - bringing together features of operator interfaces and industrial computers. It is a high performance computer with a compact flash drive and integrated RSView Machine Edition runtime (no activation required). There's no hard disk, no fan, and no moving parts, which means maximum reliability on the plant floor. Easy to set up and maintain, VersaView CE means an open system that's rugged and economical, offering high functionality in an easy to use package.

Summary

Use a spreadsheet to record the amount and type of devices your FlexLogix system needs. For example, the requirements for Location A in this sample system:



could result in this spreadsheet:

Device	Location	Number of Points Needed	Cat. No.	I/O Points per Module	Number of Modules
120V ac digital inputs	A	48	1794-IA8	8	6
120V ac digital outputs	A	25	1794-OA8	8	4
24V dc digital inputs	A	43	1794-IB16	16	3
24V dc digital outputs	A	15	1794-OB16	16	1
contact digital outputs	A	5	1794-OW8	8	1
4-20mA analog inputs	A	6	1794-IF4I	4	2
0-10V dc analog inputs	A	2	1794-IF4I	4	0 (can use remaining points on above module)
4-20mA analog outputs	A	4	1794-OF4I	4	1
FlexLogix extended-local adapter	A	na	1794-FLA	na	1
ControlNet communication card	A	na	1788-CNC	na	2
Location A subtotal					21

As you select devices for your FlexLogix system, keep in mind:

✓	Step		Remember to Select
	1	**Select I/O devices**	• I/O modules • terminal bases for FLEX and FLEX Ex I/O modules • extender cables • 1794-FLA adapter for an extended-local rail, if needed • 1797-BIC and 1797-CEC if using FLEX Ex I/O modules
	2	**Select communication cards**	• networks • communication cards (2 maximum per FlexLogix controller) • associated cable(s) and network equipment
	3	**Select controllers**	• a controller with sufficient memory • replacement batteries - the controller comes with one 1756-BA1 battery
	4	**Select power supplies**	• a power supply with sufficient power for the modules you need, with room to spare for additional growth • in applications that must be comply CSA requirements, use a Separated Extra-Low Voltage (SELV) power supply that is compliant with IEC 61010.1, Annex H
	5	**Determine the number of DIN rails**	• depending on the number of modules, determine the quantity and placement of DIN rails • use steel, 35 x 7.55mm DIN rails (A-B part number 199-DR1; 46277-3; EN 50022)
	6	**Select software**	• the appropriate package of RSLogix 5000 Enterprise Series software and any options • other software packages for your application

As you determine placement of the modules you selected, use the worksheet on the inside of the back cover to record your choices. Make a copy of this worksheet for each controller.

Notes:

Notes:

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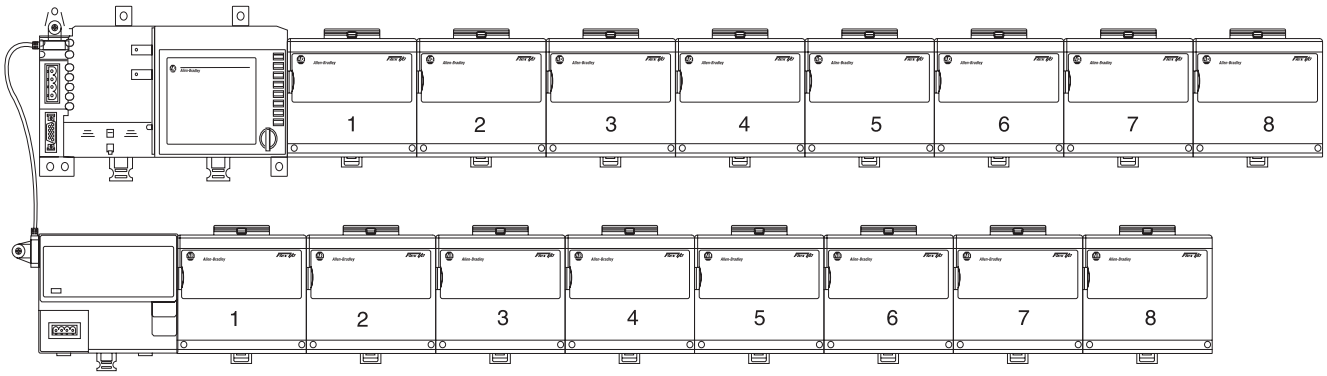

Local rail:	I/O module catalog number:	FlexBus current:	Module power (watts):
1			
2			
3			
4			
5			
6			
7			
8			
	totals:		
Extended-local rail:	I/O module catalog number:	FlexBus current:	Module power (watts):
1			
2			
3			
4			
5			
6			
7			
8			
	totals:		

Use the total FLEXBus current to ensure a given system is within the maximum limits. The FLEXBus currents for Rockwell Automation FLEX modules are listed in the module specifications through this document. Use the total module power to determine enclosure requirements.

www.rockwellautomation.com

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