

POINT I/O and ArmorPOINT I/O 2 Port EtherNet/IP Adapters

Catalog Numbers 1734-AENTR, 1738-AENTR, Series A





Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication <u>SGI-1.1</u> available from your local Rockwell Automation sales office or online at <u>http://www.rockwellautomation.com/literature/</u>) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



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Read this preface to familiarize yourself with the rest of the manual. It provides information concerning:

- who should use this manual
- the purpose of this manual
- related documentation
- conventions used in this manual

Who Should Use this Manual

Purpose of this Manual

Use this manual if you are responsible for designing, installing, programming, or troubleshooting control systems that use Series A 1734 POINT I/O^{\circ} or 1738 ArmorPOINT I/O^{\circ} 2 Port EtherNet/IP Adapter Modules.

This manual is a reference guide for the 1734-AENTR, 1738-AENTR Series A POINT I/O[™] 2 Port EtherNet/IP and ArmorPOINT I/O 2 Port EtherNet/IP Adapters, communications adapters for POINT I/O modules. It describes the procedures you use to install, wire, configure, troubleshoot, and use these modules.



ATTENTION: You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

Related Documentation

The following documents contain additional information concerning Rockwell Automation products. To obtain a copy, contact your local Rockwell Automation office or distributor

For Information About	See This Publication	Publication Number
1734-series I/O modules and compatible control platforms.	POINT I/O [™] Selection Guide	<u>1734-SG001</u>
Using EtherNet/IP for industrial control	EtherNet/IP Design Considerations Reference Manual	ENET-RM002
ControlLogix Ethernet communication interface modules	ControlLogix EtherNet/IP Bridge Module Installation Instructions	<u>1756-IN019</u>
	EtherNet/IP Modules in Logix5000 Control Systems User Manual	ENET-UM001
ControlLogix chassis and power supplies installation	ControlLogix Chassis and Power Supplies Installation Instructions	<u>1756-IN005</u>
ControlLogix systems	ControlLogix System User Manual	<u>1756-UM001</u>
RSLinx	RSLinx Classic Getting Results Guide	LINX-GR001
1734-AENTR adapter installation	POINT I/O 2 Port EtherNet/IP Adapter Installation Instructions	<u>1734-IN040</u>
1738-AENTR adapter installation	ArmorPoint I/O 2-Port EtherNet/IP Adapter Installation Instructions	<u>1738-IN028</u>
Installing an EtherNet/IP network	EtherNet/IP Media Planning and Installation Manual	<u>ODVA</u>

Common Techniques Used in this Manual

The following conventions are used throughout this manual:

- Bulleted lists such as this one provide information, not procedural steps.
- Numbered lists provide sequential steps or hierarchical information.
- *Italic* type is used for emphasis.

Rockwell Software products contain extensive tutorials and help screens. We recommend that you use these tutorials and help screens to learn about the products.

For more information about Rockwell Software products, visit the Rockwell Software website at http://www.rockwellautomation.com/software/.

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About the Adapters

Overview

This chapter provides an overview of the Series A1734-AENTR POINT I/O and 1738-AENTR ArmorPOINT I/O EtherNet/IP adapters, their primary features, and how to use them.

You need to understand the concepts discussed in this chapter to configure your adapter and use it in an EtherNet/IP control system.

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Important Adapter Considerations

Before you begin using your adapter, note the following important considerations.



ATTENTION: You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

About the POINT I/O and ArmorPOINT I/O 2 Port Adapters

The POINT I/O and ArmorPOINT I/O adapters provide connectivity to EtherNet/IP networks for POINT I/O and ArmorPOINT I/O modules respectively.

The POINT I/O adapter is for the I/O backplane that provides connectivity through two RJ-45 connectors for 2-port pass-through support of daisy chain or ring, and the existing star and tree network topologies.

Likewise, the ArmorPOINT I/O adapter provides the same connectivity through two M12 Ethernet-keyed connectors. It ships with a terminating base for use in the last I/O module on the backplane.

Set the Chassis Size

The I/O adapters for EtherNet/IP require configuration of their chassis size before you can make any I/O connections. The factory default setting for the chassis size is one slot, which represents the adapter by itself.

You must set the chassis size to a number equaling one slot for the adapter plus one slot for each I/O module present in the backplane of the adapter.

For example, a POINT I/O system consisting of a 1734-AENTR adapter, one 1734-IB8, one 1734-OB8, and one 1734-OB8S POINT Guard I/O module uses a chassis size of 4. The adapter stores this chassis size setting in non-volatile memory.

Each time the adapter is powered up, the adapter compares the number of I/O modules present on its backplane to the chassis size value from non-volatile memory. The adapter does not allow any I/O connection until the number of I/O modules present equals the chassis size value minus one for the adapter itself.

Adapter Replacement

Note that during a connection request from the controller, the chassis size setting is not communicated to the adapter. You must always set this chassis size using a separate operation. This includes situations when you are replacing an adapter. The adapter does not allow any I/O connections until it is configured with the appropriate chassis size and the proper number of POINT I/O or ArmorPOINT I/O modules are present.

Empty Slots and RIUP Situations

The POINT I/O system cannot detect an empty terminal base. For this reason, there are numerous situations in which you can potentially configure a system that is unusable or one that exercises unintended control.

In an attempt to address these situations, you must observe the following rules for I/O system construction and the removal and reinsertion of modules.

- A correct I/O system does not have any empty terminal bases.
- After you cycle power, the adapter will not allow any I/O connections until the number of modules comprising the chassis plus one for the adapter equals the stored chassis size.
 - It cannot assume any safe operation until there is a match between the number of modules indicating their presence in the chassis and what the adapter has saved in non-volatile memory because it cannot detect empty terminal bases.
 - Actual module identification (such as, electronic keying) is done when connection establishment requests are received from the controller or controllers.
- A POINT I/O module removed under power does not disrupt operation of the other I/O modules. On the other hand, ArmorPOINT I/O modules are not intended to be removed under power.
 - When you remove a module, the adapter detects what changed.
 - Whenever you remove a module with an active connection from the POINT I/O system, the adapter indicates this by flashing the POINTBus Status LED red and reports a minor recoverable fault.
- If more than one contiguous module is removed under power, connections to all modules in the contiguous missing module set are disallowed until all modules are replaced. Because the adapter cannot detect an empty base, it does not know the physical positioning of the modules until all the missing modules are replaced.
- If a module separating two sets of contiguous missing modules is removed, the two sets merge into a single set. All the modules must be replaced before connections are permitted to any module in the set.
- If modules of different types are removed and returned to the wrong locations, attempts to connect to these modules will fail during verification of the electronic ID (providing that keying has not been disabled).
- If modules of the same type are removed and returned to the wrong locations, they accept connections from the controller or controllers and reconfigure with the correct data once they pass their electronic keying check.
- These removal and return situations exist whether the system is under power or not. If the system is under power, the situation arises immediately. If the system is not under power, the situation arises in the next power cycle.

Power Up a System for the First Time

When you power the I/O for the first time, the adapter must assign slot addresses to every module in the backplane. All I/O modules ship configured at the same address.

When you first apply power, we expect that all but one module on the backplane exhibits a solid red Module Status LED.

One by one the adapter resets these modules and addresses them appropriately. The amount of time that this operation takes is proportional to the size of your I/ O system.

Adapter Features

Features of the adapters include:

- Use of EtherNet/IP messages encapsulated within standard TCP/UDP/IP protocol
- Common application layer with ControlNet and DeviceNet networks
- Interfacing via Category 5 rated twisted pair cable
- Half/full duplex 10 Mbit or 100 Mbit operation
- DIN rail mounting for 1734-AENTR adapter/Wall or panel mounting for 1738-AENTR adapter
- Communication to and from other I/O modules on the same DIN rail for 1734-AENTR adapter/Communication to and from other I/O modules in the chassis for 1738-AENTR adapter
- Communication supported by RSLinx software
- IP address assigned via standard BootP or DHCP tools
- I/O configuration via RSLogix 5000 software
- No network scheduling required
- No routing tables required
- Support of connections from multiple controllers simultaneously

You must use RSLogix 5000 to configure these features. For more details on configuration, see <u>Configuration Requirements</u> on in chapter <u>3</u>.

What the Adapter Does

The I/O adapters perform the following primary tasks:

• Control of real-time I/O data (also known as implicit messaging) - the adapter serves as a bridge between I/O modules and the network



 Support of messaging data for configuration and programming information (also known as explicit messaging)

Hardware/Software Compatibility

The I/O adapters and the applications described in this manual are compatible with the following firmware revisions and software releases.

Contact Rockwell Automation if you need software or firmware upgrades to use this equipment

Product	Firmware Revision/ Software Release
1734-AENTR; 1738-AENTR adapters	3.xx or later
1756-ENBT	2.3 or later
Logix controller	11 or later
RSLogix 5000 software	11 or later
RSLinx software	2.3.1 or later

Use of the Common Industrial Protocol (CIP)

The adapter uses the Common Industrial Protocol (CIP). CIP is the application layer protocol specified for EtherNet/IP, the Ethernet Industrial Protocol, as well as for ControlNet and DeviceNet networks. It is a message-based protocol that implements a relative path to send a message from the producing device in a system to the consuming devices.

The producing device contains the path information that steers the message along the proper route to reach its consumers. Since the producing device holds this information, other devices along the path simply pass this information; they do not store it.

This has the following significant benefits:

- You do not need to configure routing tables in the bridging modules, which greatly simplifies maintenance and module replacement.
- You maintain full control over the route taken by each message, which enables you to select alternative paths for the same end device.

The CIP producer and consumer networking model replaces the old source and destination (master and slave) model. The producer and consumer model reduces network traffic and increases speed of transmission. In traditional I/O systems, controllers poll input modules to obtain their input status. In the CIP system, input modules are not polled by a controller. Instead, they produce (multicast or unicast) their data either upon a change of state (COS) or periodically.

Multicast is the default mode for version 17 Logix and earlier controllers and unicast is the default for version 18 with multicast as a selectable option.

The frequency of update depends upon the options chosen during configuration and where on the network the input module resides. The input module, therefore, is a producer of input data, and the controller is a consumer of the data.

Understand the Producer/ Consumer Model

The controller also produces data for other controllers to consume. The produced and consumed data is accessible by multiple controllers and other devices over the EtherNet/IP network. This data exchange conforms to the producer and consumer model.

Specify the Requested Packet Interval (RPI)

The Requested Packet Interval or RPI is the update rate specified for a particular piece of data on the network. The RPI can be specified for the adapter and include all of the I/O modules in the I/O system (using a rack-optimized connection) or specified for a particular module (using direct connection).

When you add a module or an adapter to the I/O configuration of a controller, you must enter the RPI as a parameter. This value specifies how often to produce the data for that device. For example, if you specify an RPI of 50 ms, it means that every 50 ms the device should send its data to the controller and the controller should send the consumed (output) data to the device.

Use RPIs only for devices that exchange data. For example, a ControlLogix EtherNet/IP bridge module in the same chassis as the controller does not require an RPI, because it is not a data-producing member of the system. Its use is only as a bridge to remote racks.

Support of Rack-optimized and Direct Connections

The I/O adapters supports both direct and rack-optimized connections. A direct connection is a real-time data transfer link between the controller and the module occupying the slot that the configuration data references.

Direct I/O connections occur at a cyclic rate specified by the RPI during configuration. A rack-optimized connection is a grouping of data from one or more digital I/O modules into a single block of data sent over a single connection at the same data rate.

Analog, safety, and speciality modules cannot participate in the rack-optimized connection; these modules require a direct I/O connection.

Rack-optimized connections reduce the total number of connections needed to transfer data when using many digital I/O modules in a system. The following example illustrates the benefit of rack-optimized connections.

Assume you set up a system that contains eight digital I/O modules interfaced to an adapter. If you use direct connections to transfer data to each of the these I/O modules, you need eight connections to transfer all of the data, one to each of the

eight I/O modules. If you use a rack-optimized connection to transfer the data, you only need a single connection – the connection to the I/O adapter.

IMPORTANT	Although rack-optimized connections offer an efficient way to use resources, there are a few limitations on their use:
	 You can use only rack-optimized connections to send data to and from digital I/O modules. Analog or speciality I/O requires direct connections.
	• All data is sent at the same time as the RPI rate of the I/O adapters. If the update rate required for a digital module is different from the RPI of the rack-optimized connection, a direct connection to that digital I/O module is required.

See the EtherNet/IP Design Considerations Reference Manual, publication<u>ENET-RM002</u> for more information on connections.

Mixing Rack-optimized and Direct Connections

You can mix communication formats for different I/O modules communicating through the same adapter. I/O modules set up to use rack optimization communicate at the rate of the RPI configured for the adapter. I/O modules configured for direct communication communicate at their own individual RPIs and ignore the rack-optimized RPI.

Chapter Summary

In this chapter, you were introduced to the features of the POINT I/O and ArmorPOINT I/O Adapters, and considerations for installation and usage.

Notes:

Install Your Adapter

Overview

This chapter describes how to physically install the Series A POINT I/O and ArmorPOINT I/O 2 Port EtherNet/IP adapters; and how to connect the adapter to the EtherNet/IP network. The only tools you require are a flat or Phillips head screwdriver and a drill.

This table lists where to find specific information.

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ATTENTION: You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

Identify Adapter Components

Use the figures to identify the external features of your I/O adapters.

Physical Features of the 1734-AENTR Adapters



Physical Features of the 1738-AENTR Adapters



Mount the I/O Adapter

Use the following procedures to mount the I/O adapters on a new system before you install any I/O modules.

Mount a 1734-FPD module in the slot next to the I/O adapter when applying field power. You can also use the 24V DC to power the adapter to supply field power, where no FPD is necessary. Refer to Point I/O Field Potential Distribution Module Installation Instructions, publication <u>1734-IN059</u> for more information.

Mount the POINT I/O Adapter on a DIN Rail

Position the I/O adapters vertically above the DIN rail.

- 1. Make sure the DIN rail locking screw (orange) is in horizontal position.
- Position the adapter vertically above an IEC standard (35 x 7.5 x 1 mm) top-hat DIN rail at a slight angle (DIN rail: Allen-Bradley part number 199-DR1; 46277-3).
- **3.** Press down firmly to install the adapter on the DIN rail, noting that the locking mechanism locks the adapter to the DIN rail.
- Set the network address thumbwheel switches to the desired value. Set the network address thumbwheel switches to the desired value. See <u>Set the</u> <u>Network Address</u> in chapter <u>3</u> for more details on setting the IP address.



A = DIN railB = Secure DIN rail approximately every 200 mm (7.8 in.)

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5. Slide the safety end cap up to remove it, exposing the backplane and power interconnections.



WARNING: If you connect or disconnect the Ethernet cable with power applied to this module or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Mount the ArmorPOINT I/O Adapter and Base on a Wall or Panel

To mount the ArmorPOINT I/O adapter on a wall or panel, use the screw holes provided in the adapter module.

IMPORTANT	The ArmorPOINT I/O adapter must be mounted on a grounded
	metal mounting plate or other conductive surface.

Refer to the drilling dimensions illustration for the ArmorPOINT I/O adapter with I/O bases to guide you in mounting the adapter and I/O bases.

Drilling Dimensions



Install the mounting base as follows:

- 1. Lay out the required points as shown in the drilling dimension drawing.
- 2. Drill the necessary holes for #8 (M4) machine or self-tapping screws.
- 3. Mount the adapter using #8 (M4) screws.
- **4.** Ground the system using the ground lug connection in the I/O base. The ground lug connection is also a mounting hole.
- 5. Mount the terminating base that was shipped with the adapter as the last base in the backplane instead of the base that was shipped with the I/O module.
- 6. Set the network address thumbwheel switches to the desired value. See <u>Set</u> the Network Address in chapter <u>3</u> for more information on setting the IP address.

Terminating Base



Install the POINT I/O Adapter Module

To install the adapter on the DIN rail prior to installing other base units:



ATTENTION: Allow 25.4 mm (1.0 in.) of space between adjacent equipment for adequate ventilation.

- 1. Position the adapter vertically above the DIN rail.
- 2. Press down firmly to install the adapter on the DIN rail, noting that a locking mechanism locks the adapter to the DIN rail.
- 3. Set the network address on the network address thumbwheel.
- **4.** Slide the safety end cap up to remove it, exposing the backplane and power interconnections.



ATTENTION: Do not discard the end cap. Use this end cap to cover the exposed interconnections on the last mounting base on the DIN rail. Failure to do so could result in equipment damage or injury from electric shock.

Install the ArmorPOINT I/O Adapter Module

To install the ArmorPOINT I/O adapter module:

1. Using a bladed screwdriver, rotate the keyswitch on the mounting base clockwise until the appropriate number for the I/O module you are installing aligns with the notch in the base.

Refer to the installation instructions for each module to determine what this number must be. See <u>Related Documentation</u> on page <u>i</u> for a list of these installation instructions.

- 2. Position the module vertically above the mounting base. The module bridges two bases.
- **3.** Push the module down until it engages the latching mechanism. You hear a clicking sound when the module is properly engaged. The locking mechanism locks the module to the base.

Wire the POINT I/O Adapter

Refer to the following illustration to wire the adapter.



V = Supply



ATTENTION: Do not connect 120/240V AC power to the V DC supply.



ATTENTION: Do not wire more than two conductors on any single terminal.



ATTENTION: Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.

Wire the ArmorPOINT I/O Adapter

Wire the EtherNet/IP and auxiliary power connectors on the adapter as shown.

EtherNet/IP Connectors



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IMPORTANT Analog modules have earth grounded metal rings. This should be considered when choosing shielded cables and grounding techniques.

Pin 4 - User Power -

Chapter Summary

In this chapter, you learned how to install and wire your POINT I/O or ArmorPOINT adapter module. The following chapter describes how to configure your POINT I/O or ArmorPOINT I/O adapter module to communicate on the EtherNet/IP network by providing an IP address, gateway address, and Subnet mask.

⁽¹⁾ Auxiliary power cable: standard cordset (single-ended), for example Allen-Bradley part number 889N-F4AFC-6F or 889N-R4AFC-6F; or standard patchcord (double-ended), for example, Allen-Bradley part number 889N-F4AFNU-6F or 889N-F4AFNV-6F. Refer to publication. <u>M117-CA001A-EN-P</u> for more information.

Notes:

Configure the Adapter for Your EtherNet/ IP Network

Overview

Before using your adapter in an EtherNet/IP network, you need to configure it with an IP address, subnet mask, and optional Gateway address. This chapter describes these configuration requirements and the procedures for providing them. Here are ways you can do this:

- Use the Rockwell BootP/DHCP utility, version 2.3 or later, that ships with RSLogix 5000 or RSLinx software.
 - You can also use this utility to reconfigure a device with an IP address you must change.
- Use a third party DHCP server.
- Use the Network Address thumbwheel switches.
- Have your network administrator configure the adapter via the network DHCP server.

See the table for a list of where to find information in this chapter.

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Configuration Requirements

Before you can use your adapter, you must configure its IP address, its subnet mask, and, optionally, a gateway address. You can use the Rockwell BootP utility, version 2.3 or later, to perform the configuration. You can also use a DHCP server or the network address switches to configure these parameters.



ATTENTION: You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

If you need to reset the adapter to factory defaults, see <u>Work with the</u> <u>Configuration Pages</u> in <u>Appendix B</u>.

IP Address

The IP address identifies each node on the IP network (or system of connected networks). Each TCP/IP node on a network (including the adapter) must have a unique IP address.

The IP address is 32 bits long and has a Network ID part and Host ID part. Networks are classified A, B, C, (or other). The class of the network determines how an IP address is formatted.

	0	7	8			31
Class A	0	Network ID		Host ID		
	0		15	16		31
Class B	10	Network ID)		Host ID	
	0			23	24	31
Class C	110		Network ID		Host ID	

You can distinguish the class of the IP address from the first integer in its dotteddecimal IP address as follows:

Range of first integer	Class	Range of first integer	Class
0 1127	А	192223	С
128191	В	224 255	other

Each node on the same physical network must have an IP address of the same class and must have the same network ID. Each node on the same network must have a different Host ID thus giving it a unique IP address.

IP addresses are written as four decimal integers (0...255) separated by periods where each integer gives the value of one byte of the IP address.

EXAMPLE	For example, the 32-bit IP address:
	10000000 00000001 00000000 00000001 is written as 128.1.0.1

Gateway Address

This section applies to multi-network systems. If you have a single network system, refer to the next section.

The Gateway Address is the default address of a network. It provides a single domain name and point of entry to the site. Gateways connect individual physical networks into a system of networks.

When a node needs to communicate with a node on another network, a gateway transfers the data between the two networks. The figure shows gateway G connecting Network 1 with Network 2.



When host B with IP address 128.2.0.1 communicates with host C, it knows from C's IP address that C is on the same network. in an Ethernet environment, B can then resolve C's IP address into a hardware address (MAC address) and communicate with C directly.

When host B communicates with host A, it knows from A's IP address that A is on another network (the network IDs are different). In order to send data to A, B must use the IP address of the gateway connecting the two networks. In this example, the gateway's IP address on Network 2 is 128.2.0.3.

The gateway has two IP addresses (128.1.0.2 and 128.2.0.3). The first must be used by hosts on Network 1 and the second must be used by hosts on Network 2. To be usable, a gateway of a host must be addressed using a network ID matching its own.

Subnet Mask

The subnet mask is used for splitting IP networks into a series of subgroups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the Host ID address field into a field for subnets.

Two bits of the Class B host ID are used to extend the network ID. Each unique combination of bits in the part of the Host ID where subnet mask bits are 1 specifies a different physical network.

The new configuration is:



A second network with Hosts D and E was added. Gateway G2 connects Network 2.1 with Network 2.2.

Hosts D and E will use Gateway G2 to communicate with hosts not on Network 2.2.

Hosts B and C will use Gateway G to communicate with hosts not on Network 2.1.

When B is communicating with D, G (the configured Gateway for B) will route the data from B to D through G2.

Set the Network Address

The adapters ship DHCP-enabled and with the switches set to 999. To change the network address, do the following.

Set the Network Address for POINT I/O Adapter

- Use the thumbwheel switches located on the adapter. Press either the + or buttons to change the number.
- Use a Dynamic Host Configuration Protocol (DHCP) server, such as Rockwell Automation BootP/DHCP.
- Retrieve the IP address from non-volatile memory.

Network address thumbwheel Press either the + or - buttons to change the number and assign the IP address.



The adapter reads the thumbwheel switches first to determine if the switches are set to a valid number. You set the node address by using the 3-position thumbwheel switch. Press the + or - buttons to change the number. Valid settings range from **001...254**.

When you use the thumbwheel to assign an address and set it to **001**, the adapter gateway address is set to **0.0.0.0**. and the subnet mask is **255.255.255.0**. When you use the thumbwheel to assign an address and set it between **002...254**, the adapter gateway address is set to **192.168.1.1**.

The adapter does not have a host name assigned, or use any Domain Name System when using the thumbwheel settings.

If DHCP is not enabled, the adapter uses the IP address, along with other TCP configurable parameters, stored in non-volatile memory.

Set the Network Address for ArmorPOINT I/O Adapter

- Adjust the switches in front of the module
- Use a Dynamic Host Configuration Protocol (DHCP) server such as Rockwell Automation BootP/DHCP
- Retrieve the IP address from non-volatile memory

The adapter reads the switches first to determine if the switches are set to a valid number. Set the network address by adjusting the three switches on the front of the adapter.

Network Address Example

This example shows the network address set at 163.



Use a small blade screwdriver to rotate the switches. Line up the small notch on the switch with the number setting you wish to use. Valid settings range from **001...254**.

When you use the switches to assign an address and set it to **001**, the adapter gateway address is set to **0.0.0.0**. and the subnet mask is **255.255.255.0**. When you use the switches to assign an address and set it to a valid number between **002...254**, the adapter gateway address is set to **192.168.1.1**.

If the switches are set to an invalid number (for example, 000 or a value greater than 254 excluding 888), the adapter checks to see if DHCP is enabled. If DHCP is enabled, the adapter requests an address from a DHCP server. The DHCP server also assigns other Transport Control Protocol (TCP) parameters.

If DHCP is not enabled, the adapter uses the IP address, along with other TCP configurable parameters, stored in non-volatile memory.

Use the Rockwell BootP/ DHCP Utility

The Rockwell BootP/DHCP utility is a standalone program that incorporates the functionality of standard BootP software with a user friendly graphical interface. It is located in the Utils directory on the RSLogix5000 software installation CD. The adapter must have DHCP enabled (factory default and the network address switches set to an invalid value) to use the utility. To configure your adapter using the BootP utility, perform the following steps:

1. Run the BootP software.

In the BOOTP Request History panel you see the hardware addresses of devices issuing BootP requests.

BOOTP/DHCP 9	5erver 2.	3					_ 🗆 X
File Tools Help							
- Request History -	Addito	Rolption List					
			<u></u>	15 + 11		1	
(hr:min:sec) 8:09:34 8:09:26 8:09:22 8:09:13 8:08:57	Type DHCP DHCP DHCP DHCP DHCP DHCP	Ethernet Addre 00:00:8C:21:2 00:00:8C:21:2 00:00:8C:21:2 00:00:8C:21:2 00:00:8C:21:2	ess (MAC) 0:14 0:14 0:14 0:14 0:14 0:14	IP Address	Hostname		
Relation List	: Enable	BOOTP Ena	ble DHCP Dis	able BOOTP/DHCP			
Ethernet Addre	ss (MAC)	Туре	IP Address	Hostname	Description		
- Status Unable to service	DHCP req	uest from 00:00	:BC:21:20:14.				Entries 0 of 256
BOOTP/DHCP S	öerver 2.3	3 - C:\Docume	ents and Setti	ngs\tiggs\Desktop	\Bootp Serve	r\control sys	ite 💶 🗙
Request History Clear History	Add to	Relation List					
(hr:min:sec)	Туре	Ethernet Addre	ss (MAC)	IP Address	Hostname		
12:47:24 12:47:24	DHCP DHCP	00:00:BC:21:20 00:00:BC:21:20	D:14 D:14	10.88.70.2			

BOOTP/DHCP Server 2.3 - C:\Documents and Settings\tiggs\Desktop\Bootp Server\control syste								
File Tools Help								
Request History								
	Clear History Add to Relation List							
	(hr:min:sec)	Туре	Ethernet Address (MAC)	IP Address	Hostname			
	12:47:24	DHCP	00:00:BC:21:20:14	10.88.70.2				
	12:47:24	DHCP	00:00:BC:21:20:14					
Relation List								
New Delete Enable BOOTP Enable DHCP Disable BOOTP/DHCP								
Ethernet Address (MAC) Type IP Address Hostname Description								
00:00:BC:21:20:14 DHCP 10.88.70.2								
- Status								
Sent 10.88.70.2 to Ethernet address 00:00:BC:21:20:14 1 of 256								

2. Double-click the hardware address of the device you want to configure.

New Entry		×
Ethernet Address (MAC):	00:00:BC:21:20:14	
IP Address:	10 . 88 . 70 . 2	
Hostname:		
Description:		
	OK Cancel	

The New Entry dialog appears with the device's Ethernet Address (MAC).

3. Enter the IP Address you want to assign to the device and click OK. The device is added to the Relation List, displaying the Ethernet Address (MAC) and corresponding IP Address, Hostname, and Description (if applicable).

🎇 BOOTP/DHCP Server 2.3 - C:\Documents and Settings\tiggs\Desktop\Bootp Server\control syste 💶 💌									
File Tools Help									
⊢ Re	Request History								
	Clear History Add to Relation List								
	(hr:min:sec)	Туре	Ethernet Addr	ess (MAC)	IP Address		Hostname		
	12:47:24	DHCP	00:00:BC:21:2	20:14	10.88.70.2				
	12:47:24	DHCP	00:00:80:21:2	20:14					
- Be	elation List								
	New Delet	e Enabl	e BOOTP En	able DHCP	Disable BOOTP/D	HCP			
	Ethernet Addre	ess (MAC)	Туре	IP Address	Hostna	ame	Description		
	00:00:BC:21:2	0:14	DHCP	10.88.70.2					
St	atus								Entries
Se	Sent 10.88.70.2 to Ethernet address 00:00:BC:21:20:14 1 of 256							1 of 256	

When the address displays in the IP Address column in the Request History section, the IP address assignment has been made.

4. To make this configuration static in the device, highlight the device in the Relation List panel, and click the Disable BOOTP/DHCP button.

When power is cycled to the device, it uses the configuration saved in nonvolatile memory and will not issue a DHCP request.

5. To enable DHCP for a device with DHCP disabled, highlight the device in the Relation List, and click the Enable DHCP button.

You must have an entry for the device in the Relation List panel to reenable DHCP.

Save the Relation List

You can save the Relation List for later use. To save the Relation List, perform the following steps:

1. Select Save As... from the File menu.

🞆 BOOTP/DHCP	Server 2.3 - C:\Documents and Se	ettings\tiggs\Desktop	\Bootp Serve	er\control sys	te 💶 🗙	
File Tools Help						
New						
Open	Add to Relation List					
Save	Type Ethernet Address (MAC)	IP Address	Hostname			
Save As	DHCP 00:00:BC:21:20:14	10.88.70.2				
Exit	DHCP 00:00:BC:21:20:14					
Relation List New Delete Enable BOOTP Enable DHCP Disable BOOTP/DHCP						
Ethernet Addr	ess (MAC) Type IP Address	Hostname	Description	[
00:00:86:21:2	0:14 DHCP 10.88.70.2					
Status					Entries	
Sent 10.88.70.2 to Ethernet address 00:00:BC:21:20:14 1 of 256						

The Save As dialog appears.

Save As				? ×
Save in: 🔁	Bootp Server	• 🗢 🖸	🗅 💣 🎟 •	
File name:	control system configuration		Sav	/e
Save as type:	Bootp Config Files (*.bpc)	•	Can	cel

- 2. Select the folder where you want to save the Relation List.
- **3.** Enter a File name for the Relation List, for example, control system configuration, and click Save.

You can leave the Save as type at the default setting: Bootp Config Files (*.bpc).

You now have the option to open the file containing the Relation List at a later session.

Use DHCP Software to Configure Your Adapter

DHCP (Dynamic Host Configuration Protocol) software automatically assigns IP addresses to client stations logging onto a TCP/IP network.

DHCP is based on BootP and maintains some backward compatibility. The main difference is that BootP was designed for manual configuration, while DHCP allows for dynamic allocation of network addresses and configurations to newly attached devices.

Be cautious about using DHCP software to configure your adapter. A DHCP server typically assigns a finite lease time to the offered IP address.

When 50% of the leased time has expired, the adapter attempts to renew its IP address with the DHCP server.

The possibility exists that the adapter will be assigned a different IP address, which would cause the adapter to cease communicating with the ControlLogix controller. See <u>Configure the Adapter with Fixed IP Address</u> in Chapter <u>4</u> for more details on how to configure an adapter with a fixed IP address.



ATTENTION: To avoid unintended control or loss of control, the I/O adapter must be assigned a fixed IP address. A dynamically provided IP address should be used only at initial configuration. If a DHCP server is used, it must be configured to assign the same IP address to your adapter.

Failure to observe this precaution may result in unintended machine motion or loss of process control.

Chapter Summary

This chapter provided instructions on how to configure POINT and ArmorPOINT Adapter modules through the RSLogix 5000 software and included information on configuration requirements and setting the network address.

Configure the Adapter for Direct Connection in RSLogix 5000 Software

Overview

In this example, a ControlLogix controller communicates with I/O modules via the adapter using a direct connection.

The adapter makes a direct connection to each of the modules referenced by the data. The modules presented in this chapter use RSLogix 5000 software, revision 11 and above.



ATTENTION: You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

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Set Up the Hardware

In this example, a ControlLogix chassis contains the L63 controller in slot 1 and a 1756-ENBT bridge module in slot 3. The 1734-AENTR adapter is mounted on a DIN rail in slot 0, with a 1734-OW2/C relay output module in slot 1, a 1734-OV4E/C sink output module in slot 2, and a power supply (not shown).



To work along with this example, set up your system as shown in the figure.

- In the example application, we assume that the L63 controller and 1756-ENBT module (firmware revision 2.3, or later) are in the slots shown in the figure.
- Verify the IP addresses for your programming terminal, 1756-ENBT module, and adapter.
- Verify the position (slot) of the I/O modules on the DIN rail.
- Verify that you connected all wiring and cabling properly.
- Be sure you configured your communication driver (for example, AB_ETH-1 or AB-ETHIP-1) in RSLinx software, as described in Appendix of this manual.
Create the Example Application

Perform the following steps to create the example application:

- 1. Start RSLogix 5000 Enterprise Series software to open the RSLogix 5000 main dialog.
- 2. From the File menu, select New.



3. The New Controller dialog opens.

New Controller		×
Vendor:	Allen-Bradley	
<u>T</u> ype:	1756-L63 ControlLogix5563 Controller	OK
Re <u>v</u> ision:	18 🗸	Cancel
	Eedundancy Enabled	Help
Na <u>m</u> e:		
Descri <u>p</u> tion:		
	-	
<u>C</u> hassis Type:	1756-A7 7-Slot ControlLogix Chassis	
Sl <u>o</u> t:	Safety Partner Slot: <none></none>	
Create In:	C:\RSLogix 5000\Projects	Browse

4. Enter an appropriate Name for the Controller, for example, POINT_IO_Controller.

New Controller		×
Vendor:	Allen-Bradley	
<u>T</u> ype:	1756-L63 ControlLogix5563 Controller	OK
Re <u>v</u> ision:	18 💌	Cancel
	Eedundancy Enabled	Help
Na <u>m</u> e:	Point_10_Controller	
Description:	A	
<u>C</u> hassis Type:	1756-A4 4-Slot ControlLogix Chassis	
Sl <u>o</u> t	0 Safety Partner Slot: <none></none>	
Cr <u>e</u> ate In:	C:\RSLogix 5000\Projects	Browse

5. Select the correct Version, Chassis Type, and Slot number of the L63 controller, and the folder where you want to save the RSLogix 5000 file (Create In). The Description is optional. RSLogix 5000 software version 18 lets you enable redundancy. To use redundancy in your system, check the Redundancy Enabled checkbox when using the said version or later. 6. Click OK. Configure the I/O You now add the POINT I/O modules to the controller's I/O configuration performing these procedures: • Add the local 1756-ENBT module to the I/O configuration. • Add the 1734-AENTR adapter as a child of the 1756-ENBT module on the Ethernet network. • Add the POINT I/O modules as children of the AENTR adapter. **IMPORTANT** Click the Help button on the configuration dialogs shown in this

Add the Local EtherNet/IP Bridge to the I/O Configuration

parameters.

1. Select the I/O Configuration folder in the project dialog, and click the right mouse button. A menu opens.

section if you need assistance in selecting and setting the



2. Choose New Module.

🔄 🔽 Configuration		
	New Module	
	Cut	
	Сору	
	Paste	
	Print	

The Select Module dialog opens.

rodalo	Description	1		Vendor
🛨 Analog				
Communications			 	
Controllers				
🛨 - Digital				
H- Motion				
+ Other				
				1
			Find	Add Favorite
		5 .).]	Find	Add Favorite

3. Expand the Communications tree as in the following dialog.

Module	Description	Vendor
- 1756-CNBR/E	1756 ControlNet Bridge, Redundant Media	Allen-Bradley
- 1756-DHRIO/B	1756 DH+ Bridge/RIO Scanner	Allen-Bradley
- 1756-DHRIO/C	1756 DH+ Bridge/RIO Scanner	Allen-Bradley
- 1756-DHRIO/D	1756 DH+ Bridge/RIO Scanner	Allen-Bradley
- 1756-DNB	1756 DeviceNet Scanner	Allen-Bradley
- 1756-EN2F	1756 10/100 Mbps Ethernet Bridge, Fiber Media	Allen-Bradley
- 1756-EN2T	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
- 1756-EN2TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair	Allen-Bradley
- 1756-EN3TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair	Allen-Bradley
1756-ENBT	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
- 1756-ENET/A	1756 Ethernet Communication Interface	Allen-Bradley
- 1756-ENET/B	1756 Ethernet Communication Interface	Allen-Bradley
- 1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv	Allen-Bradley
•		•
	<u></u> ind	Add Favorite
By Category By Ve	ndor Favorites	

4. Select the 1756-ENBT EtherNet/IP Bridge and click OK.

The Select Major Revision dialog opens.

Select Major Revis	ion		×
Select major revis module being crea	ion for new 175 ated.	6-ENBT/A	
Major Revision:	3		
ОК	Cancel	Help	

5. Select the number for Major Revision and click OK.

The New Module dialog opens.

New Module		×
Type: Vendor: Parent: Name: Description:	1756-ENBT/A 1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media Local Local Local_ENB C IP Address: 10 . 88 . 70 .	4
Slot: Revision:	C Host Name: C Ho	•
🔽 Open Mod	tule Properties OK Cancel H	lelp

6. Enter values for Name, IP Address, Slot, Electronic Keying, and Revision, noting that we used the following values:

Name	Local_ENBT
IP Address	10.88.70.4
Slot	3
Electronic Keying	Compatible Keying
Revision	3.1

7. Click OK to accept the configuration.

The Module Properties dialog opens.

🔲 Module Prop	perties: Local:3 (1756-ENBT/A 3.1)
General <u>Conr</u> Type: Vendor: Parent:	nection RSNetWorx Module Info Port Configuration Port Diagnostics Backplane 1756-ENBT/A 1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media Allen-Bradley Local
Na <u>m</u> e: Descri <u>p</u> tion:	Local_ENB Address / Host Name Image: Control of the state o
Sl <u>o</u> t: <u>R</u> evision:	3 ★ 3 ▼ ← 1 ★ Electronic Keying: Compatible Keying ▼
Status: Offline	OK Cancel Apply Help

Add the POINT I/O Adapter to the I/O Configuration

Next, you must add the adapter as a child of the local 1756-ENBT module.

1. In the Project dialog, right-click the local 1756-ENBT module under the I/O Configuration folder, and select New Module from the dialog.



The Select Module dialog opens.

		1
	Find	Add Favorite
		Find

2. Expand the Communications tree.

Select Module		×
Module	Description	Vendor
- Communications		
1734-AENT	1734 Ethernet Adapter, Twisted-Pair Media	Allen-Bradley
	1734 Ethernet Adapter, 2-Port, Twisted Pair Media	Allen-Bradley
	1738 Ethernet Adapter, Twisted-Pair Media	Allen-Bradley
1738-AENTR	1738 Ethernet Adapter, 2-Port, Twisted Pair Media	Allen-Bradley
1756-EN2F	1756 10/100 Mbps Ethernet Bridge, Fiber Media	Allen-Bradley
1756-EN2T	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
1756-EN2TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair	Allen-Bradley
1756-EN3TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair	Allen-Bradley
1756-ENBT	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
1756-ENET/A	1756 Ethernet Communication Interface	Allen-Bradley
1756-ENET/B	1756 Ethernet Communication Interface	Allen-Bradley
1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv	Allen-Bradley 💌
•		
	<u> </u>	Add Favorite
By Category By Ve	endor Favorites	
	OK Cancel	Help

3. Select your adapter from the list, and click OK, noting that we entered these values on the General Tab of the New Module dialog.

Name	POINT_IO_Adapter
IP Address	10.88.70.2

IMPORTANT	The Slot field appears grey because the slot is automatically 0 for
	the 1734-AENTR adapter.

The New Module dialog opens.

New Module			×
General* Conn	ection Module Info Internet Protocol Port Configu	ration Network Chassis Size	
Type: Vendor: Parent	1734-AENTR 1734 Ethernet Adapter, 2-Port, Twister Allen-Bradley	l Pair Media	
Name:	Point ID Adapter	C Private Network: 192 168 1	
Description:		© IP Address: 10 . 88 . 70 . 2 C Host <u>N</u> ame:	
Module Defin Revision:	ition Change	Sl <u>o</u> t:	
Electronic Ke	ying: Compatible Module		
Connection:	Rack Optimization		
Chassis Size	: 1		
Status: Creating		OK Cancel <u>H</u> elp	

4. Click Change...

The Module Definition dialog opens.

Module Definition*		×
<u>R</u> evision:	3 💌 1 🛓	
Electronic Keying:	Compatible Module	
Connection:	None	
Chassis Size:	3	
OK	Cancel Help	

5. Choose values for Connection, Chassis Size, Electronic Keying and Revision, noting that we used the following values:

Connection	None
Chassis Size	3
Electronic Keying	Compatible Module
Revision	3.1

IMPORTANT	The chassis size value equals 1 for the adapter plus the number of I/O
	modules installed (physically present on the I/O backplane).

Connection choices are the following:

- None the adapter only makes a direct connection to each of the modules referenced by the data.
- Rack optimization digital I/O data is collected into a rack image. This
 rack image does not include analog or specialty I/O modules.
- Listen only rack optimization read or verify input data only, but does
 not control the modules. When you have multiple controllers, one
 controller is used to control and the other controllers are used to
 monitor. When the owning controller of rack-optimized connection
 closes the connection, the Listen-Only data will also stop.
- Choose None as Connection, because we are only making direct connections, then click OK. There is no need to have a rack-optimized connection if all I/O connections to the POINT I/O modules are directly connected.

A dialog box opens.

RSLogix	5000	×
⚠	These changes will cause module data types and properties to change. Data will be set to default values unless it can be recovered from the existing module properties. Verify module properties before Applying changes.	
	Change module definition?	
	<u>Y</u> es <u>N</u> o	

The requested packet interval (RPI) is disabled because you have chosen None as the Connection.

7. Click OK to accept the configuration.

The name of your adapter appears in the Ethernet folder.



Add the POINT I/O Modules to the I/O Configuration

You now add POINT I/O modules to the I/O Configuration List under the adapter.

In this example, you add a 1734-OW2 relay output and a 1734-OV4E sink output modules with standard configurations. Use these steps as a guide when configuring different I/O modules for your system.

TIP	This example application uses I/O module default
	configurations. For more information, refer to the
	POINT I/O Selection Guide, publication <u>1734-SG001</u> .

Add the Relay Output Module

1. Right-click the name of the remote adapter under the I/O Configuration folder and select New Module.

×

Select Module

Module Description Vendor

Analog

Digital

Other

Specialty

The Select Module dialog opens.

By Vendor



By Category

3. Select the 1734-OW2 relay output module from the list and click OK.

Favorites

Find.

Cancel

Help



The New Module dialog opens.

Rew Module		×
General* Conn	ection Module Info Fault/Program Action	
Type: Vendor: Parent:	1734-0W/2 2 Point AC/DC Relay Output Allen-Bradley POINT ID Adapter	
Name:	POINT_Relay_Output Slot: 1	
Description:		
_ Module Defin	ition	
Series:	C Change	
Revision:	3.1	
Electronic Ke	ying: Compatible Module	
Connection:	Data	
Data Format:	Integer	
Status: Creat	ing OK Cancel Help	

- 4. Enter values for Name and Slot, noting that we used the following values.

 Name
 POINT_Relay_Output

 Slot
 1
- 5. Choose Connection.

The RPI is selectable since it is a direct connection.

6. Enter 50 for requested packet interval (RPI) to set how often you exchange data with the I/O adapters.

IMPORTANT To avoid overloading the I/O adapters, we recommend that RPI be no less than 10 ms for rack connections and 50 ms for direct connections.

7. Click OK to save the configuration. The relay output module appears under Ethernet.

RSLogix 5000 - POINT_I_0_Controller [1756] X File Edit View Search Logic Communications Tools
Window Help
Offline 🛛 🗸 🗖 RUN
No Forces
No Edits
Redundancy 👦
Ready //

Add the Digital Output Module

1. Right-click the name of the I/O adapter and select New Module.





Expand the Digital tree.

Select Module		×
Module P-Analog Digital P-Other Specialty	Description	Vendor
By Category B	y Vendor Favorites	Find Add Favorite

2. Select the 1734-OV4E digital output module from the list.

lodule	Description	Vendor
- 1734-OB2E	2 Point 10V-28V DC Electronically Fused Output, Source	Allen-Bradley
- 1734-OB2EP	2 Point 10V-28V DC Electronically Fused Protected Output	Allen-Bradley
- 1734-OB4	4 Point Relay Output N.O./N.C.	Allen-Bradley
- 1734-OB4E	4 Point 10V-28V DC Electronically Fused Output, Source	Allen-Bradley
- 1734-OB8	8 Point Relay Output N.O./N.C.	Allen-Bradley
- 1734-OB8E	8 Point 10V-28V DC Electronically Fused Output, Source	Allen-Bradley
- 1734-OV2E	2 Point 10V-28V DC Electronically Fused Output, Sink	Allen-Bradley
	4 Point 10V-28V DC Electronically Fused Output, Source	Allen-Bradley
- 1734-OW2	2 Point AC/DC Relay Output	Allen-Bradley
- 1734-OW4	4 Point AC/DC Relay Output	Allen-Bradley
	2 Point Relay Output N.O./N.C.	Allen-Bradley
🕂 Other		-
± Specialty		
	Find	Add Favorite
By Category B	y Vendor Favorites	

3. Click OK.

The New Module dialog opens.

 Enter values for Name and Slot, noting we used the following.

 Name
 POINT_Digital_Output

 Slot
 2

General* Conne	ction Module Info Fault/Program Action Configuration
Туре:	1734-0V4E 4 Point 10V-28V DC Electronically Fused Output, Source
Vendor:	Allen-Bradley
Parent:	POINT_IO_Adapter
Name:	POINT_Digital_Output Slot: 2
Description:	A V
Module Definit	tion
Series:	C Change
Revision:	3.1
Electronic Key	ing: Compatible Module
Connection:	Data
Data Format:	Integer

- **4.** On the Connection tab, enter 10 ms as the RPI for the 1734-OV4E module.
- 5. Click OK.

The I/O Configuration in the Project dialog should look similar to the following



Edit the Controller Tags

When you add modules to the I/O configuration the system creates tags for those modules to use in the application program.

For the example application you need to add one more controller tag.

1. Double-click the Controller Tags folder in the project dialog.



The Controller Tags dialog opens. You see the tags created for the 1734-AENTR adapter and its digital I/O modules.

	s	cope	e: POINT_IO_Controlle 💌	Show All	🖌 Sort: Tag Name 💌			
		Ρ	Tag Name ⊽	Alias For	Base Tag	Туре	Style	Descri 🔺
Г		F				AB:1734_D02:C:0		
				POINT_IO_Adapter:0.Data[1]	POINT_IO_Adapter:0.Data[1]	SINT	Binary	
						AB:1734_DOV4:C:0		
Tags created by the system				POINT_IO_Adapter:I.Data[2]	POINT_IO_Adapter:I.Data[2]	SINT	Binary	
			+-POINT_I0_Adapter:2:0	POINT_IO_Adapter:0.Data[2]	POINT_IO_Adapter:0.Data[2]	SINT	Binary	
						AB:1734_8SL0T:1:0		
E i i i L			+-POINT_I0_Adapter:0			AB:1734_8SL0T:0:0		
Enter the new tag here	*		-					
	4		Monitor Tags \Edit Tag	s /	<u> </u>			×

2. Click the Edit Tags tab at the bottom of the Controller Tags dialog.

s	сор	e: POINT_IO_Controlle	Show: Show All	🖌 Sort: Tag Name 💌			
	Ρ	Tag Name ⊽	Alias For	Base Tag	Туре	Style	Descri 🔺
		⊕-P0INT_I0_Adapter:1:C			AB:1734_D02:C:0		
		+-POINT_IO_Adapter:1:0	POINT_IO_Adapter:0.Data[1]	POINT_IO_Adapter:0.Data[1]	SINT	Binary	
					AB:1734_D0V4:C:0		
			POINT_IO_Adapter:I.Data[2]	POINT_IO_Adapter:I.Data[2]	SINT	Binary	
			POINT_IO_Adapter:0.Data[2]	POINT_IO_Adapter:0.Data[2]	SINT	Binary	
					AB:1734_8SL0T:I:0		
					AB:1734_8SLOT:0:0		
I		Parts_count			COUNTER 🔜	Decimal	
*							

3. Create the following tag:

Tag	Туре
Parts_Count	Counter

4. Close the Controller Tags dialog.

Create the Ladder Program

Create the example ladder program to test the I/O.

1. Under the Main Program folder, double-click Main Routine.



2. Enter the following ladder program using the tags previously created.



3. Save the program.

Follow this procedure to download the program you just saved to the ControlLogix controller.

1. From the main menu, choose Communications>Who-Active. The Who Active dialog opens.



- 2. Navigate to select the slot where the controller is located in the chassis.
- 3. Choose Set Project Path.

Download the Program to the Controller

4. Choose Download.

The Download dialog opens with a reminder of the following.

- The controller is in Remote Run mode.
- The mode changes to Remote Program prior to download.



5. From the Download dialog, choose Download The RSLogix 5000 software dialog opens.



6. Notice that the 1756-ENBT Bridge is now online. If yellow triangles are present, see the following section.



Verify the Module Chassis Size

You have now built the I/O tree in the RSLogix 5000 software, and the RSLogix 5000 software used the chassis size from the 1734-AENTR General tab.

Now you need to download this new chassis size value into the 1734-AENTR adapter hardware. This procedure synchronizes the chassis size value from the RSLogix 5000 software into the 1734-AENTR adapter hardware.

- 1. Verify that the RSLogix 5000 software is online.
- 2. In the Project dialog, right-click the 1734-AENTR adapter under I/O Configuration.

- 3. Select Properties.
- 4. Click the Connection tab. The Module Fault error code displays.

Module Properties: Local_ENB:0 (1734-AENTR 3.1)	<u>_ ×</u>
General Connection Module Info Internet Protocol Port Configuration Network Chassis Size	
Requested Packet Interval (RPI):	
Inhibit Module	
Major Fault On Controller If Connection Fails While in Run Mode	
Module Fault	
(Code 16#0010) Mode or state of module does not allow object to perform requested service	
Status: Faulted OK Cancel Ap	piy Help

- 5. Click the Chassis Size tab.
- 6. Click Set Chassis Size in Module.

	Module Properties: Local_ENB:0 (1734-AENTR 3.1)	<u>- I ×</u>
Value from Module Properties General Tab	General Connection Module Infu Internet Protocol Port Configuration Network Chassis Size Chassis Size From General Tab: 3 Set Chassis Size in Module Set Chassis Size in Module Chassis Size In Module: 1	
Value currently ——— stored in 1734- AENTR adapter	Refresh	
	Status: Faulted OK Cancel Apply H	elp

7. Read and acknowledge the warning dialog.



8. Click OK to continue.

Notice the chassis size stored in the module has been changed to 3.

At this point, your POINTBus status LED should be solid green. All the yellow triangles in your I/O configuration should be gone.

Module Properties: Local_ENE	:0 (1734-AE	NTR 3.1)	_O×
General Connection Module Infe) Internet Pro	tocol Port Configuration Network Chassis Size	
Chassis Size From General Tab:	3	Set Chassis Size in Module	
Chassis Size In Module:	3		
		Refresh	
Statue: Bunning			
otatas. Hummig			
J			

9. Click OK.

Configure the Adapter with Fixed IP Address

To configure the adapter with a fixed IP address to prevent the adapter from ceasing to communicate with the ControlLogix controller:

- 1. All controllers with I/O connections to the AENTR and/or the modules in its backplane need to be in program mode.
- 2. In the Module Properties dialog, click the Port Configuration tab.
- **3.** Unselect the Enable DHCP box.

Module Properties - EN_Bridge:0 (1734-AENT/A 1.1)	×
General Connection Module Info Port Configuration Chassis Size	
P Address Domain Name	
<u>I</u> P Address: <u>10 . 88 . 70 . 2</u> <u>D</u> omain Name:	
(Must Match IP Address on General Tab) Primary DNS Server Address:	0.0.0.0
Subnet Mask: 255 . 255 . 0 . 0 Secondary DNS Server Address:	0.0.0.0
Gateway Address: 0.0.0.0	
(DHCP must be configured to return a fixed address.)	Set
Status: RunningOKCancel	Apply Help

- 4. Click the Set button.
- 5. Read and acknowledge the warning.

RSLogix 5	000	×
1	Danger: Multi-controller systems If two or more controllers are sharing this module, applying these configuration changes could affect the operation of the other controllers.	
	Apply the changes to the module configuration?	
	OK Cancel Help	

- 6. Click OK.
- 7. Click the Refresh button to verify the changes.

Recover From an Overloaded Adapter

Each I/O connection established with the I/O adapter consumes a portion of microprocessor bandwidth. The amount of bandwidth used by a connection depends on several variables, such as the requested packet interval (RPI), number of I/O modules involved in the connection, and rate of change of the I/O.

The AENTR adapter continuously monitors this bandwidth and rejects requests for new I/O connections when there is insufficient bandwidth available to support the new connection.

The condition where the I/O adapters cannot support the connection due to a limit of the bandwidth of the microprocessor is shown on the Connection tab of the Module Properties dialog.

Module Properties: Local_ENB:0 (1734-AENTR 3.1)	<u>_ ×</u>
General Connection Module Info Internet Protocol Port Configuration Network Chassis Size	
Requested Packet Interval (RPI):	
Inhibit Module	
Major Fault On Controller If Connection Fails While in Run Mode	
⊂ Module Fault	
(Code 16#0010) Mode or state of module does not allow object to perform requested service	
Status: Faulted DK Cancel Apply H	elp de
	<u> </u>

If you encounter this condition, the only action you can take is to alter the existing connections to reduce the amount of microprocessor bandwidth consumed. The most likely fixes for this condition include the following:

- Increase the RPI.
- Decrease the number of connections.
- Remove modules from the rack-optimized I/O connection.
- Remove the rack-optimized connection if there are no modules participating in it.

Chapter Summary

This chapter provided instructions on how to configure the POINT I/O Adapter for Direct Connection through the the RSLogix 5000 software. It included information about setting up the hardware and configuring the I/O, adding the adapter to the configuration, and configuring the adapter with a fixed IP address.

Configure the Adapter for Direct Connection and Rack Optimization in RSLogix 5000 Software

Overview

This chapter guides you through the steps required to configure your AENTR adapter with both direct and rack-optimized I/O connections using RSLogix 5000 software.

You can mix I/O connection formats for different I/O modules communicating through the same adapter. I/O modules set up to use rack optimization communicate at the rate of the RPI configured for the adapter.

I/O modules controlled by a direct I/O connection communicate at their own set RPI. The RPI of the rack-optimized I/O connection has no bearing on the direct I/O connections. The modules presented in this chapter have a configuration using RSLogix 5000 software, revision 11. The chapter contains the following main sections.

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ATTENTION: You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

Set Up the Hardware

The following section describe how to set up the I/O Hardware.

Set Up the POINT I/O Hardware

In this example, a ControlLogix chassis contains the L63 controller in slot 1 and a 1756-ENBT bridge module in slot 3. In this example, we mounted the 1734-AENTR adapter on a DIN rail in slot 0, with a 1734-OW2/C relay output module in slot 1, a 1734-OV4E/C sink output module in slot 3, and two other POINT I/O modules which will not be controlled by this Logix controller in slots 2 and 4.



To work along with this example, set up your system as shown in the figure.

- Note that in the example application, the Logix controller and 1756-ENBT module (firmware revision 2.3 or later) we assume are in the slots shown in the figure.
- Verify the IP addresses for your programming terminal, 1756-ENBT module, and I/O adapter.
- Verify the position (slot) of the I/O modules on the DIN rail.
- Verify that you properly connected all wiring and cabling.
- Make sure you configured your communication driver (such as AB_ETH-1 or AB-ETHIP-1) in the RSLinx software. See Configure the RSLinx Ethernet Communication Driver on page 93.

Create the Example Application

Perform the following steps to create the example application:

- 1. Start the RSLogix 5000 Enterprise Series software. The RSLogix 5000 software main dialog opens.
- 2. From the File menu, select New.



3. The New Controller dialog opens.

New Controller		×
Vendor:	Allen-Bradley	
<u>T</u> ype:	1756-L63 ControlLogix5563 Controller	ОК
Re <u>v</u> ision:	18 💌	Cancel
	Eedundancy Enabled	Help
Na <u>m</u> e:	POINT_IO_CONTROLLER	
Descri <u>p</u> tion:	<u> </u>	
	<u>_</u>	
<u>C</u> hassis Type:	1756-A4 4-Slot ControlLogix Chassis	
Sl <u>o</u> t:	1 Safety Partner Slot: <none></none>	
Cr <u>e</u> ate In:	C:\RSLogix 5000\Projects	Browse

- **4.** Enter an appropriate Name for the Controller, for example, POINT_IO_Controller.
- 5. Select the following:
 - Revision
 - Chassis Type
 - Slot number
 - Description (optional)
- **6.** Complete the Create In entry by selecting the folder where you want to save the file.
- To use redundancy in your system, select the Redundancy Enabled checkbox. RSLogix 5000 software, revision 11 and later includes enable redundancy.
 - This example does not use redundancy.
- 8. Click OK.

Configure the I/O Modules

You now add the I/O modules to the controller I/O configuration. To do this, first add the local 1756-ENBT module to the I/O configuration. Next, add the I/O adapter as a child of the 1756-ENBT module, and then add the I/O modules as children of the adapter.

IMPORTANT Click the Help button on the configuration dialog shown in this section if you need assistance in selecting and setting the parameters.

Add the Local EtherNet/IP Bridge to the I/O Configuration

1. Right-click the I/O Configuration folder in the project dialog and select New Module...



2. The Select Module dialog opens.

Select Module	_			×
Module	Description			Vendor
Controllers Controllers Digital Digital				
Motion Other Specialty				
			Find	Add Favorite
By Category By ∖	'endor Favorites			
		OK	Cancel	Help

3. Expand the Communications tree, as in the following dialog and select the 1756-ENBT EtherNet/IP Bridge.

Select Module		
Module	Description	Vendor
- 1756-CNBR/B	1756 ControlNet Bridge, Redundant Media	Allen-Bradley
- 1756-CNBR/D	1756 ControlNet Bridge, Redundant Media	Allen-Bradley
1756-CNBR/E	1756 ControlNet Bridge, Redundant Media	Allen-Bradley
- 1756-DHRIO/B	1756 DH+ Bridge/RIO Scanner	Allen-Bradley
1756-DHRIO/C	1756 DH+ Bridge/RIO Scanner	Allen-Bradley
1756-DHRIO/D	1756 DH+ Bridge/RIO Scanner	Allen-Bradley
- 1756-DNB	1756 DeviceNet Scanner	Allen-Bradley
- 1756-EN2T/A	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
1756-ENBT/A	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
- 1756-ENET/A	1756 Ethernet Communication Interface	Allen-Bradley
- 1756-ENET/B	1756 Ethernet Communication Interface	Allen-Bradley
- 1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv	Allen-Bradley
	SynchLink Interface	Allen-Bradley
•		•
	Find	Add Favorite
By Category By \	/endor Favorites	
	OK Cancel	Help

4. Click OK.

The Select Major Revision dialog opens.

Select Major Revis	ion			×
Select major revis module being cre	ion for new " ated.	1756-E1	NBT/A	
Major Revision:	3			•
ОК	Cancel		Help	

5. Select the value for Major Revision and click OK. The Module Properties dialog opens.

New Module	×
Туре:	1756-ENBT 1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Change Type +
Vendor:	Allen-Bradley
Parent:	Local
Na <u>m</u> e:	Local_ENB Address / Host Name
Description:	
	C Host Name:
Sl <u>o</u> t	3 🗄
<u>R</u> evision:	3 T 1 Electronic Keying: Compatible Keying
🗖 Open Mod	ule Properties OK Cancel Help

6. Enter values for Name, IP Address, Slot, Electronic Keying, and Revision, noting we used the following values:

Name	Local_ENB
IP Address	10.88.70.4
Slot	3
Electronic Keying	Compatible Module
Revision	3.1

7. Click OK to accept the configuration.

Add the I/O Adapter to the I/O Configuration

Next, you must add the I/O adapter as a child of the local 1756-ENBT module.

1. In the Project dialog, right-click the local 1756-ENBT module under the I/O Configuration folder, and select New Module from the dialog.

E G I/O Configuration		
🔤 🗍 [3] 1756-ENBT/A Local	New Module	
	Cut	Ctrl+X
	Сору	Ctrl+C
	Paste	⊂trl+V
	Delete	Del
	Cross Reference	Ctrl+E
	Print	Ctrl+P
	Properties	



	Descriptio	n		Vendor
Communications				
Drives				
] HMI				
			Find	Add Favorite
-			 	

2. Expand the Communications tree and select the 1734-AENTR Ethernet Adapter from the list.

Select Module		×
Module	Description	-1
- 1734-AENT	1734 Ethernet Adapter, Twisted-Pair Media Allen-Bradle	y 🔲 🛛
1734-AENTR	1734 Ethernet Adapter, 2-Port, Twisted Pair Media Allen-Bradle	
- 1738-AENT	1738 Ethernet Adapter, Twisted-Pair Media Allen-Bradle	/
- 1738-AENTR	1738 Ethernet Adapter, 2-Port, Twisted Pair Media Allen-Bradle	y
- 1756-EN2F	1756 10/100 Mbps Ethernet Bridge, Fiber Media Allen-Bradle	/
1756-EN2T	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media Allen-Bradle	/
- 1756-EN2TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair Allen-Bradle	/
- 1756-EN3TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair Allen-Bradle	/
1756-ENBT	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media Allen-Bradle	/
1756-ENET/A	1756 Ethernet Communication Interface Allen-Bradle	/
- 1756-ENET/B	1756 Ethernet Communication Interface Allen-Bradle	/
- 1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv., Allen-Bradle	∠_
	<u> </u>	-
	Eind Add Favori	te
By Category By \	/endor Favorites	
	OK Cancel <u>H</u> elp	

3. Click OK.

The New Module dialog opens.

New Module		×
General [®] Connection [®] Type: 1734-A Vendor: Allen-B Parent: Lcoal_E Name: Paint_ Description: Module Definition Revision: Electronic Keying: Connection: Chassis Size:	Module Info* Internet Protocol* Port 0 ENTR 1734 Ethernet Adapter, 2-Port, Tw adley NB 0_Adapter 	Corfiguration" Network" Chassis Size" isted Pair Media Ethernet Address Private Network: 192.168.1. I PAddress: 10 88 70 2 Host Name: Slot: 0 V
Status: Creating		OK Cancel Help

4. Enter values for Name and IP Address, noting we used the following values.

Name	POINT_IO_Adapter
IP Address	10.88.70.2

IMPORTANT The Slot field appears grey because the slot is automatically 0 for the I/O adapter.

5. On the General tab, click Change... The Module Definition dialog opens.

Module Definition*		×
<u>R</u> evision:	3 🔽 1 🕂	
Electronic <u>K</u> eying:	Compatible Module	
Connection:	Rack Optimization	
Chassis Size:	5	
OK	Cancel Help	

6. Enter values for Connection, Chassis Size, Electronic Keying, and Revision.

Connection	Rack Optimization
Chassis Size	5
Electronic Keying	Compatible Module
Revision	3

IMPORTANT The chassis size equals 1 for the adapter plus the number of I/O modules installed (physically present on the I/O backplane).

Connection choices include:

- None the adapter makes a direct connection to each of the modules referenced by the data.
- Rack optimization– digital I/O data is collected into a rack image. This does not include analog or specialty I/O modules.
- Listen only rack optimization read or verify data only, but does not control the modules. When you have multiple controllers one controller is used to control and the other controllers are used to monitor.
- 7. Choose Rack Optimization from the Connection drop-down list, because we are making a mixed connection that includes both a direct connection and rack-optimized connection.
- 8. Click OK.

The New Module properties dialog opens.

New Module	×
General* Connection* Module Info* Internet Protocol* Port Configuration* Chassis Size*	_,
Requested Packet Interval (RPI): 20.0 ms (2.0 - 750.0)	
🗖 Inhibit Module	
🔲 Major Fault On Controller If Connection Fails While in Run Mode	
Use Unicast <u>C</u> onnection over EtherNet/IP	
- Modula Fault	
moutrie i suit	
Status: Creating OK Cancel Help	

9. Verify that the requested packet interval (RPI) is appropriate for your system. You use this value for the rack-optimized connection to the I/O modules.

IMPORTANT To avoid overloading the adapter, we recommend that you set RPI no less than 10 ms for rack connections and 50 ms for direct connections.

10. Click OK. The name of the adapter appears in the I/O tree.



Add the POINT I/O Module and Configure for Rack-optimized Connection

1. Right-click the POINT I/O Chassis in the I/O Configuration folder and select New Module...





Module	Description			Vendor
		•		
🛨 Digital				
Other				
			Final	A del Escueite
			Finu	
By Category	By Vendor	Favorites		

- 2. Expand the Digital tree.
- 3. Select the 1734-OW2 relay output module from the list and click OK.

/lodule	Description	Vendor
- 1734-OB2EP	2 Point 10V-28V DC Electronically Fused Protected Output	t Allen-Bradley
- 1734-OB4	4 Point Relay Output N.O./N.C.	Allen-Bradley
- 1734-OB4E	4 Point 10V-28V DC Electronically Fused Output, Source	Allen-Bradley
- 1734-OB8	8 Point Relay Output N.O./N.C.	Allen-Bradley
- 1734-OB8E	8 Point 10V-28V DC Electronically Fused Output, Source	Allen-Bradley
- 1734-OV2E	2 Point 10V-28V DC Electronically Fused Output, Sink	Allen-Bradley
- 1734-OV4E	4 Point 10V-28V DC Electronically Fused Output, Sink	Allen-Bradley
- 1734-OV8E	8 Point 10V-28V DC Electronically Fused Output, Sink	Allen-Bradley
1734-OW2	2 Point AC/DC Relay Output	Allen-Bradley
- 1734-OW4	4 Point AC/DC Relay Output	Allen-Bradley
- 1734-OX2	2 Point Relay Output N.O./N.C.	Allen-Bradley
🕂 Other		
E Specialty		
•		
	<u> </u>	Add Favorite
By Category E	ly Vendor Favorites	

New Module		×
General* Conne	ction Module Info Fault/Program Action	
Type: Vendor: Parent: Na <u>m</u> e:	1734-0W2 2 Point AC/DC Relay Output Allen-Bradley IO_Adapter Point_Relay_Output	
Descri <u>p</u> tion:		
Module Definit	ion	
Series:	C Change	
Revision:	3.1	
Electronic Key	ing: Compatible Module	
Connection:	Rack Optimization	
Data Format:	Integer	
Status: Creating	OK Cancel Help	

The New Module dialog opens.

4. Click Change... and then enter values for Name and Slot, noting we used the following values.

Name	POINT_Relay_Output
Slot	1

 Note that the requested packet interval (RPI) is the same as was chosen by the adapter. You use this value for the rack-optimized connection to the I/ O modules.

IMPORTANT To avoid overloading the adapter, we recommend that you set RPI no less than 10 ms for rack connections and 50 ms for direct connections.

6. Click OK to accept the configuration.

The name of the OW2 appears indented under the local 1734-AENTR in the I/O Configuration folder.



Add the POINT I/O Module and Configure For Direct Connection

- 1. Right-click the POINT I/O Chassis in the I/O Configuration folder, and select New Module.
- **IMPORTANT** If you exceed the adapter chassis size trying to add more modules than you configured, the New Module selection appears dim and is disabled. Increase the adapter chassis size to add more I/O modules.

The Select Module dialog opens.

Select Module				×
Module ⊕ Analog ⊕ Digital ⊕ Other ⊕ Specialty	Description			Vendor
By Category	By Vendor Favo	orites	<u> </u>	Add Favorite
		OK.	Cancel	

2. Expand the Digital tree.



3. Choose the 1734-OV4E/C module and click OK. The New Module dialog opens.

📑 New Module	<u>×</u>
General Conner	tion Module Info Fault/Program Action Configuration
Type: Vendor: Parent:	1734-0V4E 4 Point 10V-28V DC Electronically Fused Output, Sink Allen-Bradley
Na <u>m</u> e:	Sl <u>o</u> t: 2 V
Description:	x x
│ Module Defini Series: Revision: Electronic Key Connection: Data Format:	ion C Change 3.1 ing: Compatible Module Rack Optimization Integer
Status: Creating	OK Cancel <u>H</u> elp

- 4. From the New Module dialog, complete the following:
 - Enter a value for Name.
 - Enter a value for Slot.
 - Click Change to modify the module definition values.

The Module Definition dialog opens.

Module Definition*		×
<u>S</u> eries: <u>R</u> evision: Electronic <u>K</u> eying: Connection:	C V 3 V 1 2 Compatible Module V Data V	
Data Format:	Data Listen Only Rack Optimization	
	Cancel Help	

- For Connection, select Data. This configures the controller to make a Direct I/O Connection to the module.
- 6. Click OK.

7. From the New Module dialog, click the Connection tab. The New Module dialog opens.

New Module
General* Connection* Module Info Fault/Program Action Configuration
Requested Packet Interval (RPI): 50.0 = ms (2.0 - 750.0)
Inhibit Module
□ Major Fault On Controller If Connection Fails While in Run Mode
✓ Use Unicast Connection over EtherNet/IP
Module Fault
Status: Creating OK Cancel Help

- 8. From the New Module dialog, enter 50 for the Requested Packet Interval (RPI).
- 9. Keep the following unchecked.
 - a. Inhibit Module
 - b. Major Fault on Controller If Connection fails While in Run Mode
- 10. Click OK.
- 11. Choose File \rightarrow Save and enter the name and location of the file.

Download the Program to the Controller

Follow this procedure to download the program we just saved to the ControlLogix controller.

- 1. From the main menu, choose Communications>Who Active.
- 2. From the Who Active dialog, navigate to select the slot where the controller is located in the chassis.



- 3. Click Set Project Path.
- 4. Click Download. The Download dialog opens.



 From the Download dialog, click Download. The Downloading dialog displays the download progress.



Notice that the 1756-ENBT Bridge is now online.



If yellow triangles are present, see the following section.

Verify the Module Chassis Size

You have now built the I/O tree and the RSLogix 5000 software uses the chassis size from the General tab of the adapter for the rack-optimized I/O connection. Now you need to configure this new chassis size value into the adapter non-volatile memory. This procedure synchronizes the chassis size value from the RSLogix 5000 software into the adapter hardware. You must be online to perform this procedure.

- 1. Verify that the RSLogix 5000 software is online.
- 2. Right-click the name of the adapter under I/O Configuration in the Project dialog.
- 3. Select Properties.

 Click the Connection tab. The Module Fault error code displays at the bottom of the Connection tab.

Module Properties: Local_ENB:0 (1734-AENTR 3.1)	
General Connection Module Info Internet Protocol Port Configuration Network Chassis Size	
Requested Packet Interval (RPI):	
Inhibit Module	
Major Fault On Controller If Connection Fails While in Run Mode	
Module Fault	
(Code 16#0010) Mode or state of module does not allow object to perform requested service	
Status: Faulted OK Cancel Apply H	elp

- 5. Click the Chassis Size tab.
- 6. Click Set Chassis Size in Module.

Module Properties: Local_ENB:0	(1734-AENTR 3.1)	_O×
General Connection Module Info	Internet Protocol Port Configuration Network Chassis Size	
Chassis Size From General Tab:	3 Set Chassis Size in Module	
Chassis Size In Module:	1	
	Refrech	
Status: Faulted	OK Cancel Apply I	Help

7. Read and acknowledge the warning dialog.

RSLogix	5000	×
<u>.</u>	DANGER: Multi-controller systems: If two or more controller are sharing this module, setting the chassis size could affect the operation of the other controllers.	
<u>.</u>	Missing Modules: All slot must be filled with modules. Unexpected behaviors will result if modules are missing.	
<u>.</u>	Incorrect Chassis Size: The chassis size specified must match the physical chassis exactly or unexpected behaviors will result.	
⚠	This function may result in modules being re-addressed. Ensure that all planned modules are presented and that all terminal bases are filled.	
	Set the Chassis Size of the Point I/O System to 5 ?	
	OK Cancel Help	

- 8. Click OK to continue.
- 9. Notice the chassis size in the module is modified to 5.

Module Properties: Local_ENB:0 (1734-AENTR 3.1)			
General Connection Module Inf	o Internet Protocol Port Configura	ation Chassis Size	
Chassis Size From General Tab:	5 get Chassis Size in	Module	
Chassis Size In Module:	5		
		Retresh	
Status: Faulted		OK Cancel Apply	Help

10. Click OK.

At this point, your POINTBus status LED should be solid green. All the yellow triangles in your I/O configuration should be gone.

- 11. Click OK to close the dialog.
- **12.** Click File \rightarrow Save to save the project.

Access Module Data

Use the following information to use the I/O adapter data in the ladder logic program:

- POINT_IO_Adapter the name you gave to your EtherNet adapter
- # slot number of POINT I/O module
- C configuration, I = input, O = output

1						L .
N	ame <u>=8</u> A	Value	Force Mask 🔹	Style	Data Type	D,
_ E	-IO_Adapter:1:C	{}	{}		AB:1734_D02:C:0	
E	-IO_Adapter:1:0	2#0000_0000		Binary	SINT	
Ē	-IO_Adapter:2:C	{}	{}		AB:1734_DOV4:C:0	
E	-IO_Adapter:2:1	()	{}		AB:1734_D0B8:1:0	
H	-IO_Adapter:2:0	()	{}		AB:1734_D08:0:0	
E	-IO_Adapter:I	()	{}		AB:1734_5SL0T:I:0	
	±-I0_Adapter:I.SlotStatusBi	2#1111_1111_1111_1111_1111_1111_1111_11		Binary	DINT	П
	±-I0_Adapter:I.SlotStatusBi	2#1111_1111_1111_1111_1111_1111_1111_11		Binary	DINT	П
	±-I0_Adapter:I.Data	()	{}	Binary	SINT[5]	П
H	-IO_Adapter:0	{}	{}		AB:1734_5SL0T:0:0	П

Use the controller tags in your ladder program to read input data or write output data.

- For ControlLogix controller information, refer to ControlLogix System User Manual, publication <u>1756-UM001</u>.
- Slot Status Bits: The Slot Status bits display the connection status for each of the POINT I/O modules that use a rack-optimized connection.
 - Bit 0 is reserved for the adapter and always reports a value of 1.
 - Each of the other bits (1 to 63) correspond to a POINT I/O module that you install in the POINT I/O backplane.
 - In this example, we configured the 1734-AENTR adapter for both rack-optimized and direct connections. The slot status bits indicate that we installed the module in slot 2 with it

0 =module participating with no errors and

operating correctly:

1 = module not participating or connection error (typically, module removed/missing)
Troubleshoot the Adapter

Overview

This chapter describes the different status indicators available in the 1734 POINT I/O and 1738 ArmorPOINT I/O EtherNet/IP adapters and how to interpret these indicators to help troubleshoot the modules.

The following table lists where to find specific information

Торіс	Page
Interpret the Status Indicators	<u>65</u>
Status Indicators for POINT I/O Adapter	<u>65</u>
Status Indicators for ArmorPOINT I/O Adapter	<u>68</u>

Interpret the Status Indicators

Read this chapter to learn about what the LED status indicators mean for the POINT I/O and ArmorPOINT I/O EtherNet/IP adapters.

Status Indicators for POINT I/O Adapter

The following describes the status indicators on the 1734-AENTR.



Status Indicators for 1734-AENTR Adapter

	Status	Description
Module status	Off	No power applied to device
	Solid green	Device operating normally
	Flashing red/green	Module self-test
	Flashing red	Recoverable fault. Complete firmware update, verify address switches.
	Solid red	Unrecoverable fault, may require device replacement.
Network status	Off	Device is not online - Device has not completed Dup_MAC_ID test. - Device not powered - check module status indicator.
	Flashing green	Device is online but has no CIP connections in the established state.
	Solid green	Device online and has CIP connections in the established state.
	Flashing red	One or more CIP connections in timed-out state. Check for I/O module failure and controller operation.
	Solid red	Duplicate IP address detected. Verify IP address setting and correct, as needed.
	Flashing red/green	Module self-test
Network Activity	Off	No link established with Port 1 or Port 2.
	Solid green	Link established with Port 1 and/or Port 2 @ 100 Mbps. Link established with Port 1 and Port 2. One port @ 100 Mbps and the other port @ 10 Mbps.
	Flashing green	Transmit or receive activity present on Port 1 and/or Port 2 @ 100 Mbps. Transmit or receive activity present on Port 1 and/or Port 2. One port @ 100 Mbps and the other port @ 10 Mbps.
	Solid yellow	Link established with Port 1 and/or Port 2 @ 10 Mbps.
	Flashing yellow	Transmit or receive activity present on Port 1 and/or Port 2 @ 10 Mbps.
Link 1 or Link 2 Activity /	Off	No link established.
Status	Solid green	Link established @ 100 Mbps.
	Flashing green	Transmit or receive activity present on indicated port @ 100 Mbps.
	Solid yellow	Link established @ 10 Mbps.
	Flashing yellow	Transmit or receive activity present on indicated port @ 10 Mbps.
POINTBus status	Off	Device is not online. Device has not completed Dup_MAC_ID test. Device not powered - check module status indicator.
	Flashing green	Device is online but has no connections in the established state. Firmware (NVS) update in progress.
	Solid green	Adapter online with connections established.
	Flashing red	Recoverable fault occurred:
		 At cycle power, the number of expected modules does not equal the number of modules present.
		• A module is missing.
		Node fault (I/O connection timeout) occurred.
	Solid red	Unrecoverable fault occurred - POINTBus is off.
	Flashing red/green	LED powerup test is in progress.

Status Indicators for 1734-AENTR Adapter

	Status	Description
System power	Off Not active. Adapter power is off, or there is a DC-DC converter problem	
	Solid green	System power is on. DC-DC converter output is active (5V).
Field power	Off	Not active. Adapter power is off.
	Solid green	Power is on. 24V input is present.

Status Indicators for ArmorPOINT I/O Adapter

The following describes the status indicators on the 1738-AENTR.

This module has the following indicators:

- Adapter, Network, and POINTBus status indicators for EtherNet/IP
- Adapter and System power indicators
- Network activity indicator



Status Indicators for 1738-AENTR Adapter

	Status	Description
Adapter status	Off	No power applied to device
	Green	Device operating normally
	Flashing red/green	Device is in self-test
	Flashing red	Recoverable fault. -Firmware (NVS) update. -Address switches changed.
	Red	Unrecoverable fault -Self-test failure (Flash checksum failure at power up, RAM test failure or EEPRO< checksum failure at cycle power). -Firmware fatal error.

Status Indicators for 1738-AENTR Adapter

	Status	Description		
Network activity	Off	No link established with Port 1 or Port 2.		
	Green	Link established with Port 1 and/or Port 2 at 100 Mbps. Link established with Port 1 and Port 2. One port at 100 Mbps and one port at 10 Mbps		
	Flashing green	Transmit or receive activity present on Port 1 and/or Port 2 at 100 Mbps. Transmit or receive activity present on Port 1 and/or Port 2. One port at 100 Mbps and one port at 10 Mbps.		
	Yellow	Link established with Port 1 and/or Port 2 at 10 Mbps.		
	Flashing yellow	Transmit or receive activity present Port 1 and/or Port 2 at 10 Mbps.		
Network status	Off	Device not initialized. Device does not have an IP address.		
	Green	CIP connections present. Device online and has an IP address, and CIP connections are established.		
	Flashing green	No CIP connections present. Device has an IP address, but no CIP connections are established.		
	Flashing red/green	Device is in self-test.		
	Flashing red	One or more CIP connections have timed out.		
System power	Off	Not active; adapter power is off, or DC-DC converter problem is present.		
	Green	System power is on; DC-DC converter output is active (5V).		
Adapter power	Off	Not active; adapter power is off		
	Green	Power is on; 24V input is present.		
POINTBus status	Off	Device is not online. - Device has not completed Dup_MAC_ID test. - Device not powered - check Adapter Status indicator		
	Green	Device is online and has connections in the established state.		
	Flashing green	Device is online but has no connections in the established state. Firmware (NVS) update in progress.		
	Flashing red/green	LED cycle power test present.		
	Flashing red	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identify Communication Faulted Request - long protocol message		
	Red	Unrecoverable fault has occurred: - POINTBus is off.		
Link 1 or Link 2 activity/status	Off	No link established.		
	Green	Link established at 100 Mbps		
	Flashing green	Transmit or receive activity present at 100 Mbps.		
	Yellow	Link established at 10 Mbps.		
	Flashing yellow	Transmit or receive activity present at 10 Mbps.		

Notes:

EtherNet/IP I/O Adapter Specifications

Specifications

Following are specifications for the POINT I/O and ArmorPOINT I/O modules

General Specifications – POINT I/O and ArmorPOINT I/O 2 Port EtherNet/IP Adapters 1734-AENTR, 1738-AENTR

Specification	Description
Module location	Starter module - left side of the 1734 system
LED Indicators	Adapter status - green/red Network status - green/red POINTBus status - green/red Network activity - green System power (POINTBus 5V power) - green Field power (24V from field supply) - green Link activity status - green/yellow
Input voltage ratings, nom	24V DC
Input voltage range	1028.8V DC
Inrush current, max	6 A for 10 ms
Power consumption, max	10.4 W @ 28.8V DC
Power dissipation, max	6.3 W @ 28.8V DC
Thermal dissipation, max	21.5 BTU/hr. @ 28.8V DC
POINTBus output current, max	0.8 A @ 5V DC ± 5% (4.755.25)
Input overvoltage protection	Reverse polarity protected
Isolation voltage	50V (continuous), Basic Insulation Type Tested at 1250V rms for 60s
Field side power, max	24V DC (+ 20% = 28.8V DC) @ 400 mA
Fieldbus power current, max	10 A
Fieldbus power range	1028.8V DC
Interruption	Output voltage will stay within specifications when input drops out for 10 ms at 10V with maximum load
Wiring category ⁽¹⁾	1 – on power ports 2 – on communications ports

 Use this conductor category information for planning conductor routing. Refer to publication <u>1770-IN041</u>, Industrial Automation Wiring and Grounding Guidelines.

Specification	Description
Expansion I/O capacity	Maximum of 63 modules
	 Maximum of 5 Rack Optimized connections (for digital modules only)
	Maximum of 20 Direct connections
	• POINT I/O 1734-AENTR backplane current output= 0.8 A maximum. The actual number of modules varies. Add up the current requirements of the modules you want to use to make sure they do not exceed the amperage limit of 0.8 A for the 1734-AENTR.
	• Backplane current is extended beyond 1.0 A with a 1734-EP24DC Backplane Extension Power Supply. Add multiple 1734-EP24DC modules to reach the 63 module maximum.
	Cat. No.POINTBus Current Requirements
	1734-IB275 mA 1734-IB475 mA 1734-IV275 mA 1734-IV275 mA 1734-0B275 mA 1734-0B275 mA 1734-0B275 mA 1734-0B2E75 mA 1734-0B2E75 mA 1734-0B2E75 mA 1734-0B2E75 mA 1734-0V2E75 mA 1734-0V2E75 mA 1734-0V2E75 mA 1734-I2275 mA 1734-I228 mA 1734-I228 mA 1734-I2175 mA 1734-I2175 mA 1734-I2180 mA 1734-I2180 mA 1734-I2180 mA 1734-I2175 mA

Specifications – POINT I/O 2 Port EtherNet/IP Adapter 1734-AENTR

Specification	Description
Expansion I/O capacity	1734-0E4C75 mA 1734-IA475 mA 1734-IM475 mA 1734-0A475 mA 1734-IR2E75 mA 1734-8CFG100 mA
Ethernet communication rate	10/100 Mbps, half or full-duplex
Module location	Starter module - left side of the 1734 system
Dimensions (HxWxD), approx.	76.2 x 73.0 x 133.4 (3.0 x 2.87 x 5.25)
Weight, approx.	280 g (9.87 oz)
Enclosure type rating	Non (open style)
Terminal base screw torque	0.8 Nm (7 inlb)
Conductors	#22#14 AWG (0.3242.08) solid or stranded wire rated at 75 °C or higher
Wire size	1.2 mm (3/4 in.) insulation, max
North American temp code	Τ4
IEC temp code	T4

Specifications – POINT I/O 2 Port EtherNet/IP Adapter 1734-AENTR

Specification	Description
Expansion I/O capacity	Maximum of 63 modules
	Maximum of 5 Rack Optimized connections (for digital modules only)
	Maximum of 20 Direct connections
	• 1738-AENTR backplane current output =0.8 A. The actual number of modules varies. Add up the current requirements of the modules you want to use to make sure they do not exceed the amperage limit of 0.8 A.
	• Backplane current is extended beyond 1.0 A with a 1738-EP24DC Backplane Extension Power Supply. Add multiple 1738-EP24DC modules to reach the 63 module maximum.
	Cat. No.POINTBus Current Requirements
	1738-IB4xx75 mA 1738-IB4xx75 mA 1738-IV4xx75 mA 1738-OB2EM1275 mA 1738-OB2EPM1275 mA 1738-OB4Exx75 mA 1738-OB4Exx75 mA 1738-OB4Exx75 mA 1738-OB4Exx75 mA 1738-OV4EM1275 mA 1738-OV4EM1275 mA 1738-OE2CM1275 mA 1738-IE2CM12 75 mA 1738-IE4Cxx75 mA 1738-IE4Cxx75 mA 1738-OE2VM12 75 mA 1738-OE2VM12 75 mA 1738-IE2VM12 75 mA
Dimonsions (Hy)(/yD)	1/38-80FGxxx100 mA
approx.	(3.0 x 2.87 x 5.25 in.)
Weight, approx.	330 g (11.64 oz)
Enclosure type rating	Meets IP65, IP66, IP67 (when marked)
Mounting base screw torque	#8 screw, 0.845 Nm (7.5 in-lbs) in aluminum 1.81 Nm (16 in-lbs) in steel
Wire size	1.2 mm (3/4 in.) insulation, max

Specifications – AmorPOINT I/O 2 Port EtherNet/IP Adapter 1738-AENTR

Lowroor	nontal S	nooit	tiontione
FIIVIIUII	แต่แสเอ		
		P 0 0 1	

Specification	Description
Temperature, operating	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -2055 °C (-4131 °F) – 1734-AENTR -2060 °C (-4140 °F) – 1738-AENTR
Temperature, storage	IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock): -4085 °C (-40185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 595% noncondensing
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5 g @ 10500 Hz
Shock, operating	IEC60068-2-27 (Test Ea, Unpackaged Shock): 30 g
Shock, non-operating	IEC60068-2-27 (Test Ea, Unpackaged Shock): 50 g
Emissions	CISPR 11: Group 1, Class A
ESD immunity	IEC 61000-4-2: 6 kV contact discharges – 1734-AENTR 8 kV contact discharges 8 kV air discharges
Radiated RF immunity	10V/m with 1 kHz sine-wave 80% AM from 802000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 20002700 MHz – 1734- AENTR
EFT/B immunity	IEC 61000-4-4: ±4 kV at 5 kHz on power ports ±2 kV at 5 kHz on communication ports ±3 kV at 5 kHz on communication ports – 1734-AENTR
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line(DM) and ±2 kV line-earth(CM) on power ports ±2 kV line-earth(CM) on unshielded communications ports (tested as balanced circuits)
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz80 MHz

Certifications

Certifications (when product is marked) ⁽¹⁾	Value
c-UL-us	1734-AENTR only
	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584
	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/EC EMC Directive, compliant with: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	1734-AENTR only European Union 94/9/EC ATEX Directive, compliant with: EN 60079-15; Potentially Explosive Atmospheres, Protection "n" (Zone 2)
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications

 See the Product Certification link at <u>http://www.rockwellautomation.com/products/certification/</u> for Declaration of Conformity, Certificates, and other certification details.

Adapter Web Dialogs

Overview

The Web dialog of the I/O adapter offers extensive internal and network diagnostics. To view the Web dialogs, enter the IP address of the I/O adapters into your browser.

For Information About	Page
Work with the Home Page	77
Work with the Diagnostics Pages	<u>79</u>
Use the Diagnostic Overview Page	<u>79</u>
Use the Network Settings Page	<u>81</u>
Use the Ethernet Statistics Page	<u>82</u>
Use the I/O Connections Page	<u>83</u>
Use the Diagnostic Messaging Page	<u>84</u>
Work with the Configuration Pages	<u>85</u>
Use the Identity Page	<u>86</u>
Use the Network Configuration Page	<u>87</u>
Use the Services Page	<u>89</u>
Work with the Browse Chassis Page	<u>89</u>

Work with the Home Page

Use the adapter diagnostics home page to access other adapter diagnostics web pages and see the following information.

- Host Name
- Module Description
- Module Location
- IP Address
- Ethernet Address (MAC)
- DHCP Enabled
- Product Revision
- Serial Number
- Status
- Auto Negotiate
- Media Speed
- Half or Full Duplex

To display and work with the adapter diagnostics home page, follow these procedures.

IMPORTANT Make sure that your PC Internet LAN setting and your TCP/IP settings are configured to access the subnet on which your adapter communicates.

1. From your web browser, enter the adapter IP address to see the Home page.



2. From the Home page, click Expand to show options, or minimize to see Diagnostics, Configuration, and Browse Chassis options without the expansion.



- 3. From the Home page, complete one of these, as desired.
- Click one of the following to access <u>www.ab.com</u>.
 - Allen-Bradley logo at the top of the page
 - Visit <u>ab.com</u> for additional information statement under Resources

- Click Rockwell Automation at the top right to go to <u>www.rockwellautomation.com</u>.
- Click the following to see additional diagnostics web pages.
 - Diagnostics Diagnostic overview, Network Settings, Ethernet Statistics, I/O Connections, Diagnostic messaging
 - Configuration Identity, Network, Services
 - Browse Chassis

Work with the Diagnostics Pages

To work with the Diagnostics options, follow these procedures.

- 1. From the Home page, click Diagnostics or Expand to see the following diagnostics options from the panel at the left.
 - Diagnostic overview
 - Network settings
 - Ethernet statistics
 - I/O connections
 - Diagnostic messaging
- 2. In the Refresh Rate field, you can type a refresh rate, noting that the default rate is 15 seconds.
- **3.** From the panel at the left or tabs at the top of the page, click one of the diagnostics options to see the corresponding page.

	1734-AENTR/A 100-Mb Ethernet Module - Windows Internet Explorer provided by Rockwell Automation								
		156/		T 🐓 🗙 Live	e Search				
	File Edit View Favorites Tools Help								
Click tabs to see	😪 🏟 💋 1734-AENTR/A 100-	Mb Ethernet Module		🙆 • 🖻) 🔹 🖶 🔹 🔂 Page				
the corresponding	Allen-Bradley 1	734-AENTR/	4		A				
page.	Expand Minimize	Diagnostic Overview	etwork Settings 🔪 Ethernet St	atistics I/O Connection	15 Diagnostic Me				
	Home Diagnostics		Refresh Rate [sec] [15					
	Diagnostic Overview Network Settings	Ring Status		Module Settings					
Click from this	Ethernet Statistics	Network Topology	Linear	Chassis Size	5				
panel to see the corresponding page.	I/O Connections	Network Status	Normal	Switches	999				
	Configuration	Ring Supervisor	00:00:00:00:00:00 0.0.0.0						
	browse Chassis	System Resource Utilizat	ion						
		CPU Utilization	1.3% (5.2% [pk])						
		Module Uptime	0 days, 0h:20m:49s						
		1		Type a refresh ra	ate.				

Use the Diagnostic Overview Page

To use the Diagnostic Overview page for general diagnostics information, follow this procedure.

1. Click Diagnostic Overview from the tab at the top of the page or panel on the left.

Allen-Bradley 1734-AEN	TR/A		Rockw Automati
d Minimize Diagnostic Overv	iew Network Settings Et	hernet Statistics 🔨 I/O Connecti	ions Diagnostic Messaging
nostics	Ref	resh Rate [sec] 15	
agnostic Overview Ring Status		Module Settings	
hernet Statistics Network Topology	Linear	Chassis Size	5
O Connections Network Status	Normal	Switches	999
guration Ring Supervisor	00:00:00:00:00 0.0.0	00	
System Resource	e Utilization		
CPU Utilization	1.3% (5.2% [p		
Module Uptime	0 days, 0h:20m	(49s	
CIP Connection S	tatics		
Current CIP Msg Co	nnections 0		
CIP Msg Connection	Limit 32		
Max Msg Connectio	ns Observed 0		
Current CIP I/O Con	nections 0		
CIP I/O Connection	Limit 20		
Max I/O Connection	s Observed 0		
Conn Opens	0		
Open Errors	0		
Conn Closes	0		
Close Errors	0		
Conn Timeouts	0		
LED Status : Module Status Network Activit Network Status Point Bus Status			
	Get	1734-AENT(R) EDS File	
		Other EDS Files	
	Copyright © 2009 Bo	skwell Automation, Inc. All Rights	Reserved

The Diagnostic Overview page opens.

- 2. From the Diagnostic Overview page, view the following:
- Ethernet Link Status
 - Media Speed
 - Half or Full Duplex
 - Autonegotiate Status
- System Resource Utilitization
 - CPU Utilization
 - Module Uptime
- CIP Connection Statics
 - Current CIP MSG Connections
 - CIP MSG Connection Limit
 - Max Msg Connections Observed
 - Current CIP I/O Connections
 - CIP I/O Connection Limit
 - Max I/O Connections Observed
 - Conn Opens
 - Open Errors

- Conn Closes
- Close Errors
- Conn Timeout
- Status
- Module Settings
 - Chassis Size
 - Switches

Use the Network Settings Page

To use the Network Settings page for network related information, follow this procedure.

1. Click Network Settings from the tab at the top of the page or panel on the left.

This opens the Network Settings page.

ind Minimize	Diagnostic Overview Network	Settings Ethernet Stat	istics I/O Connections Dia	ignostic Messaging
gnostics	Network Interface		Ethernet Port 1	
etwork Settings	Ethernet Address (MAC)	00:00:BC:3F:63:4E	Interface State	Unknown
hernet Statistics	IP Address	10.88.81.156	Link Status	Inactive
O Connections agnostic Messaging	Subnet Mask	255.255.254.0	Media Speed	Unknown
figuration	Default Gateway	10.88.80.1	Duplex	Unknown
e Chassis	Primary Name Server	10.88.128.139	Autonegotiate Status	Forced speed
	Secondary Name Server	10.88.128.138		and duplex
	Default Domain Name	na.home.ra-int.com	Ethernet Port 2	
	Host Name		Interface State	Enabled
	Name Resolution	DNS Disabled	Link Status	Active
	Ethernet Interface Configuration		Media Speed	100MBd
	Obtain Network Configuration	Dypamic (DHCP)	Duplex	Full Duplex
	Contain Network Configuration	eyname (errory	Autonegotiation Status	Autonegotiation
	IP Switch Override Values			completed
	IP Network Number	136.129.1		
	Subnet Mask	255.255.0.0		
	Gateway Address	0.0.0.0		
	Revision	1.2		

- 2. From the Network Settings page, view the following:
- Network Interface
 - Ethernet Address (MAC)
 - IP Address
 - Subnet Mask
 - Default Gateway
 - Primary Name Server
 - Secondary Name Server
 - Default Domain Name

- Host Name
- Name Resolution
- Ethernet Interface Configuration
 - How the Network Configuration was obtained Static or Dynamic
- Ethernet Link
 - Media Speed
 - Half or Full Duplex
 - Autonegotiate Status

Use the Ethernet Statistics Page

To use the Ethernet Statistics page for information about the Ethernet link and interface and media counters, use this procedure.

1. Click Ethernet Statistics from the tab at the top of the page or panel on the left.

Allen-Bradley 17	34-AENTR/A			Rockwel Automatio
xpand Minimize	Diagnostic Overview Netw	ork Settings Ethernet Statist	ics I/O Connections D	iagnostic Messaging
Home Diagnostics		Refresh Rate [sec]	15	
Diagnostic Overview	Ethernet Port 1		Media Counters	
thernet Statistics	Interface State	Unknown	Alignment Errors	0
nections	Link Status	Inactive	FCS Errors	0
Messaging	Media Speed	Unknown	Single Collisions	0
n	Duplex	Unknown	Multiple Collisions	0
s	Autonegotiate Status	Forced speed	SQE Test Errors	0
		and duplex	Deferred Tranmissions	0
	Ethernet Port 2		Late Collisions	0
	Interface State	Enabled	Execessive Collisions	0
	Link Status	Active	MAC Transmit Errors	0
	Media Speed	100MBd	Carrier Sense Errors	0
	Duplex	Full Duplex	Frame Too Long	0
	Autonegotiate Status	Autonegotiation completed	MAC Receive Errors	0
	Interface Counters		Media Countere Port 2	
	In Octets	399636	Alignment Errore	
	In Ucast Packets	1978	FCS Errore	0
	In NUcast Packets	749	Single Collisions	0
	In Discards	0	Single Collisions	0
	In Errors	0	SOE Test Errors	0
	In Unknown Protos	168	Deferred Transissions	0
	Out Octets	318104	Late Collisions	0
	Out Ucast Packets	1970	Exercessive Collisions	0
	Out NUcast Packets	7	MAC Trapent Errore	0
	Out Discards	0	Carrier Sepse Errors	0
	Out Errors	0	Evene Teo Long	0
			MAC Receive Errore	0
			WHO NOUGHO LITURS	0

The Ethernet Statistics page opens.

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- 2. From the Ethernet Statistics page, view the following:
- Ethernet Link
 - Media Speed, Half or Full Duplex, Autonegotiate Status

- Interface Counters
 - In Octets, In UCast Packets, In NUcast Packets, In Discards, In Errors, In Unknown Protos, Out Octets, Out Ucast Packets, Out NUcast Packets, Out Discards, Out Errors
- Media Counters
 - Alignment Errors
 - FCS Errors
 - Single Collisions
 - Multiple Collisions
 - SQE Test Errors
 - Deferred Transmissions
 - Late Collisions
 - Excessive Collisions
 - MAC Transmit Errors
 - Carrier Sense Errors
 - Frame Too Long
 - MAC Receive Errors

Use the I/O Connections Page

To use the I/O Connections page for CIP I/O (Class 1) connection information, follow this procedure.

- 1. Click I/O Connections from the tab at the top of the page or panel on the left.
 - The I/O Connections page opens.

The top value in this column representing Lost shows — the number of packets from the missing source.

Allen-Bradley 173	4-AENTR	/A							A	Rockw utomati	rell ion
Expand Minimize	Diagnostic Overv	iew Netwo	ork Settings	Ethernet Statistics	I/O Connec	tions Diagnosti	c Messag	ging	、		
 Home Diagnostics 				Refresh Rate [sec]	15						
 Diagnostic Overview Network Settings 	Conn #Uptime	Rcv/Xmt	Conn. ID	Source	Dest	Multicast Addr.	RPI	Lost/ Slot	Size		
Ethernet Statistics	1	Rov	0x7E9F0101	10.88.80.88 (O)	10.88.81.156		20	ō	17		
I/O Connections	00h:00m:38s	Xmt	0x7E9F0115	10.88.81.156 (T)	10.88.80.88	239.192.52.96	20	0	13		
Diagnostic Messaging	4	Rcv	0x7E9F0303	10.88.80.88 (O)	10.88.81.156		80	0	8		
Configuration	00h:00m:38s	Xmt	0x7E9F0317	10.88.81.156 (T)	10.88.80.88	239.192.52.98	88	-4	6		
Browse Chassis	5	Rcv	0×7E9F0202	10.88.80.88 (O)	10.88.81.156		20	0	5		
	00h:00m:38s	Xmt	0×7E9F0216	10.88.81.156 (T)	10.88.80.88	239.192.52.97	20	2	5		
							The va the slo modu contro	alue ot nu le thi olling	for SI mber s con ı.	ot shows of the I/O nection is	

2. From the I/O Connections page, view the following:

- Connection Number
- Uptime
- Receive and Transmit (Rcv/Xmt)
- Connection ID
- Source IP Address with an indication of the following:
 - (O) for originator
 - (T) for target
- Destination IP Address
- Multicast Address
- Requested Packet Interval (RPI)
- Lost/Slot that shows the number of lost packets and the slot number for the connection, with a slot value of 0 indicating that this is a rack-optimized connection
- Size of data in bytes

Use the Diagnostic Messaging Page

To use the Diagnostic Messaging page to execute explicit, unconnected message services, use this procedure.

1. Click Diagnostic Messaging from the tab at the top of the page or panel on the left.

The Diagnostic Messaging page opens.

Expand Minimize Diagnostic Overview Network Settings Ethernet Statistics I/O Connections Diagnostic Nessaging	
	-
Home Hom	

- 2. From the Diagnostic Messaging page, enter the following:
- Service choose either Get Attribute Single or Get Attributes All
- I/O Module Slot Position (0 to 63 decimal)
- Class (decimal)
- Instance (decimal)

- Attribute (decimal)
- Timeout
- **3.** From the Diagnostic Messaging page, click Submit to see values similar to that shown.

17	'34-AENTR/A Rockwe	n
	Diagnostic Overview Network Settings Ethernet Statistics 1/O Connections Diagnostic Nessaging	
	Service Get Atributes All	
	VO Module Slot Position (0-63 Jecimal)	
	Class (dec mal)	
9	Instance (dec mai)	
	Attribute (dec mal)	
	Timeout 5	
	Submit	
	81 00 00 01 00 0C 00 🔺	
	C4 00 03 06 34 00 12 34 56 8A 1B 31 37 33 34 2D	
	41 45 4E 54 52 20 45 74	
	68 65 72 6E 65 74 20 41	

Work with the Configuration Pages

To work with the Configuration pages, follow these procedures.

IMPORTANT	The values on these pages are in non-volatile memory. Changes to these parameters do not take effect until you reset or cycle power through the I/O adapters.
IMPORTANT	If you set the value of the I/O adapters switch to 888 and then power cycle the module, the following occurs:
	• The DHCP Enabled function is enabled (set to True).
	 The Ethernet link is negotiated automatically. The Auto Negotiate function is set to True.
	 The web server is enabled. The Disabled Web Server function is disabled.
	 The Ethernet port are disabled. Both ports are re-enabled once the switches are returned to their previous value and power is cycled.
	 The password for this page resets to the factory default whih is "password".
	Note the value of the switches before you enter the 888 value because you must return the adapter to those values once this process is complete.

- 1. From the Home page, click Configuration or Expand to see the Configuration options, if needed.
- 2. From the Configuration page, click one of the following:
 - Identity
 - Network
 - Services

A login dialog opens as shown. The dialog may vary in appearance depending on your operating system and browser.

Connect to 10.88.8	1.156 ? ×
	GR
The server 10.88.81 username and passv	1.156 at Microsoft-WinCE requires a vord.
Warning: This serve password be sent in without a secure cor	r is requesting that your username and an insecure manner (basic authentication nnection).
User name:	🖸 admin 💌
Password:	•••••
	Remember my password
	OK Cancel

- **3.** From the user name and password dialog, enter values, noting the following:
 - The values for user name and password are case sensitive.
 - The default user name is admin.
 - The default password is "password".
- 4. Click OK to log in. After you log in, you can go to any of the Configuration pages without having to log in again.
- 5. Refer to the section of this manual that corresponds to the section you clicked:
 - Identity
 - Network Configuration
 - Services

Use the Identity Page

To use the Identity page to make entries for the host name, module description, module location, and chassis size, use this procedure.

1. Click Identity from the tab at the top of the page or panel on the left.

Allen-Bradley 1	734-AENT	R/A	Rockwell Automation
Expand Minimize	Identity Network	k Configuration Services	
Diagnostic Overview	Device Information	n and Chassis Size	
 Network Settings Ethernet Statistics I/O Connections 	Host Name		
Diagnostic Messaging	Module Description	User Entered Text	
Configuration Identity Network	Module Location	User Entered Text	
Services	Chassis Size	5	
Browse Chassis	Appy Chang	es	
	Note: Values on this Changes to these pa	page are in non-volatile memory. arameters do not take effect until the AENTR has b	een reset or power cycled.
	Copyright © 2009 Ro	ockwell Automation, Inc. All Rights Reserved.	

The Identity page opens

- **2.** From the Identity page, complete entries for the following, noting that the description and location help you identify where modules are in the facility:
 - Host Name the name a Domain Name Server uses to resolve this adapter's IP address
 - Module Description
 - Module Location
 - Chassis Size the value that shows the number of I/O modules plus the adapter. This value must match the number of I/O modules plus 1 for the adapter before any I/O connections are allowed.
- 3. Click Apply Changes to save the modified values.

Use the Network Configuration Page

To use the Network Configuration page to make entries for enabling or disabling DHCP and setting TCP/IP parameters and Ethernet link operation, follow this procedure.

1. Click Network from the tab at the top of the page or panel on the left. The Network Configuration page opens.

Allen-Bradley 1	734-AENTR/A		Rockwell Automation
Expand Minimize	Identity Network Configuration	on Services	
Home	Initial Network Configuration		
Diagnostics	Ethernet Interface Configuration	Dynamic (DHCP)	
Ethernet Statistics	Network Interface		
I/O Connections	IP Address	10.88.81.156	
Configuration	Subnet Mask	255.255.254.0	
Network	Gateway Address	10.88.80.1	
Browse Chassis	Primary Name Server	10.88.128.139	
	Secondary Name Server	10.88.128.138	
	Domain Name	na.home.ra-int.com	
	Ethernet Link Port 1		
	Port 1 Enable	Enabled 💌	
	Autonegotiate Status	Autonegotiate Speed and Duplex	
	Select Port Speed	100 Mbps 💌	
	Select Duplex Mode	Half Duplex	
	Ethernet Link Port 2		
	Port 2 Enable	Enabled	
	Autonegotiate Status	Autonegotiate Speed and Duplex	
	Select Port Speed	100 Mbps 💌	
	Select Duplex Mode	Full Duplex	
	Apply Changes		
1	Note: Values on this page are in Changes to these parameters do	non-volatile memory. not take effect until the AENTR has been reset or power cy	rcled.

- 2. From the Network Configuration page, complete these entries, noting that values for Network Interface are disabled when DHCP is Dynamic DHCP and port speed and duplex mode are disabled when Autonegotiate Speed and Duplex is selected.
 - For Initial Network Configuration:
 - Ethernet Interface Configuration
 - Static
 - Dynamic DHCP
 - For Network Interface, select from these choices:
 - IP Address
 - Subnet Mask
 - Gateway Address
 - Primary Name Server
 - Secondary Name Server
 - Domain Name
 - For Ethernet Link, select from these choices:
 - Autonegotiate Status
 - Autonegotiate Speed and Duplex
 - Force Speed and Duplex
 - Select Port Speed 10 megabits, 100 megabits
 - Select Duplex Mode Half Duplex, Full Duplex

3. From the Network Configuration page, click Apply Changes to save the modified values.

Use the Services Page

To use the Services page to change the password for the Configuration web page or disable the web server, complete these procedures.

1. Click Services from the tab at the top of the page or panel on the left. The Services page opens.

Allen-Bradley	1734-AE	NTR/A			Rockwell Automation
Expand Minimize	Identity Ne	twork Configuratio	n Services		
Home	Service	Description	Status	Enable	1
Diagnostic Overview Network Settings Ethernet Statistics	нттр	Web Server	Rurning		
🖹 Diagnostic Messagin	Set Password	I			
Configuration	New Password				
Services	Confirm Passwo	rd			
Browse Chassis	Apply C	hanges			
	Note: Values on Changes to thes	this page are in r e parameters do	non-volatile men not take effect u	nory. Intil the AENTR has	been reset or power cycled.
	Copyright © 200	9 Rockwell Autom	ation, Inc. All Ri	ghts Reserved.	

- 2. From the Services page, make these entries.
- Click in the Enable box to change whether the web server runs after the module is reset.
- Change the password by typing the new value for New Password and Confirm Password, noting the following:
 - The entry is case sensitive.
 - The default value is the word password.
- **3.** Click Apply Changes.

Work with the Browse Chassis Page

Use the Browse Chassis page for the following:

- See what modules are present on the system.
- Run a query from slot 1 to slot 63.
- Display the modules found based on the query.
- Provide an easy way to see which modules the adapter recognizes on your system.

To work with the Browse Chassis page, follow these procedures.

1. From the Home page, click Browse Chassis.

🖉 1734-AENTR/A 100-Mb Etherne	t Module - Windows Internet Explore	r provided by Rockwell Automatio	n
G V F http://10.88.81.15	5/	💽 😽 🗙 Live S	iearch
File Edit View Favorites Tools	Help		
😭 💠 🏾 🏉 1734-AENTR/A 100-Mb	Ethernet Module	🙆 • 🔊	🔹 🖶 🔹 🔂 Page 👻 🎯 Tools
Allen-Bradley 17	34-AENTR/A		Rocky Automat
Expand Minimize Bro	wse Chassis		
Home Diagnostics Diagnostic Overview	START CANCEL	🗋 Display compact 🔲 Increas	e timeout
Ethernet Statistics	Slot Module Description	n Firmware	Revision
I/O Connections Diagnostic Messagin; Configuration Identity			

Check Increase timeout to increase time of the browse query and the time the modules get to respond to the query. This is useful when browsing a busy system.

- 2. From the Browse Chassis page, leave the Display compact check box unchecked, unless you want to decrease the font size, to make the full page easier to read after the query.
- 3. Check the Increase timeout check box to increase the time of the browse query and time the modules get to respond to the query. This function is useful when you are browsing a busy system.
- Click Start to run the query. A Browser Chassis page opens. Note that module hyperlinks are inactive before the query completes or is cancelled.



After completing a query, here is how a typical Browse Chassis page looks with the module hyperlinks active and the Display compact check box unselected.

	🖉 1734-AENTR/A 100-Mb Ether	rnet Module - Windows Internet Explorer provided	by Rockwell Automation
		.156/	💌 👉 🗙 Live Search
	File Edit View Favorites T	ools Help	
	🔶 🍄 🌈 1734-AENTR/A 100-	-Mb Ethernet Module	🏠 🔹 🔝 🕣 🖶 🔹 🔂 Page 🔹
	Allen-Bradley 1	734-AENTR/A	Au
	Expand Minimize Home Diagnostics Diagnostic Overview	Browse Chassis	ompact 🔲 Increase timeout
	Ethernet Statistics	Slot Module Description	Firmware Revision
Click a madula hyperlink to	I/O Connections	1 1734-0W2 2 PT RELAY OUT	3.022
спск а тоците пуретник то —	Diagnostic Messagin	2 1734 OV4E 4 PT 2 0C SINK OUTP	JT 3.002
view information about the	Configuration	3 1734-OB2E 2 PT 24VDC SOURCE OU	T 3.002
modulo	Rouse Chassis	4 1734-0E2V 2 PT VOLTAGE OUTPUT	3.005
module	EL browse chassis	5 Module not found	
		6 Module not found	
		7 Module not found	
		8 Module not found	

5. To view information about a particular module, click the corresponding Module Description hyperlink.

The 1734 Module Information page opens showing this information about the module:

- Product Name
- Vendor
- Product Type
- Product Code
- Module Revision
- Serial Number
- Status



Notes:

Configure the RSLinx Ethernet Communication Driver

Overview

To communicate with your adapter over your network, you must configure the RSLinx Ethernet Communication Driver (AB_ETH) or the EtherNet/IP driver (AB-ETHIP). You can configure the AB_ETH driver with the IP addresses of all the Ethernet devices on your system. You need one of these drivers to download the example application programs in this manual.

See the table for a list of the contents of this appendix.

For Information About	Page
Install the RSLinx Software	<u>93</u>
Configure the AB_ETH Driver	<u>93</u>
Configure the AB_ETH/IP Driver	<u>96</u>

Install the RSLinx Software Use this procedure to install theRSLinx software on your computer.

1. Insert the CD in the CD-ROM drive.

Note that the CD-ROM supports Windows Autorun. Once inserted into the CD-ROM drive, if you have Autorun configured, the installation automatically starts at the first setup screen.

If Autorun is not configured for your CD-ROM drive, go to step 2.

- 2. From the Start menu, choose Run. The Run dialog opens.
- **3.** Type D:/setup (if it doesn't appear automatically), where D: is your CD-ROM drive letter.
- **4.** Click OK. The progress bar, followed by the welcome screen opens.

Configure the AB_ETH Driver

To configure the AB-ETH Ethernet communication driver perform the following steps:

1. Start the RSLinx software.

Configure Drivers		<u>? ×</u>
Available Driver Types:	Add New	Close Help
Configured Drivers:		
Name and Description	Status	
		Configure
		Startup
		Start
		Stop
		Delete
	i i	

2. From the Communications menu, select Configure Drivers.

3. Select Ethernet Devices from the list and click Add/New...

Available Driver Types:	Add New	Close
Bitemet/Levices Ethemet/Levices Ethemet/LP Driver T84-KT KXTXD/PFKTX[D)/PCMK for DH+/DH-485 devices T784-KTC(X) for ControlNet devices DF1 Polling Master Driver T784-PCIC(5) for ControlNet devices T784-PCIC(5) for ControlNet devices T747-PIC for ControlNet devices T747-PIC / AIC-P Driver DF1 Slave Driver S-S D/SD2 for DH+ devices Virtual Backplane (SoftLogis58xx) DeviceNet Drivers (1784-PCD/PCIDS,1770-KFD,SDNPT drivers) PLC-5 (DH+) Emulator driver SoftLogis6 driver Remote Devices via Linx Gateway	Status Running	Configure Startup Start Stop Delete

4. Select the default driver name (for example, AB_ETH-1) or type in a name and click OK.

Add New RSLinx Driver		×
Choose a name for the new driver. (15 characters maximum)	OK	ו
AB_ETH-1	Cancel	

The Configure driver dialog opens.

5. Click Add New and enter the IP address or Host Name of your Ethernet device (for example, 10.88.70.4, Pump1).

0 1 10.98.70.4 63 Driver	Delete
1 10.88.70.4 L	Delete
63 Driver	

- 6. Repeat step 6 for each additional Ethernet device you need to access.
- 7. After entering the IP addresses, click Apply.
- 8. Click OK to close the Configure driver dialog.

The new driver appears in the list of configured drivers. Your list displays the drivers you configured on your workstation.

nfigure Drivers		?
Available Driver Types:	Add New	Close Help
Configured Drivers:	Status	7
AB_ETH-1 A-B Ethernet RUNNING	Running	Configure
		Startup
		Start
		Stop
		Delete
1		

9. Close the RSLinx software.

Configure the AB_ETH/IP Driver

To configure the AB-ETHIP Ethernet communication driver, perform the following steps.

- **1.** Start the RSLinx software.
- 2. From the Communications menu, select Configure Drivers.

Configure Drivers		<u>? ×</u>
Available Driver Types:	Add New	Close Help
Configured Drivers:	Status	
		Configure
		Startup
		Start
		Stop
		Delete

3. Select EtherNet/IP Devices from the list and click Add/New...

Configure Drivers		<u>? ×</u>
Configure Drivers Available Driver Types: RS-232 DF1 devices Ethemet devices IT784-KTCPN for ControlNet devices DF1 Poling Master Driver IT784-KTCPN for ControlNet devices IT784-PCC for ControlNet devices IT784-PCC for ControlNet devices IT784-PCC for ControlNet devices IT784-PCC / AIC- Driver IT84-PCC / AIC- Driver IT84-PCC / AIC- Driver IT84-PCC / AIC- Driver	Add New	Close Help Configure
DF1 Slave Driver S-S SD/SD2 for DH+ devices Viritual Backplane (SoftLogix58xx) DeviceNet Drivers (1784-PCD/PCIDS,1770-KFD,SDNPT drivers) PLC-5 (DH+) Emulator driver SLC 500 (DH485) Emulator driver SoftLogix5 driver Remote Devices via Linx Gateway		Start Stop Delete

¢	Configure driver: AB_ETHIP-1	?	×
	Ethernet/IP Settings		
	 Browse Local Subnet 	O Browse Remote Subnet	
	IP Address:		
	Subnet Mask:	and the second	
	<u> </u>	Cancel Apply Help	

The Configure Driver dialog box opens.

Make sure the Browse Local Subnet button is selected.

The RSLinx software browses your local subnet and automatically reads the IP address.

4. Click OK.

The AB-ETHIP driver is now configured and appears in the configured drivers window.

Configure Drivers		<u>? ×</u>
Available Driver Types:	Add New	Close Help
Configured Drivers:		1
Name and Description	Status	
AB_ETH-1 A-B Ethernet RUNNING	Running	Configure
AB_ETHIP-1 A-B Ethernet RUNNING	Running	
		Startup
		Start
		Stop
		Delete

5. Close the RSLinx software.

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Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <u>http://www.rockwellautomation.com/support/</u>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <u>http://www.rockwellautomation.com/support/</u>.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the <u>Worldwide Locator</u> at <u>http://www.rockwellautomation.com/support/americas/phone_en.html</u> , or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication <u>RA-DU002</u>, available at <u>http://www.rockwellautomation.com/literature/</u>.

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