

## Compatibility

## Control Distributed I/O Modules

The CompactLogix controllers can control these distributed I/O modules.

I/O Modules	1768-ENBT 1769-L32E, 1769-L35E EtherNet/IP*	1768-CNB, 1768-CNBR 1769-L32X, 1769-L35CR ControlNet	1769-SDN DeviceNet*
1732 ArmorBlock	Yes	No	Yes
1734 POINT	Yes	Yes	Yes
1734D POINTBlock	Yes	Yes	Yes
1746 SLC	No	No	No
1756 ControlLogix	Yes	Yes	Yes
1769 Compact I/O	No	No	Yes
1771 PLC-5	No	No	No
1790 CompactBlock LDX	No	No	Yes
1791D CompactBlock	No	No	Yes
1792D ArmorBlock MaXum	No	No	Yes
1794 FLEX I/O	Yes	Yes	Yes
1797 FLEX Ex†	Yes	Yes	No
1798 FLEX Armor	No	No	Yes
1799 Embedded	No	No	Yes

\*A non-EtherNet/IP CompactLogix controller requires a 1761-NET-ENI interface to connect to an EtherNet/IP network. This interface is only a messaging bridge.

\*To control I/O, use a 1769-SDN scanner to connect the controller to the DeviceNet network.

†Insert a 1797-BIC and 1797-CEC module pair to isolate the FLEX Ex I/O modules from the non-intrinsically safe portion of the system.

## Communicate with Display Devices

The CompactLogix controllers can communicate with these display devices.

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	No	No	No	No
800E, 800T RediSTATION/RediPA NEL 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†

\*A non-EtherNet/IP CompactLogix controller requires a 1761-NET-ENI interface to connect to an EtherNet/IP network. This interface is only a messaging bridge.

\*For DeviceNet access, use either a 1769-SDN scanner (control I/O and send/receive messages) or a 1761-NET-DNI interface (messaging bridge).

†Use PLC/SLC mapping.

## Communicate with Other Controllers

The CompactLogix controllers can communicate with these controllers.

Controller	EtherNet/IP*	ControlNet	DeviceNet*	RS-232 (DF1)	DH-485
1756 ControlLogix 1756 GuardLogix	Yes	Yes	Yes	Yes	Yes
1768 CompactLogix	Yes	Yes	Yes	Yes	Yes
1769 CompactLogix	Yes	Yes	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
1764 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	No	No	NA	Yes	NA

\*A non-EtherNet/IP controller requires a 1761-NET-ENI interface to connect to an EtherNet/IP network. This interface is only a messaging bridge.

‡In the CompactLogix system, use either a 1769-SDN scanner (control I/O and send/receive messages) or a 1761-NET-DNI interface (messaging bridge).

†The Ethernet PLC-5 processor must be series C, firmware revision N.1 or later; series D, firmware revision E.1 or later; or series E, firmware revision D.1 or later.

§The 1785-CNET ControlNet communication interface module must be series A, firmware revision D or later.

♣The PLC-5, SLC, and MicroLogix processors appear as I/O points to the Logix controller. Use the appropriate DeviceNet interface for the controller.

>Use a 1747-L55x controller with firmware revision QS501 or later.

⌘The PLC-2 controller requires a 1771-KG module for serial (DF1) communication.

✦The PLC-3 controller requires a 1775-KA module for serial (DF1) communication.

## Communicate with Other Communication Devices

The CompactLogix controllers can communicate with these communication devices.

Communication Device	EtherNet/IP*	ControlNet	DeviceNet*	RS-232 (DF1)	DH-485
9355 RSLinx software	Yes	Yes	Yes	Yes	Yes
1784-KTC, 1784-KTC <sub>x</sub> , 1784-KTC <sub>x</sub> 15, 1784-PCIC(S), 1784-PCC	NA	Yes	NA	NA	NA
1784-PCIDS, 1784-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	NA	NA	NA	NA

\*A non-EtherNet/IP CompactLogix controller requires a 1761-NET-ENI interface to connect to an EtherNet/IP network. This interface is only a messaging bridge.

‡For DeviceNet access, use either a 1769-SDN scanner (control I/O and send/receive messages) or a 1761-NET-DNI interface (messaging bridge).

‡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.

## 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.

Method	Description
<p>Scheduled connection</p> <ul style="list-style-type: none"> <li>• Highest level of determinism</li> <li>• Unique to the ControlNet network</li> </ul>	<p>A scheduled connection is unique to ControlNet communication. 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:</p> <ul style="list-style-type: none"> <li>• communication devices.</li> <li>• produced/consumed tags.</li> </ul> <p>On a ControlNet network, you must use RSNetWorx for ControlNet software to enable all scheduled connections and establish a network update time (NUT).</p>
<p>Unscheduled connection</p> <ul style="list-style-type: none"> <li>• Deterministic</li> <li>• Used by both ControlNet and EtherNet/IP networks</li> </ul>	<p>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.</p>
<p>Unconnected message</p> <ul style="list-style-type: none"> <li>• Least deterministic</li> </ul>	<p>An unconnected message is a message that does not require connection resources. An unconnected message is sent as a single request/response.</p>

## 1769 CompactLogix Connections

The controller you select determines the connections for I/O and messages.

This controller	Supports
1769-L32C 1769-L35CR	32 CIP connections
1769-L32E 1769-L35E	32 CIP connections 32 TCP/IP connections

The total connection requirements for a 1769 CompactLogix system include both local and remote (distributed) connections. The controller supports 100 connections. The available remote connections depend on the network interface.

## 1768 CompactLogix Connections

This communication module	Supports
1768-ENBT	64 CIP connections
1756-EWEB	32 TCP/IP connections
1768-CNB 1768-CNBR	48 CIP connections

The total connection requirements for a 1768 CompactLogix system include both local and remote (distributed) connections. The controller supports 250 connections. The available remote connections depend on the network interface.

## Determine Total Connection Use

The total connection requirements for a CompactLogix system include both local and remote (distributed) connections. The 1769-L3x controller supports 100 connections; the 1768-L4x controller supports 250 connections. The available remote connections depends on the network interface.

Connection Type	Device Quantity	Connections per Device	Total Connections
Remote Ethernet/IP communication module configured as a direct (none) connection configured as a rack-optimized connection		0 <b>or</b> 1	
Remote I/O module over EtherNet/IP network (direct connection)		1	
Remote ControlNet communication module configured as a direct (none) connection configured as a rack-optimized connection		0 <b>or</b> 1	
Remote I/O module over ControlNet network (direct connection)		1	
Remote device over DeviceNet network (accounted for in rack-optimized connection for local 1769-SDN module)		0	
Produced tag		1	
Each consumer		1	
Consumed tag		1	
Message		1	
RSLink Enterprise subscriber (16 maximum)		1	
<b>Total</b>			

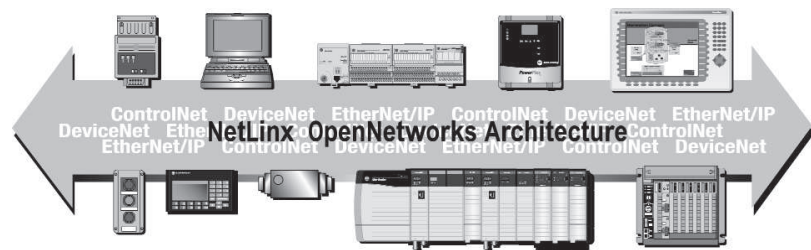
**Step 2 - Select:**

- *Networks*
- *Communication interfaces*
- *Associated cables and network equipment*

## Network Communications

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 (CIP), 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.

- The EtherNet/IP network is an open industrial-networking standard that supports implicit and explicit messaging and uses commercial, off-the-shelf Ethernet equipment and physical media.
- The ControlNet network 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.
- The DeviceNet network offers low-cost, high-speed access to plant-floor data from a broad range of plant-floor devices and a significant reduction in wiring.



## Available Networks

You can configure your system for information exchange between a range of devices and computing platforms and operating systems. Select a CompactLogix controller with integrated communication or the appropriate communication device for the networks that meet your needs.

If your application requires	Use this network	1769-L3x controller	1768-L4x controller
<ul style="list-style-type: none"> <li>• Plant management</li> <li>• Configuration, data collection, and control on a single, high-speed network</li> <li>• Time-critical applications with no established schedule</li> <li>• Data sent regularly</li> <li>• Internet/Intranet connection</li> </ul>	EtherNet/IP network	<ul style="list-style-type: none"> <li>• 1769-L32E controller</li> <li>• 1769-L35E controller</li> </ul>	<ul style="list-style-type: none"> <li>• 1768-ENBT scanner</li> <li>• 1768-EWEB interface</li> </ul>
<ul style="list-style-type: none"> <li>• Deterministic and repeatable data delivery</li> <li>• Redundant media</li> <li>• Intrinsic safety</li> <li>• Internet/Intranet connection</li> </ul>	ControlNet network	<ul style="list-style-type: none"> <li>• 1769-L32C controller (nonredundant media)</li> <li>• 1769-L35CR controller (redundant media)</li> </ul>	<ul style="list-style-type: none"> <li>• 1768-CNB scanner (nonredundant media)</li> <li>• 1768-CNBR scanner (redundant media)</li> </ul>
<ul style="list-style-type: none"> <li>• Connections of low-level devices directly to plant floor controllers, without interfacing them through I/O modules</li> <li>• Data sent as needed</li> <li>• More diagnostics for improved data collection and fault detection</li> <li>• Less wiring and reduced start-up time than a traditional, hard-wired system</li> </ul>	DeviceNet network	<ul style="list-style-type: none"> <li>• 1769-SDN scanner</li> <li>• 1769-ADN adapter</li> </ul>	
<ul style="list-style-type: none"> <li>• Modems</li> <li>• Supervisory control and data acquisition (SCADA)</li> <li>• Manipulate ASCII data</li> </ul>	Serial network	<ul style="list-style-type: none"> <li>• Built-in serial port on the controller</li> <li>• 1769-ASCII module</li> </ul>	
<ul style="list-style-type: none"> <li>• Connections to existing DH-485 networks</li> </ul>	DH-485 network	Built-in serial port with a 1761-NET-AIC	

## 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.

### Select a ControlNet Interface

Select the appropriate controller and ControlNet interface depending on the application and how the controller interacts with the devices.

If your application uses	Select for a 1769-L3x controller	Select for a 1768-L4x controller
Single media	1769-L32C controller with integrated ControlNet port	1768-CNB scanner module
Redundant media	1769-L35CR controller with integrated ControlNet port	1768-CNBR scanner module

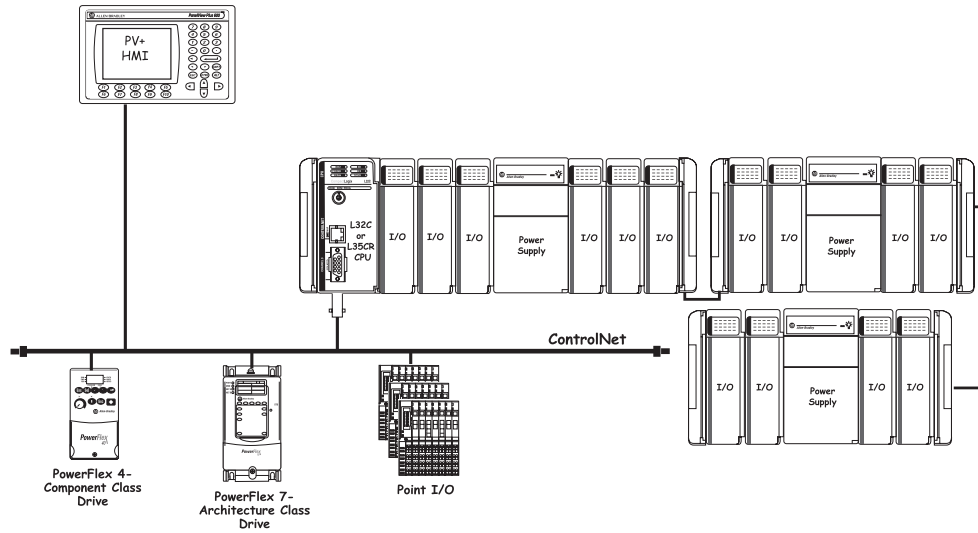
### ControlNet Interface Specifications

Cat. No.	Communication Rate	Connections Supported, Max.	Power Dissipation	Backplane Current (mA) at 5V	Backplane Current (mA) at 24V	Power Supply Distance Rating
1768-CNB	5 Mbps • Standalone system	48 connections	5.14 W	970 mA	1A	NA
1768-CNBR	5 Mbps • Redundant media					
1769-L32C	5 Mbps • Standalone system	32 connections	4.36 W	680 mA	40 mA	4 modules
1769-L35CR	5 Mbps • Redundant media					

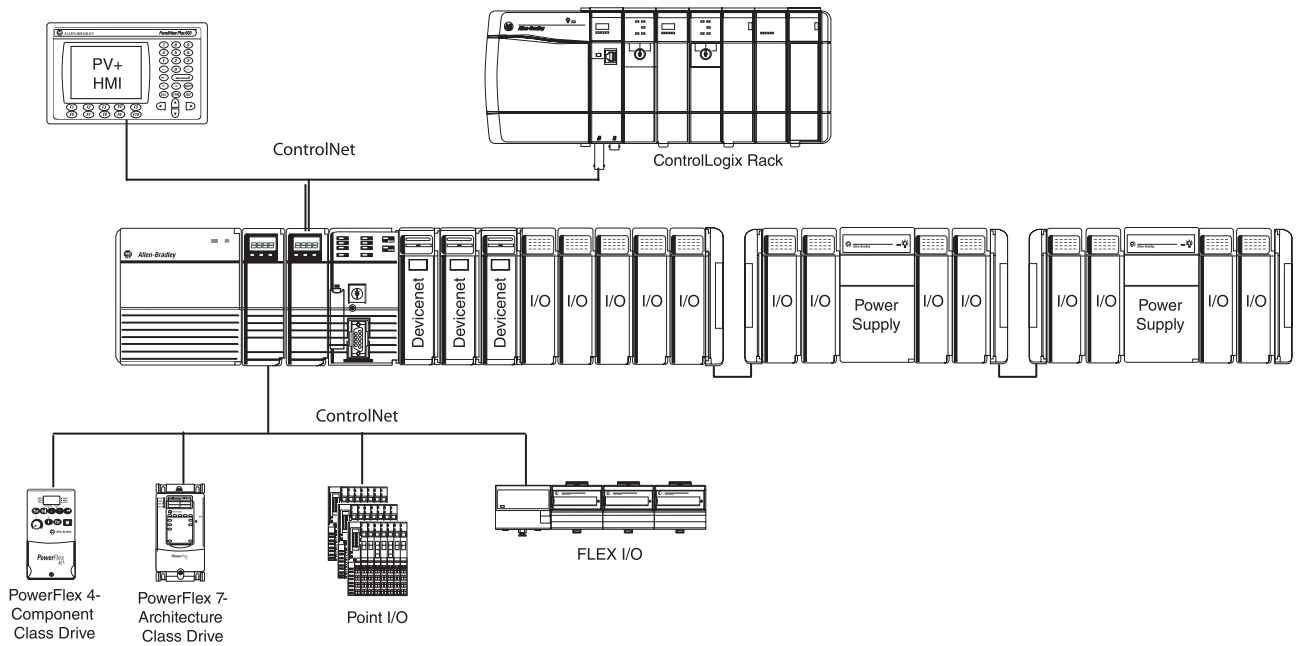
**Certifications:** UL, CSA (Class 1, Division 2, Group A, B, C, D), CE, C-Tick  
 See the Product Certifications Link at <http://ab.com> for Declarations of Conformity, Certifications, and other certifications details.



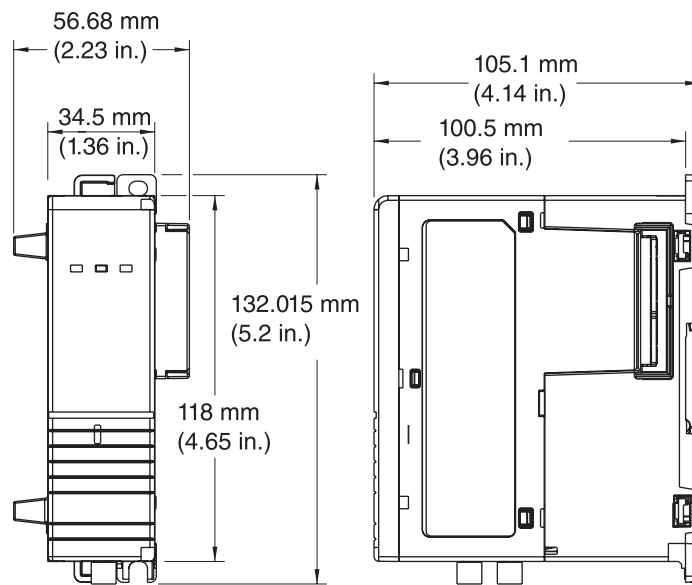
### Example 1769-L32C, 1769-L35CR ControlNet Configuration



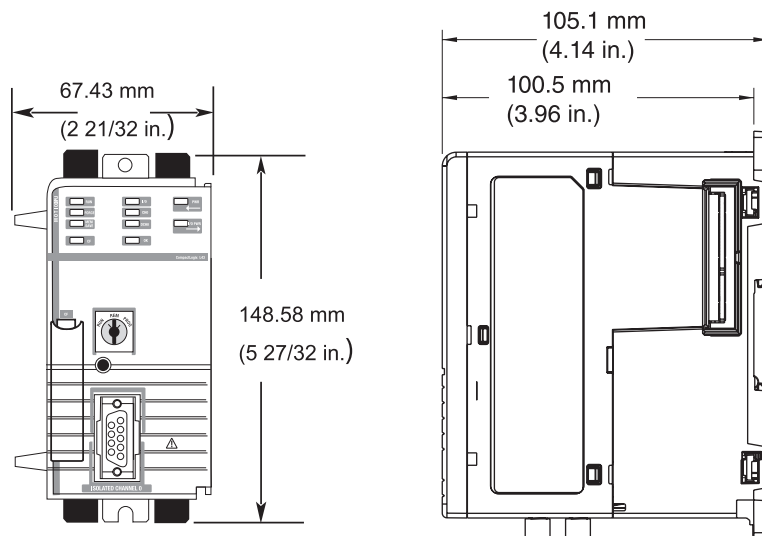
### Example 1768-L43 ControlNet Configuration



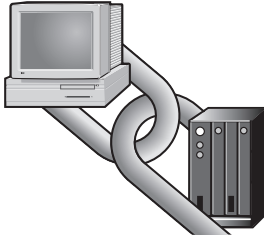
## Single 1768 Slot Dimensions



## 1768 CompactLogix Dimensions



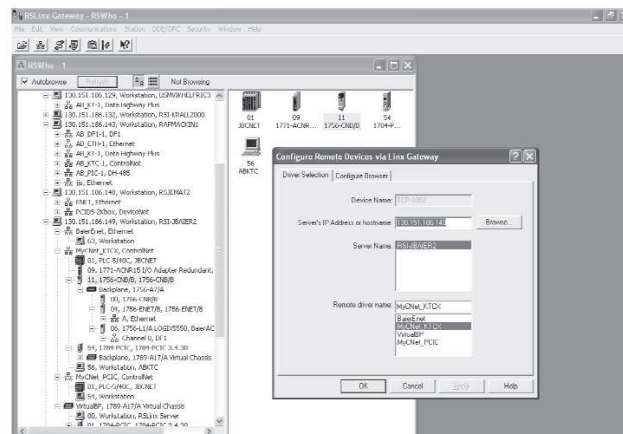
## RSLinx Software



RSLinx software is a complete communication server providing plant-floor device connectivity for a wide variety of software applications such as RSLogix 5, RSLogix 500, and RSLogix 5000, RSView32, RSView Enterprise Series, and RSSql/RSBizWare software. In addition, several open interfaces are provided for third-party HMI, data collection and analysis packages, and custom client-application software. RSLinx software can support multiple software applications simultaneously, communicating to a variety of devices on many different networks.

RSLinx software, version 2.x, is now joined by RSLinx Enterprise software, a new product within the RSLinx family that provides unparalleled connectivity to Logix processors. RSLinx Enterprise software currently can support working as a data server for widely distributed RSView Supervisory Edition products, RSSql, RSBizWare Historian, and RSBizWare PlantMetrics applications, RSView Machine Edition software including PanelView Plus and VersaView hardware platforms, and RSView Supervisory Edition Station software.

You can communicate from anywhere to anywhere using RSLinx software.



## RSLinx Software Requirements

Description	Value
Personal computer	Pentium100 MHz processor (faster processors will improve performance)
Operating system	Supported operating systems: <ul style="list-style-type: none"> <li>• Microsoft Windows XP</li> <li>• Microsoft Windows 2000</li> <li>• Microsoft Windows NT version 4.0 with Service Pack 3 or greater</li> <li>• Microsoft Windows ME</li> <li>• Microsoft Windows 98</li> </ul>
RAM	32 MB of RAM min 64 MB 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

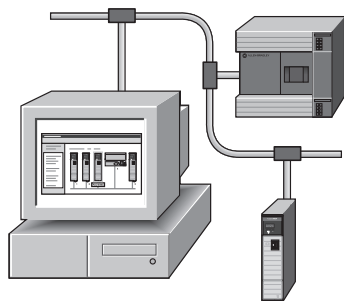
In most cases, RSLinx Lite software comes bundled with controller programming software packages.

You can also download RSLinx Lite for free from the Software Updates link on the Get Support Now website at <http://support.rockwellautomation.com>

## Select the RSLinx Software Package

<b>Cat. No.</b>	<b>RSLinx Products</b>
Available only bundled with other products such as RSLogix software products.	RSLinx Lite
9355-WABSNENE	RSLinx Single Node
9355-WABOEMENE	RSLinx OEM
9355-WABENE	RSLinx Professional
9355-WABGWENE	RSLinx Gateway
9355-WABCENE	RSLinx SDK
9355-RSLETENE	RSLinx Enterprise

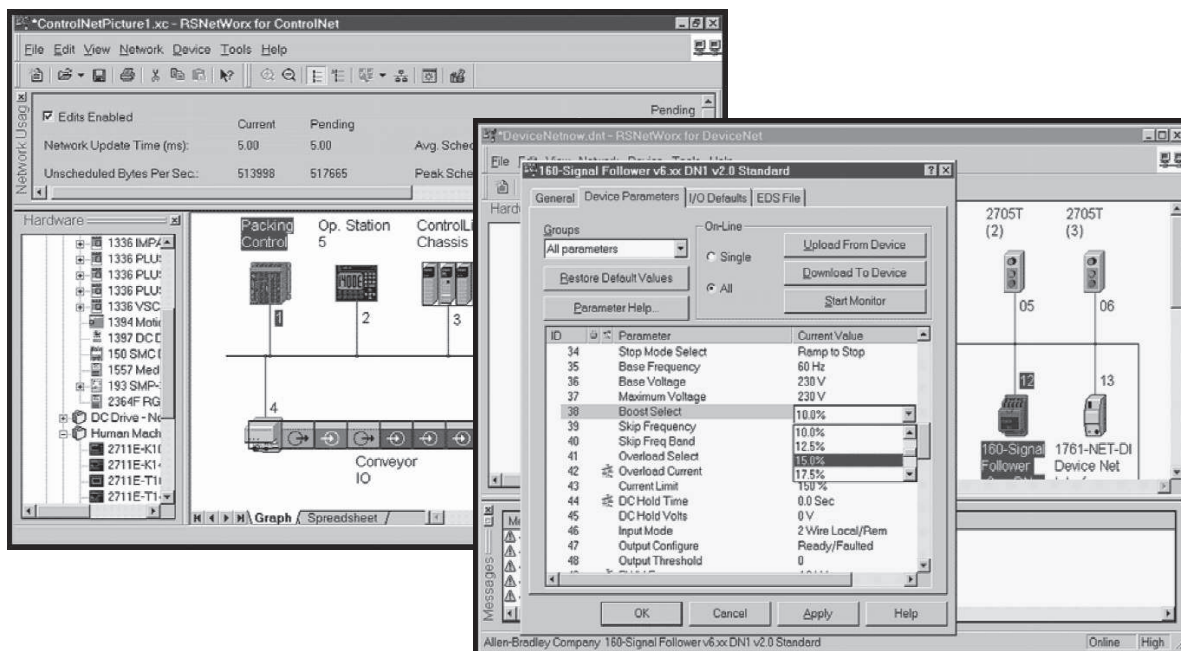
## Network Configuration Software



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 software for:

- ControlNet software 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 software to configure DeviceNet I/O devices and create a scan list. The DeviceNet scanner stores the configuration information and scan list.
- EtherNet/IP software to configure EtherNet/IP devices using IP addresses or host names.



## RSNetWorx Software Requirements

Description	EtherNet/IP Value	ControlNet Value	DeviceNet Value
Personal computer	Intel Pentium or Pentium-compatible computer		
Operating system	Supported operating systems: <ul style="list-style-type: none"> <li>• Microsoft Windows XP</li> <li>• Microsoft Windows 2000</li> <li>• Microsoft Windows 2000 Terminal Server</li> <li>• Microsoft Windows NT version 4.0 with Service Pack 6 or later</li> <li>• Microsoft Windows ME</li> <li>• Microsoft Windows 98</li> </ul>		
RAM	32 MB of RAM min More memory is required for large networks		
Hard disk space	Minimum: 108 MB (includes program and hardware files) Full support: 115...125 MB (includes program, online help, tutorial, and hardware files)	Minimum: 115 MB (includes program and hardware files) Full support: 168...193 MB (includes program, online help, tutorial, and hardware files)	Minimum: 190 MB (includes program and hardware files) Full support: 230...565 MB (includes program, online help, tutorial, and hardware files)
Video requirements	16-color VGA graphics adapter 640 x 480 resolution minimum 800 x 600 resolution recommended		
Other	RSLink Lite software, version 2.41 or later, to use RSNetWorx software online	RSLink Lite software, version 2.4 or later, to use RSNetWorx software online	RSLink Lite software, version 2.4 or later, to use RSNetWorx software online

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

## Select the RSNetWorx Software Package

Cat. No.	Description
9357-CNETL3	RSNetWorx Software for ControlNet
9357-DNETL3	RSNetWorx Software for DeviceNet
9357-ENETL3	RSNetWorx Software for Ethernet/IP
9357-ANETL3	RSNetWorx Software for ControlNet, Ethernet/IP and DeviceNet
9357-CNETMD3E	RSNetWorx with MD for ControlNet, Includes DriveExecutive Lite
9357-DNETMD3E	RSNetWorx with MD for DeviceNet
9357-ENETMD3E	RSNetWorx with MD for Ethernet
9357-ANETMD3E	RSNetWorx with MD for ControlNet, DeviceNet, and Ethernet/IP