User Manual

Allen-Bradley

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

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

Allen-Bradley • Rockwell Software

Rockwell Automation

# 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 SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com/literature/) 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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The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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

| | |
|---|---|
|  | **WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss. |
|  | **ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence |
|  | **SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present. |
|  | **BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures. |
| **IMPORTANT** | Identifies information that is critical for successful application and understanding of the product. |

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

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

## Purpose of this Manual

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 | 1734-SG001 |
| 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 | 1756-IN019 |
| | EtherNet/IP Modules in Logix5000 Control Systems User Manual | ENET-UM001 |
| ControlLogix chassis and power supplies installation | ControlLogix Chassis and Power Supplies Installation Instructions | 1756-IN005 |
| ControlLogix systems | ControlLogix System User Manual | 1756-UM001 |
| RSLinx | RSLinx Classic Getting Results Guide | LINX-GR001 |
| 1734-AENTR adapter installation | POINT I/O 2 Port EtherNet/IP Adapter Installation Instructions | 1734-IN040 |
| 1738-AENTR adapter installation | ArmorPoint I/O 2-Port EtherNet/IP Adapter Installation Instructions | 1738-IN028 |
| Installing an EtherNet/IP network | EtherNet/IP Media Planning and Installation Manual | ODVA |

## 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/.

## Preface



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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.

This table lists where to find specific information.



## 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:

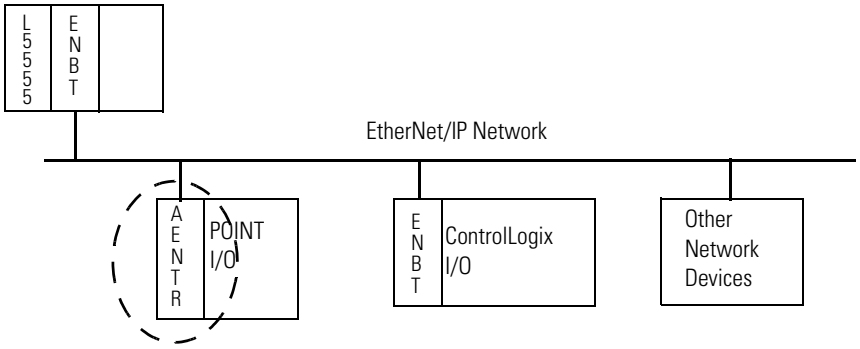
- Use of EtherNet/IP messages encapsulated within standard TCP/UDP/IP protocol
- Common application layer with ControlNet and DeviceNet networks
- Interfacing via Category 5 rated twisted pair cable
- Half/full duplex 10 Mbit or 100 Mbit operation
- DIN rail mounting for 1734-AENTR adapter/Wall or panel 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 Configuration Requirements on in chapter 3.

## 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.

## Understand the Producer/ Consumer Model

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.

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, publicationENET-RM002 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.

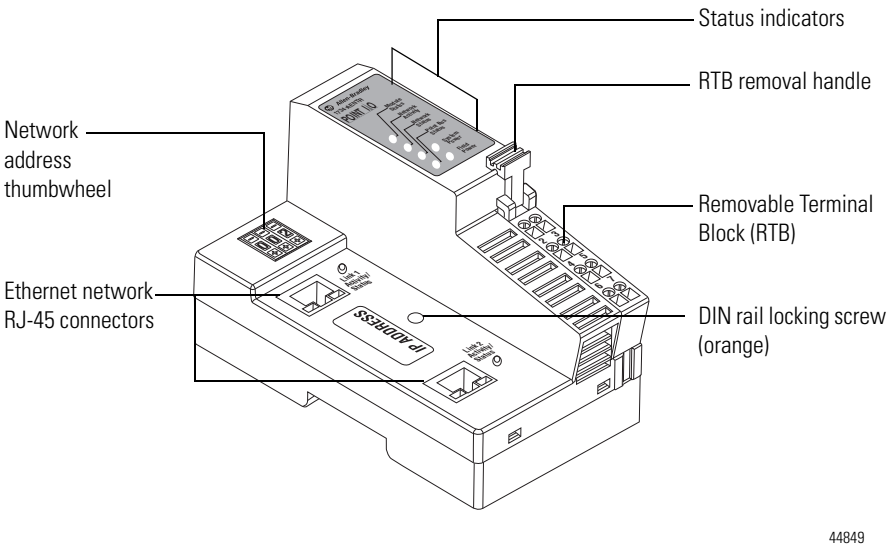


**ATTENTION:** You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

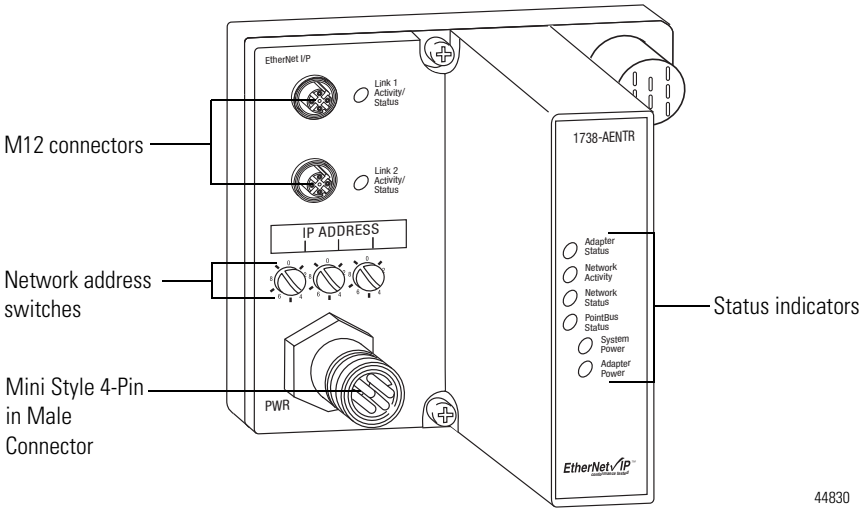
# Identify Adapter Components

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

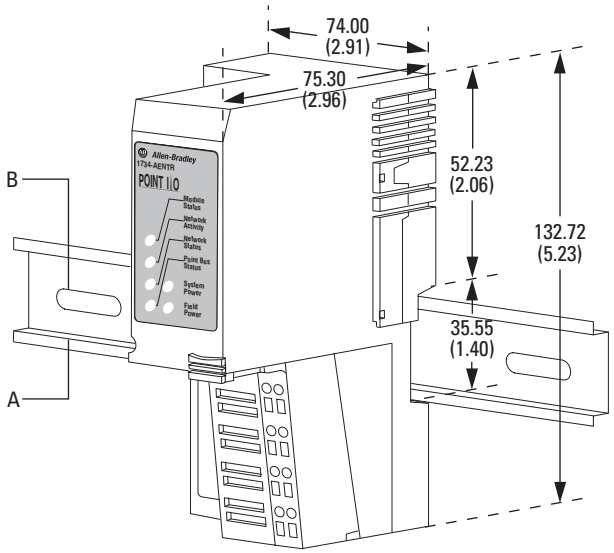
Use the following procedures to mount the I/O adapters on a new system before you install any I/O modules.

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 1734-IN059 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.
2. 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.
4. Set the network address thumbwheel switches to the desired value.Set the network address thumbwheel switches to the desired value. See Set the Network Address in chapter 3 for more details on setting the IP address.




**A** = DIN rail
**B** = 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.

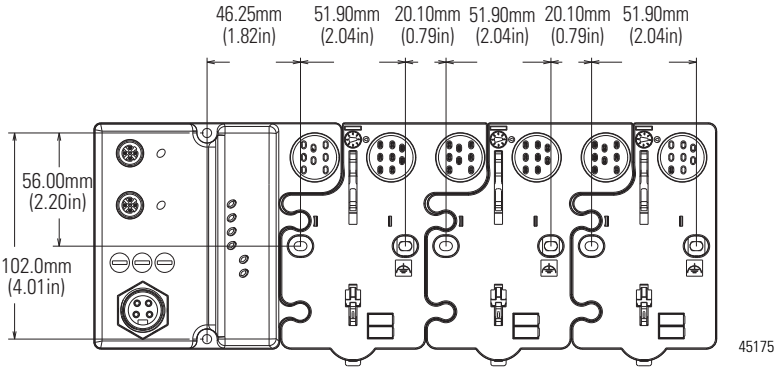
## Mount the ArmorPOINT I/O Adapter and Base on a Wall or Panel

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.

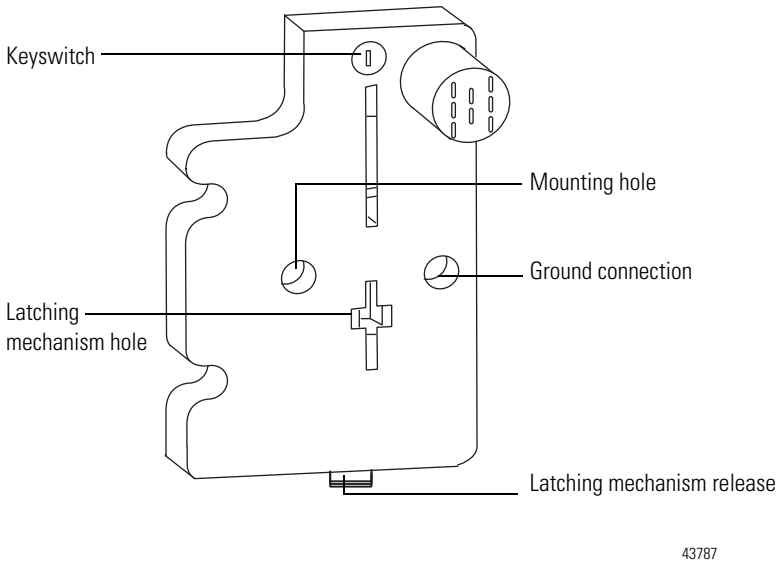
### Drilling Dimensions




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 Set the Network Address in chapter 3 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.

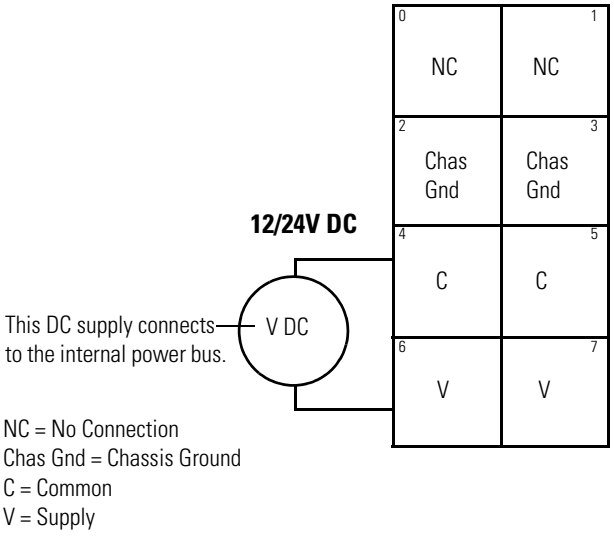
   Refer to the installation instructions for each module to determine what this number must be. See Related Documentation on page i for a list of these installation instructions.

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.




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

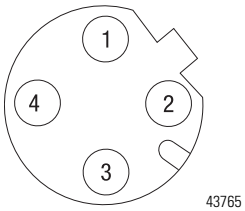
**ATTENTION:** Do not wire more than two conductors on any single terminal.

**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.

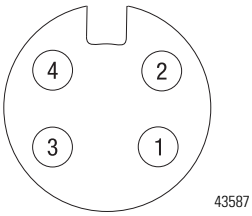
### EtherNet/IP Connectors




**M12 Female In Connector**

(view into connector)
Pin 1 - Tx +
Pin 2 - Rx +
Pin 3 - Tx -
Pin 4 - Rx -

### Auxiliary Power Connector (1)




**Mini Style 4-Pin in Male Connector**

(view into connector)
Pin 1 - User Power +
Pin 2 - Adapter Power +
Pin 3 - Adapter Power -
Pin 4 - User Power -

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

## 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 M117-CA001A-EN-P 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.

# 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.

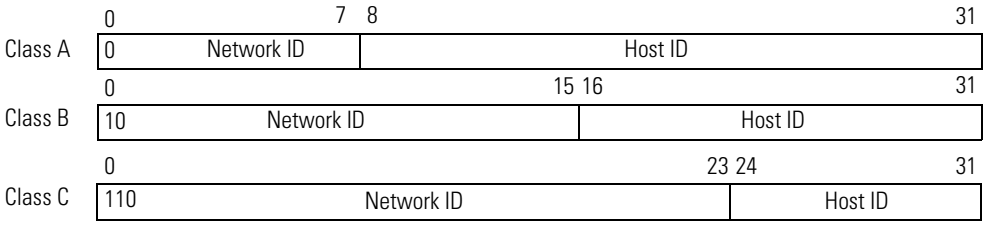
**ATTENTION:** You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

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

## 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.




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

| Range of first integer | Class | Range of first integer | Class |
|---|---|---|---|
| 0 1…127 | A | 192…223 | C |
| 128…191 | B | 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:

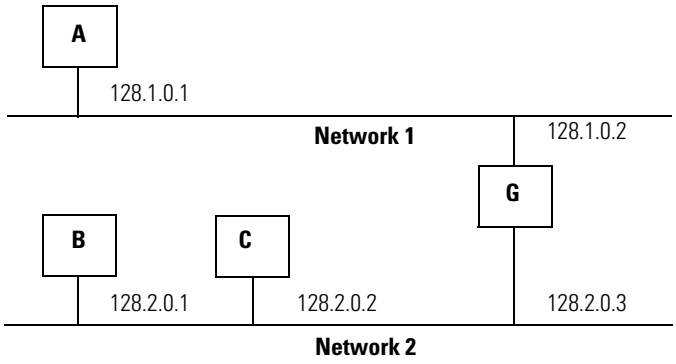
10000000 00000001 00000000 00000001 is written as 128.1.0.1

## 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

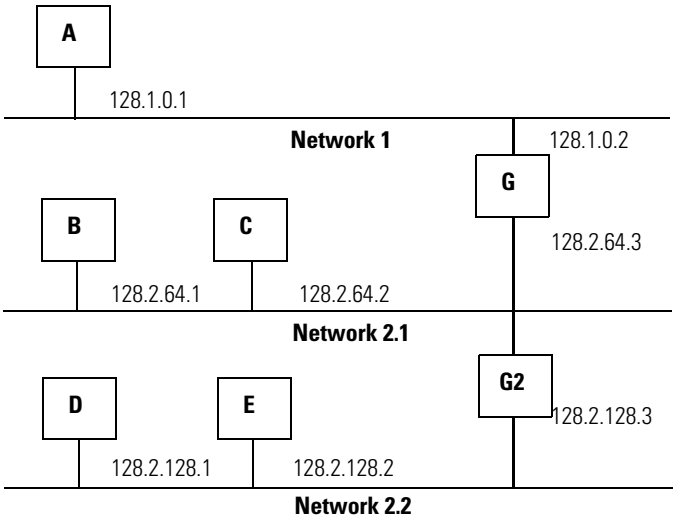
The subnet mask is used for splitting IP networks into a series of subgroups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the Host ID address field into a field for subnets.

**EXAMPLE** Take Network 2 (a Class B network) in the previous example and add another physical network. Selecting the following subnet mask would add two additional network ID bits, allowing for four physical networks:
11111111 11111111 **11**000000 00000000 = 255.255.192.0

These two bits of the Host ID are used to extend the netdwork ID.

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.

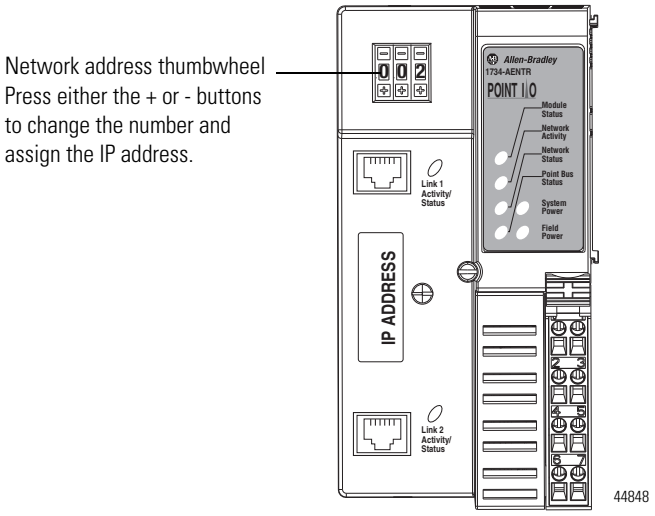
When B is communicating with D, G (the configured Gateway for B) will route the data from B to D through G2.

## 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.




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.

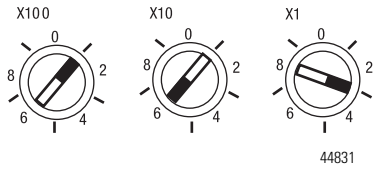
## Set the Network Address for ArmorPOINT I/O Adapter

- 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.

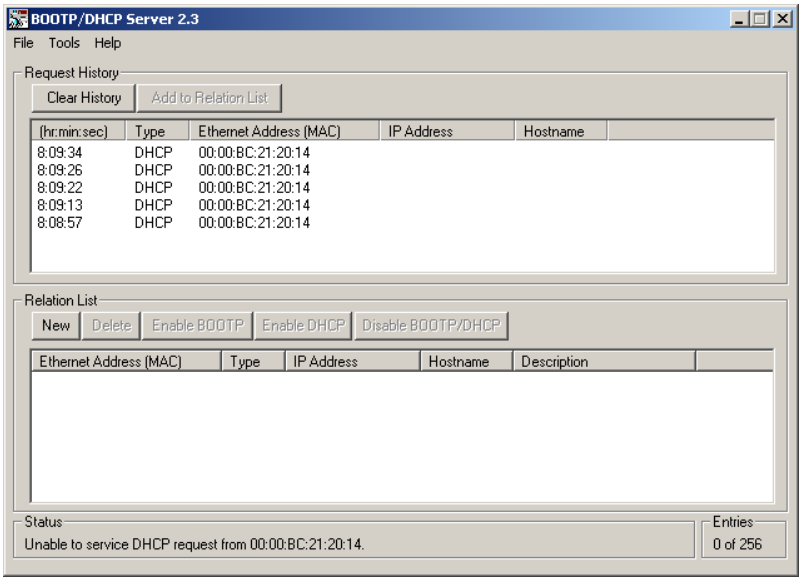
## Use the Rockwell BootP/ DHCP Utility

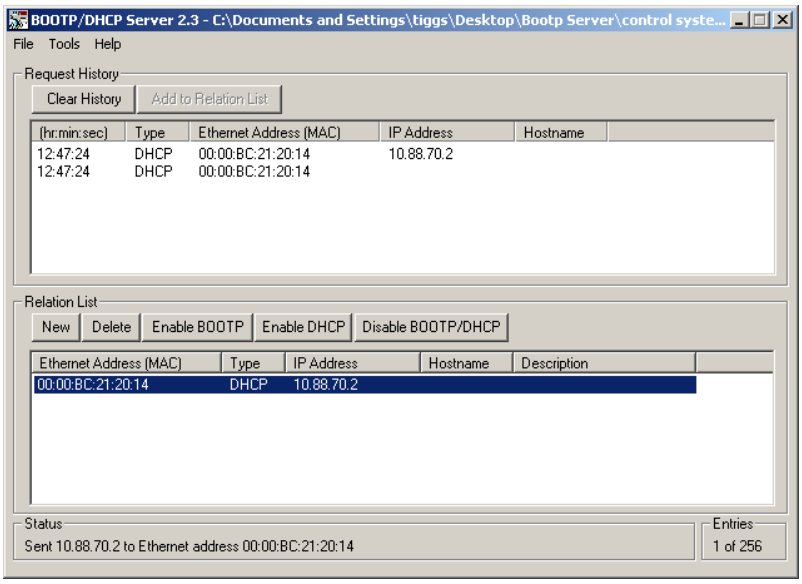
The Rockwell BootP/DHCP utility is a standalone program that incorporates the functionality of standard BootP software with a user friendly graphical interface. It is located in the Utils directory on the RSLogix5000 software installation CD. The adapter must have DHCP enabled (factory default and the 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.

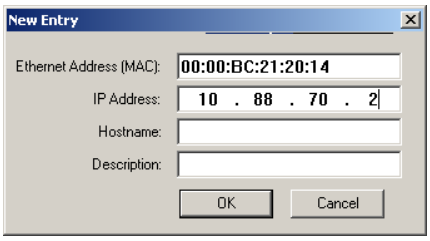
   In the BOOTP Request History panel you see the hardware addresses of devices issuing BootP requests.



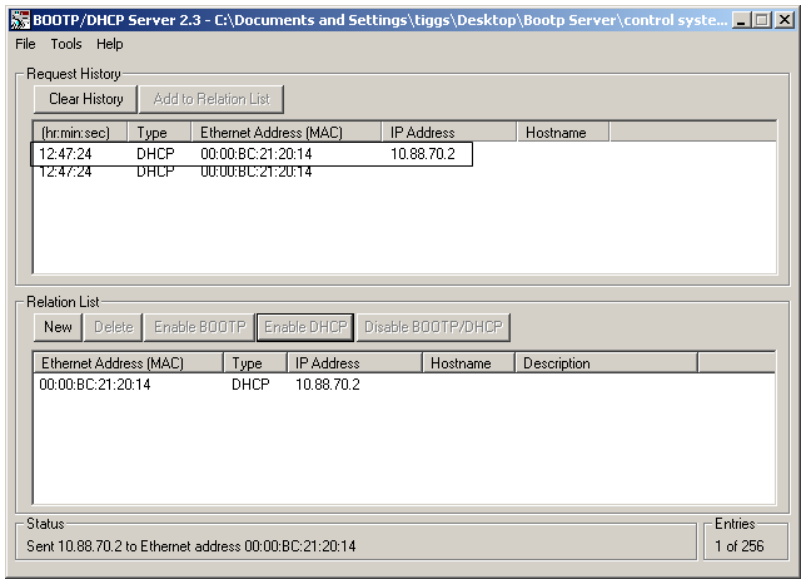




2. Double-click the hardware address of the device you want to configure.

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).




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 non-volatile memory and will not issue a DHCP request.

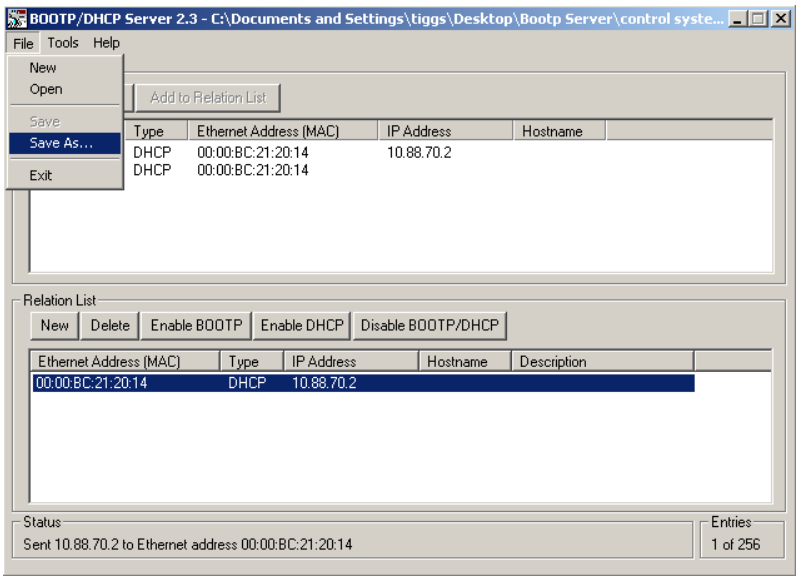
5. To enable DHCP for a device with DHCP disabled, highlight the device in the Relation List, and click the Enable DHCP button.

   You must have an entry for the device in the Relation List panel to re-enable DHCP.

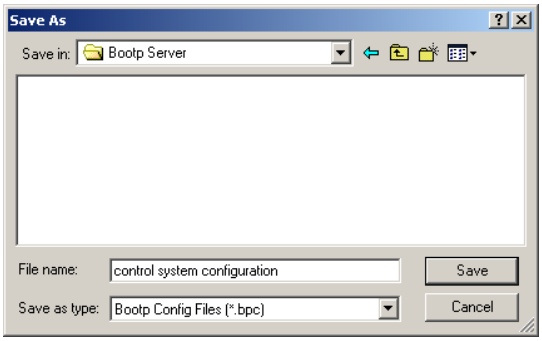
## Save the Relation List

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.




   The Save As dialog appears.




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 Configure the Adapter with Fixed IP Address in Chapter 4 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.

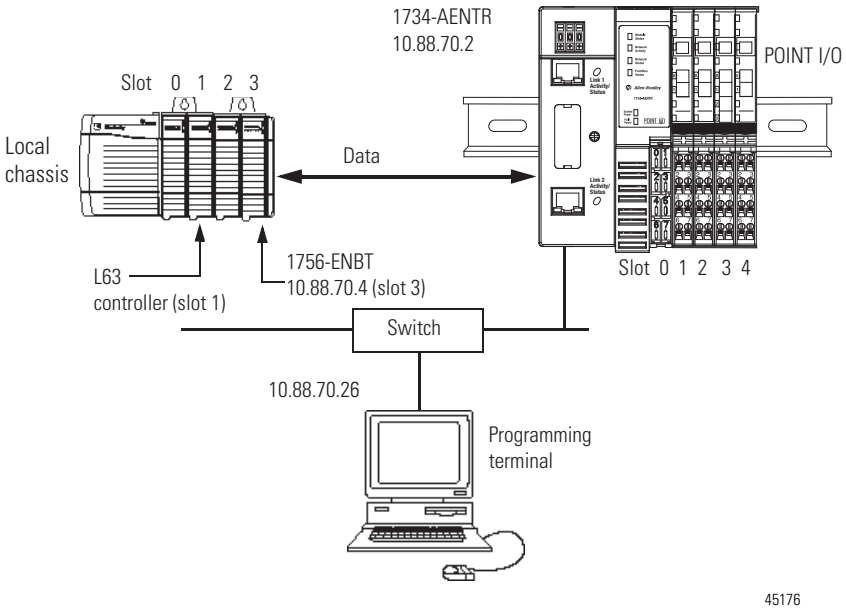
**ATTENTION:** You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.



## 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.

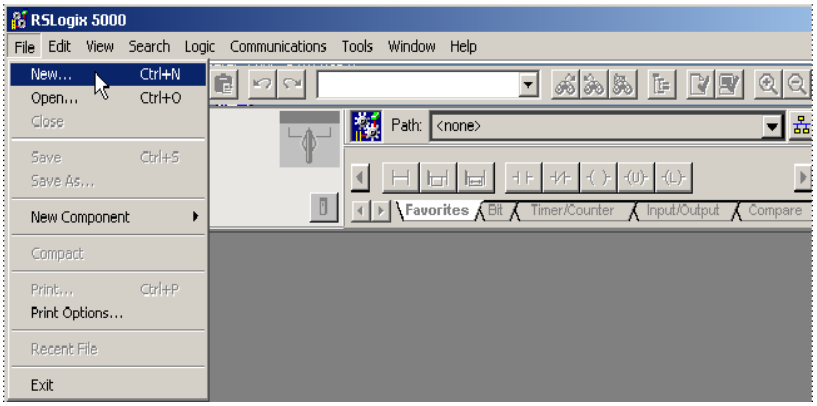



- In the example application, we assume that the L63 controller and 1756-ENBT module (firmware revision 2.3, or later) are in the slots shown in the figure.
- Verify the IP addresses for your programming terminal, 1756-ENBT module, and adapter.
- Verify the position (slot) of the I/O modules on the DIN 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.

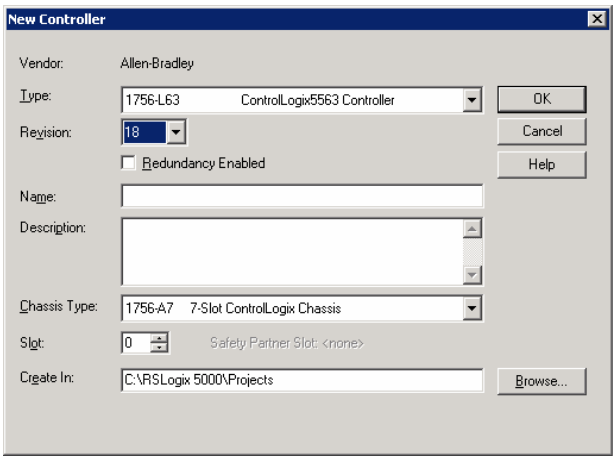
## Create the Example Application

Perform the following steps to create the example application:

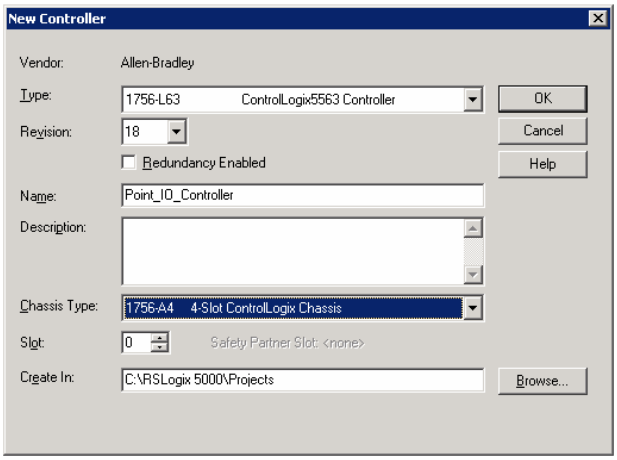
1. Start RSLogix 5000 Enterprise Series software to open the RSLogix 5000 main dialog.
2. From the File menu, select New.




3. The New Controller dialog opens.




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



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

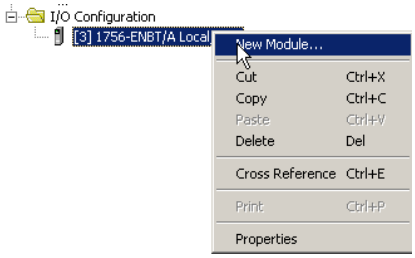
You now add the POINT I/O modules to the controller's I/O configuration performing these procedures:

- 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..

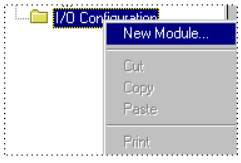
| **IMPORTANT** | Click the Help button on the configuration dialogs shown in this section if you need assistance in selecting and setting the parameters. |
|---|---|

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

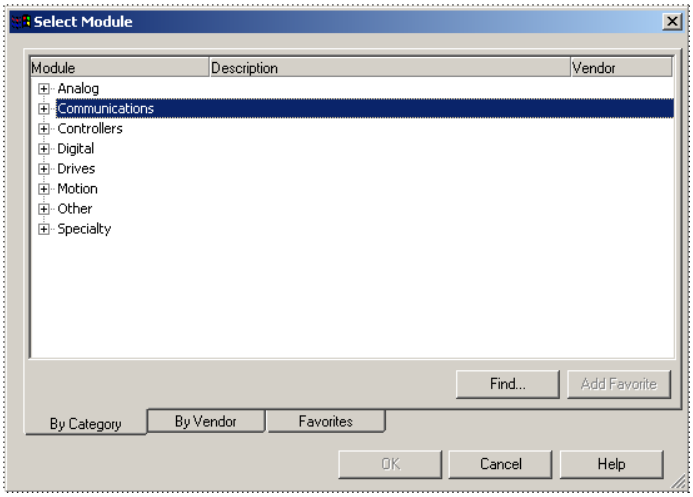
1. Select the I/O Configuration folder in the project dialog, and click the right mouse button. A menu opens.



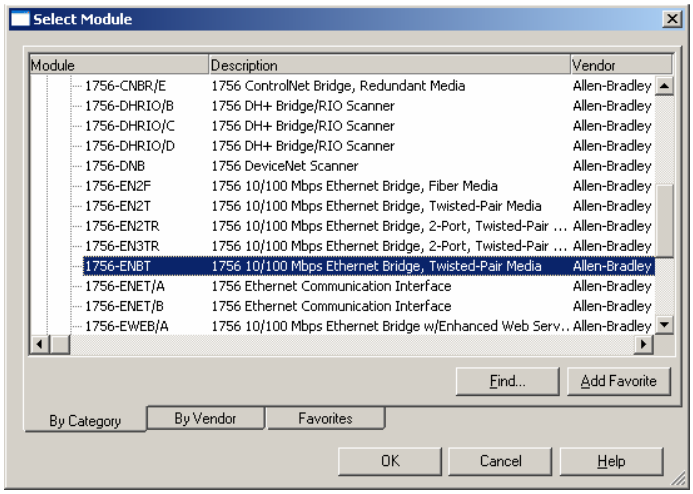

2. Choose New Module.



The Select Module dialog opens.

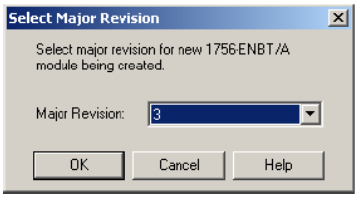



3. Expand the Communications tree as in the following dialog.



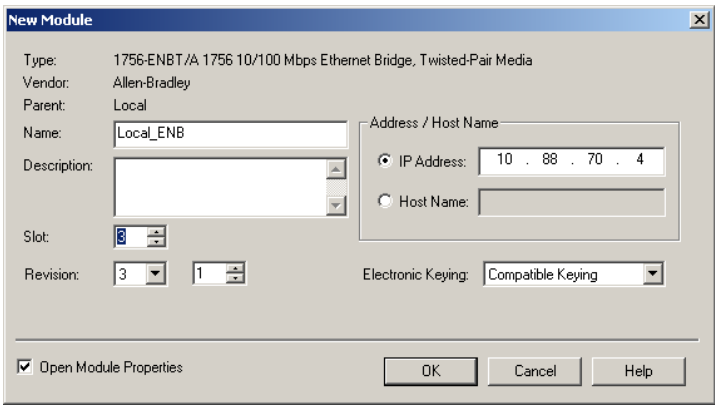

4. Select the 1756-ENBT EtherNet/IP Bridge and click OK.

The Select Major Revision dialog opens.




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

The New Module dialog opens.

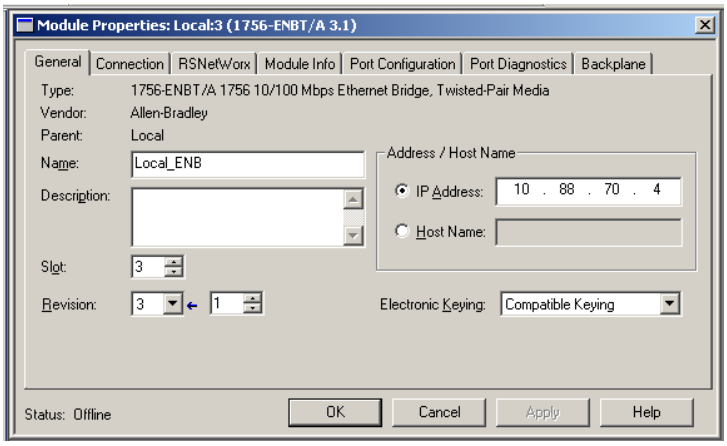



6. Enter values for Name, IP Address, Slot, Electronic Keying, and Revision, noting that we used the following values:

| | |
|---|---|
| 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.

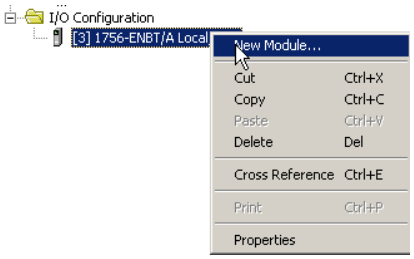
The Module Properties dialog opens.



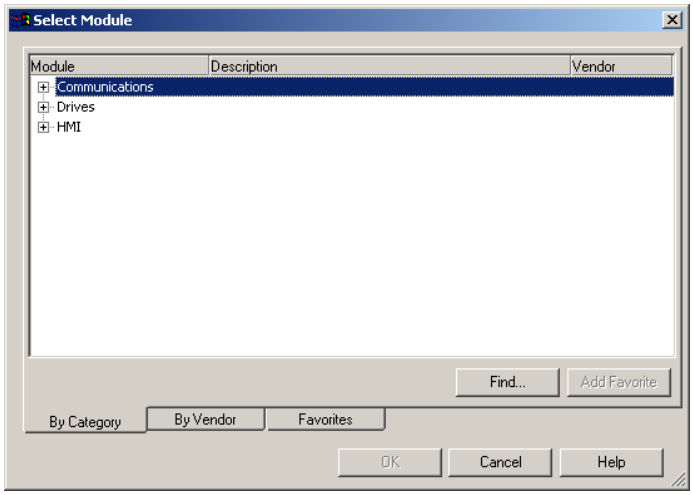
## Add the POINT I/O Adapter to the I/O Configuration

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

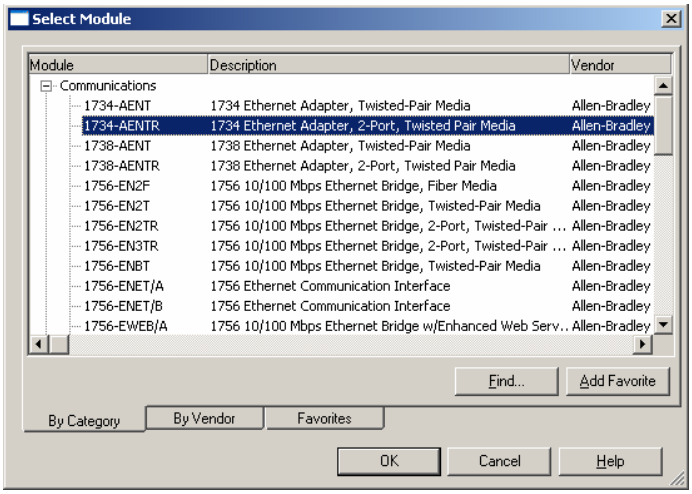
1. In the Project dialog, right-click the local 1756-ENBT module under the I/O Configuration folder, and select New Module from the dialog.




The Select Module dialog opens.




2. Expand the Communications tree.

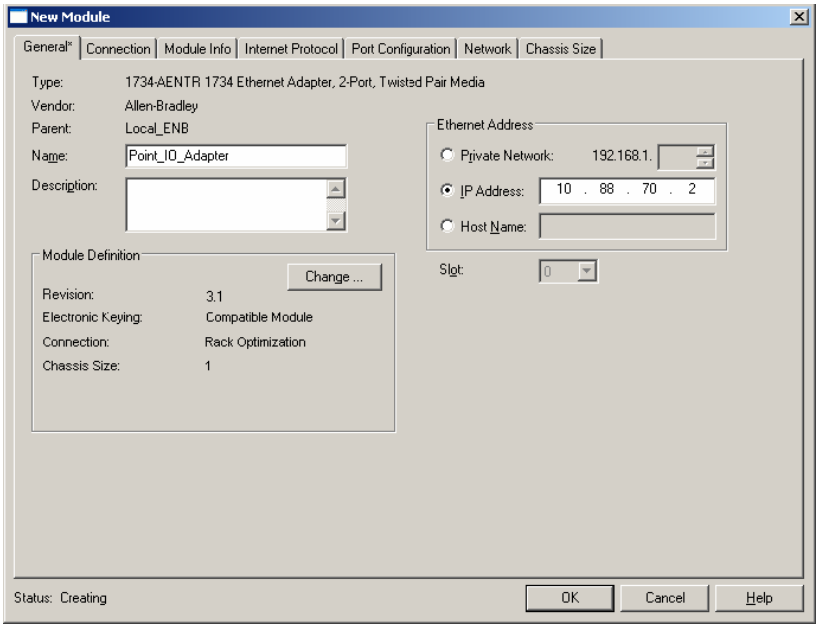


3. Select your adapter from the list, and click OK, noting that we entered these values on the General Tab of the New Module dialog..

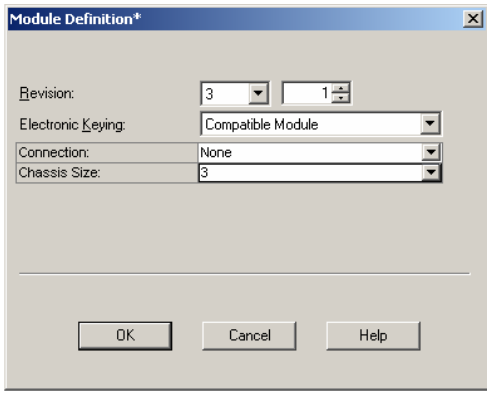
| | |
|---|---|
| Name | POINT_IO_Adapter |
| IP Address | 10.88.70.2 |

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

The New Module dialog opens.




4. Click Change...
The Module Definition dialog opens.




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

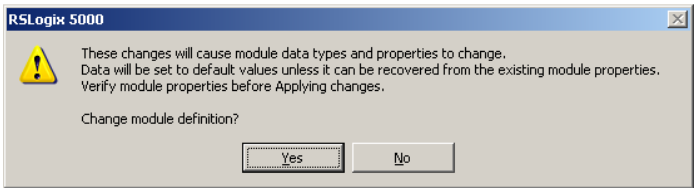
| | |
|---|---|
| Connection | None |
| Chassis Size | 3 |
| Electronic Keying | Compatible Module |
| Revision | 3.1 |

**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.

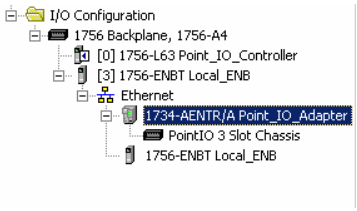
6. Choose None as Connection, because we are only making direct connections, then click OK. There is no need to have a rack-optimized connection if all I/O connections to the POINT I/O modules are directly connected.
   A dialog box opens.




   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.

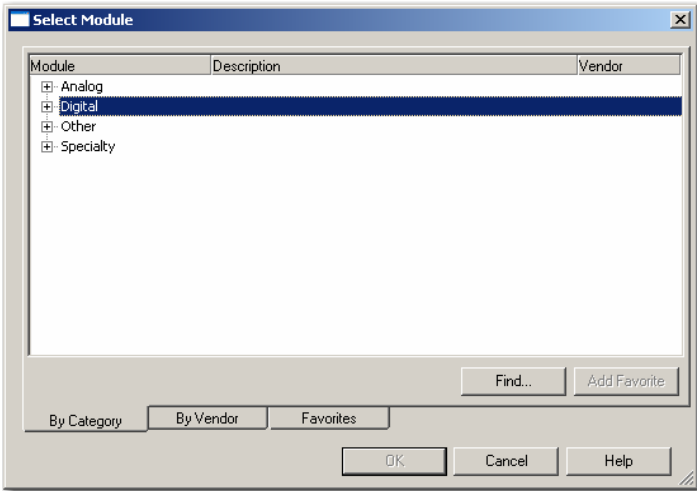
In this example, you add a 1734-OW2 relay output and a 1734-OV4E sink output modules with standard configurations. Use these steps as a guide when configuring different I/O modules for your system.

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

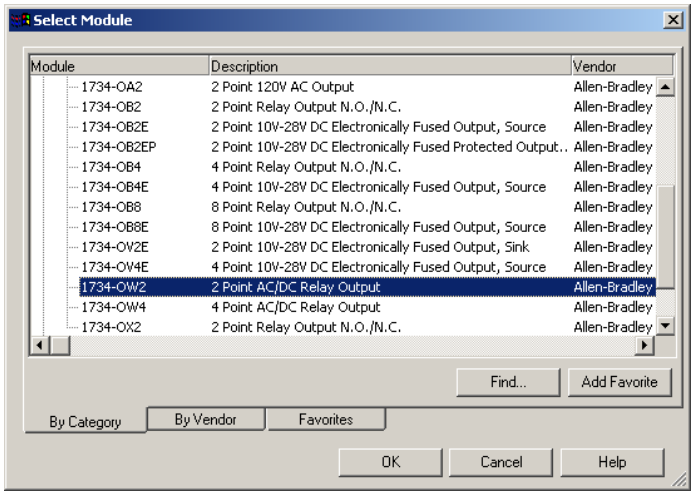
### *Add the Relay Output Module*

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

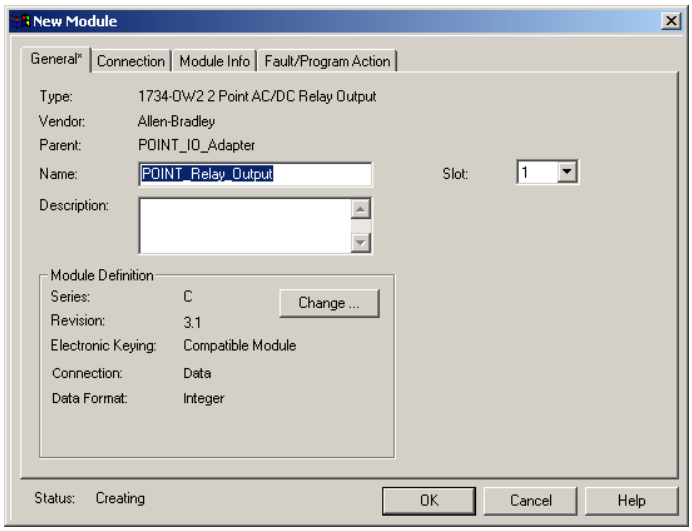
   The Select Module dialog opens.




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



The New Module dialog opens.




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

| | |
|---|---|
| Name | POINT_Relay_Output |
| Slot | 1 |

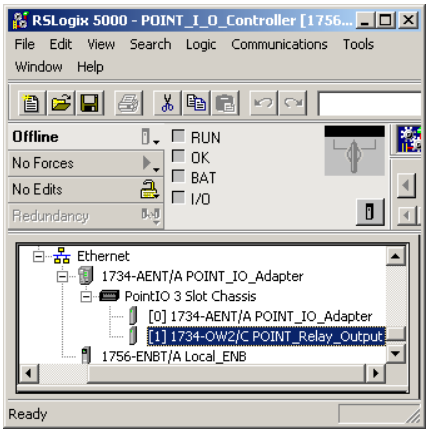
5. Choose Connection.

   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.

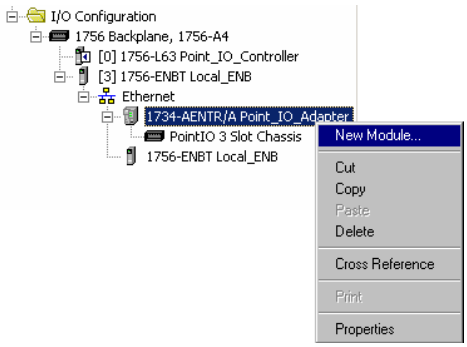
**IMPORTANT** To avoid overloading the I/O adapters, we recommend that RPI be no less than 10 ms for rack connections and 50 ms for direct connections.

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



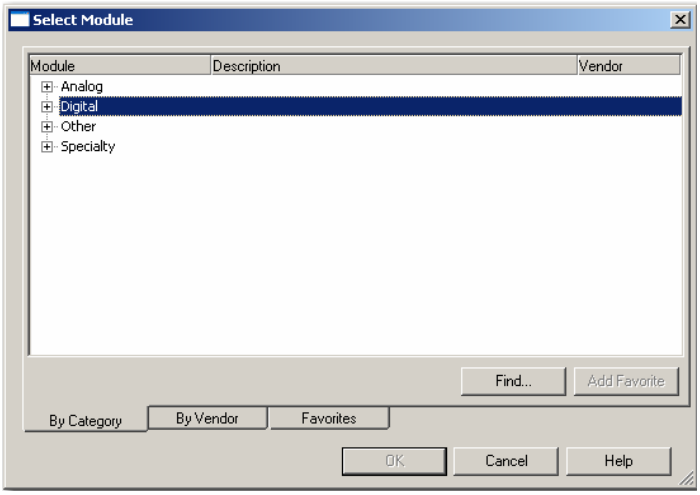
### *Add the Digital Output Module*

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

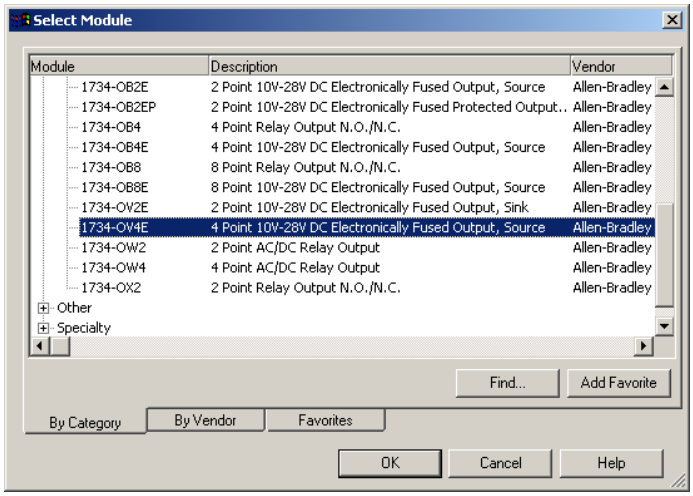



The Select Module dialog opens.

Expand the Digital tree.



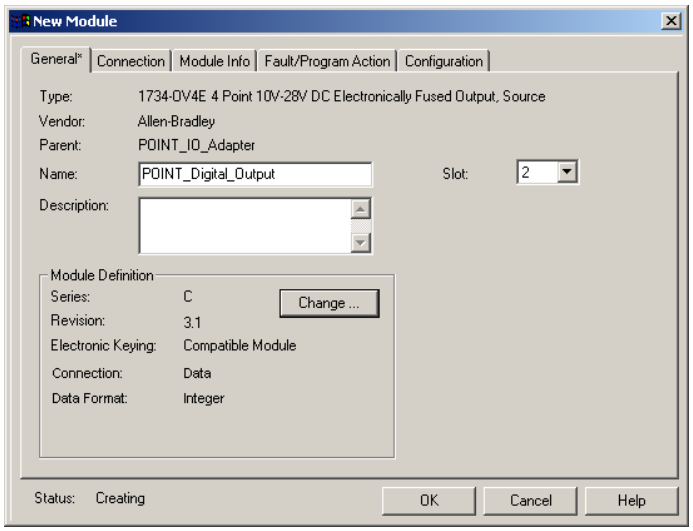

2. Select the 1734-OV4E digital output module from the list.



3. Click OK.
   The New Module dialog opens.

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

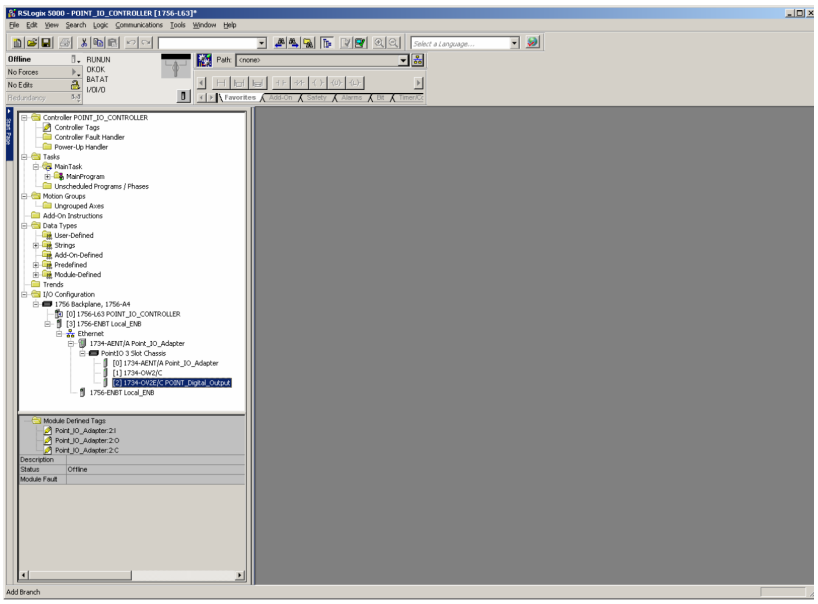
| | |
|---|---|
| Name | POINT_Digital_Output |
| Slot | 2 |




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

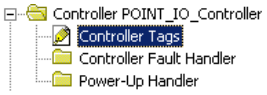


## Edit the Controller Tags

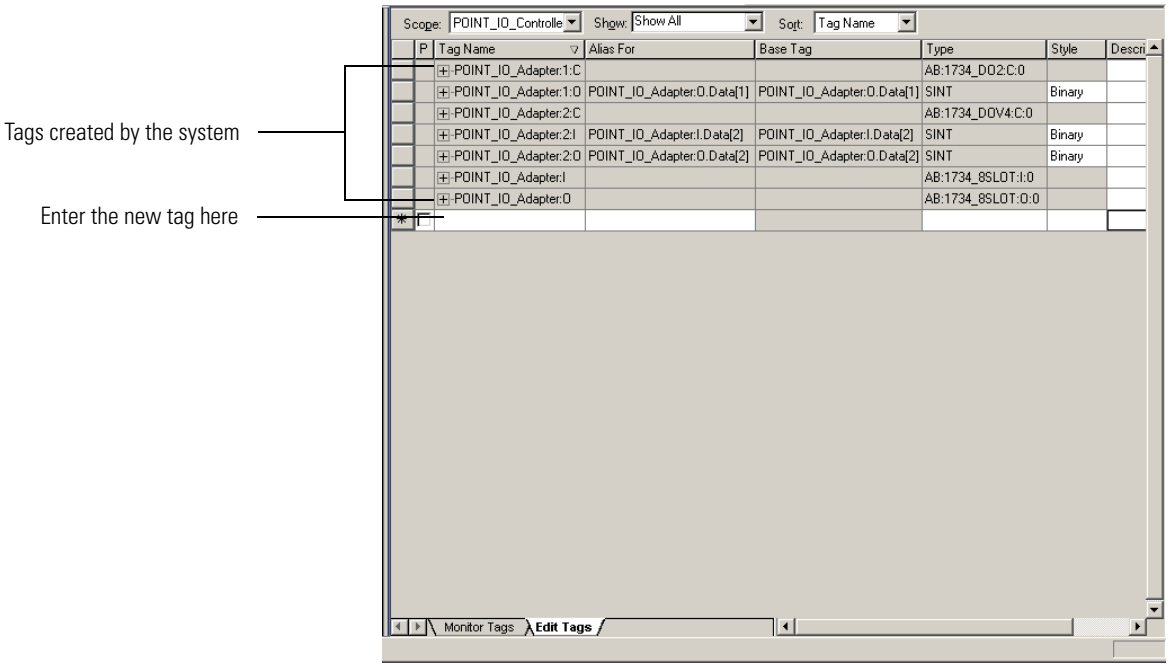
When you add modules to the I/O configuration the system creates tags for those modules to use in the application program.

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

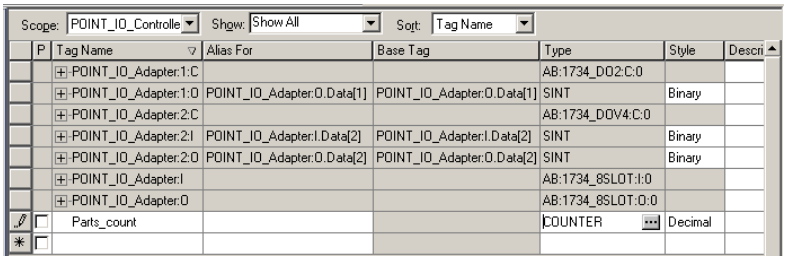
1. Double-click the Controller Tags folder in the project dialog.




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




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




3. Create the following tag:

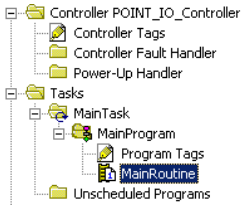
| Tag | Type |
|---|---|
| Parts_Count | Counter |

4. Close the Controller Tags dialog.

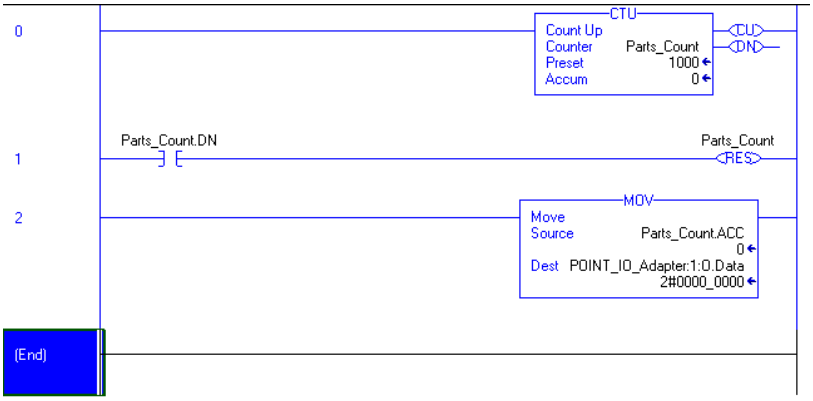
## Create the Ladder Program

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.

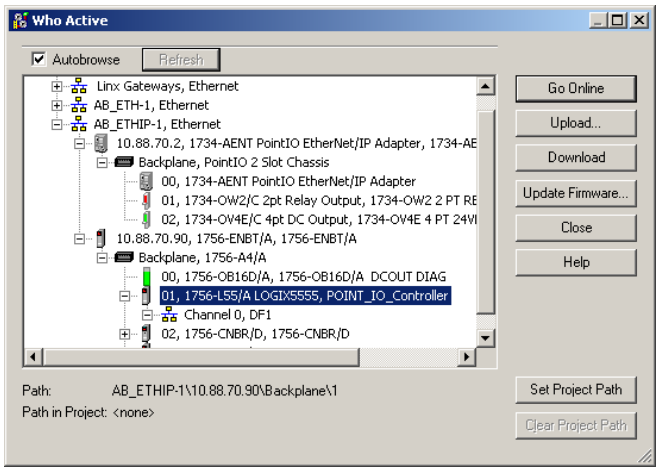



3. Save the program.

## Download the Program to the Controller

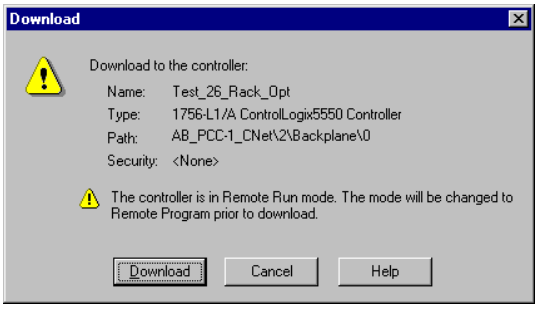
Follow this procedure to download the program you just saved to the ControlLogix controller.

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

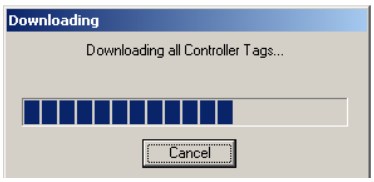



2. Navigate to select the slot where the controller is located in the chassis.
3. Choose Set Project Path.

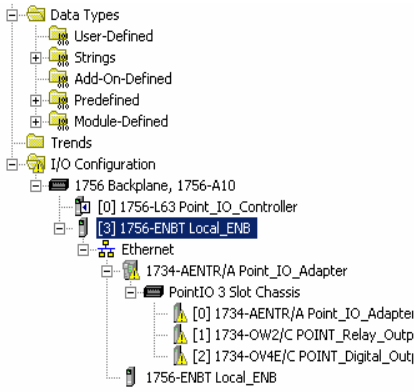
4. Choose Download.
   The Download dialog opens with a reminder of the following.
   - The controller is in Remote Run mode.
   - The mode changes to Remote Program prior to download.




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.



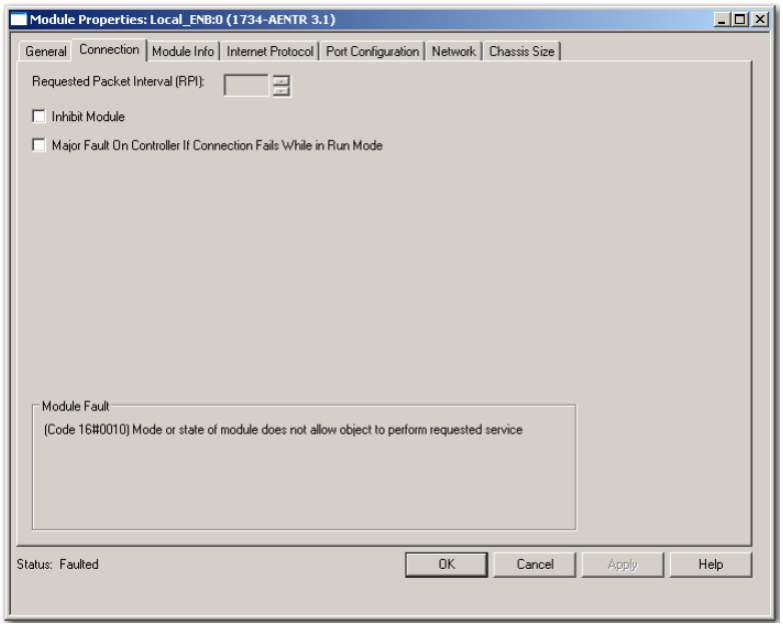

## Verify the Module Chassis Size

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.

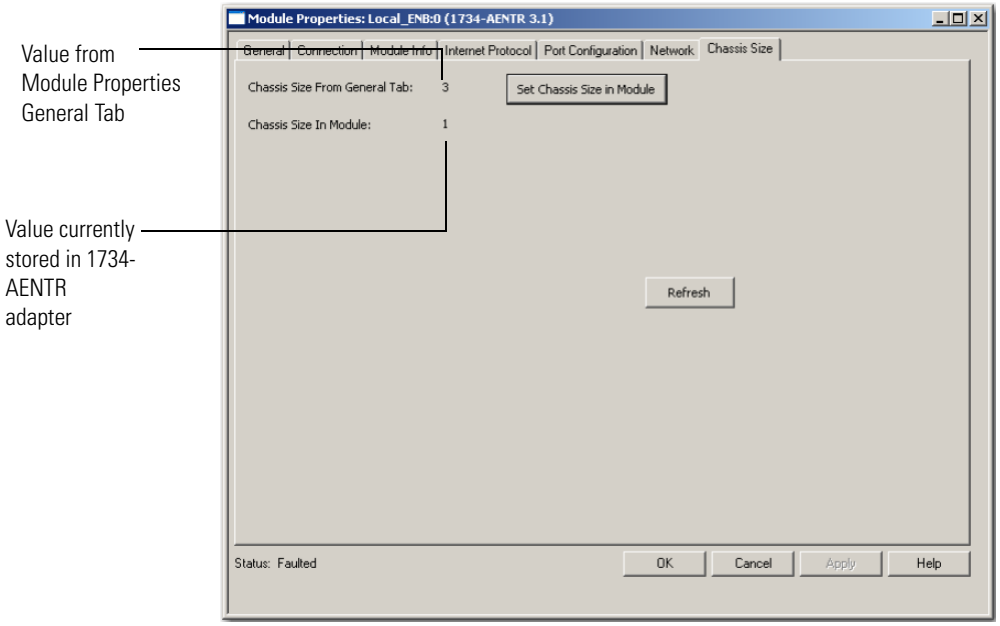
Now you need to download this new chassis size value into the 1734-AENTR adapter hardware. This procedure synchronizes the chassis size value from the RSLogix 5000 software into the 1734-AENTR adapter hardware.

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

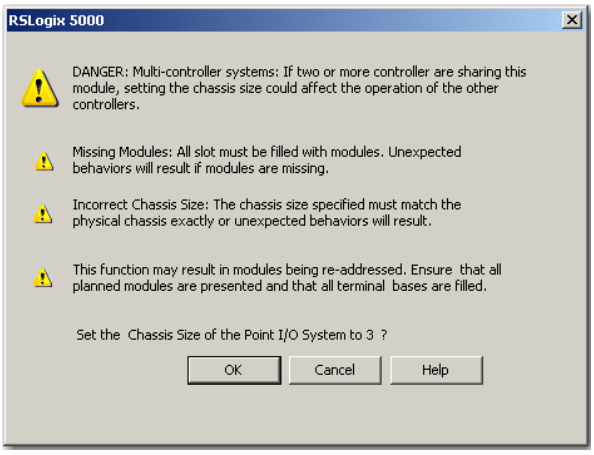
3. Select Properties.
4. Click the Connection tab.
   The Module Fault error code displays.




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

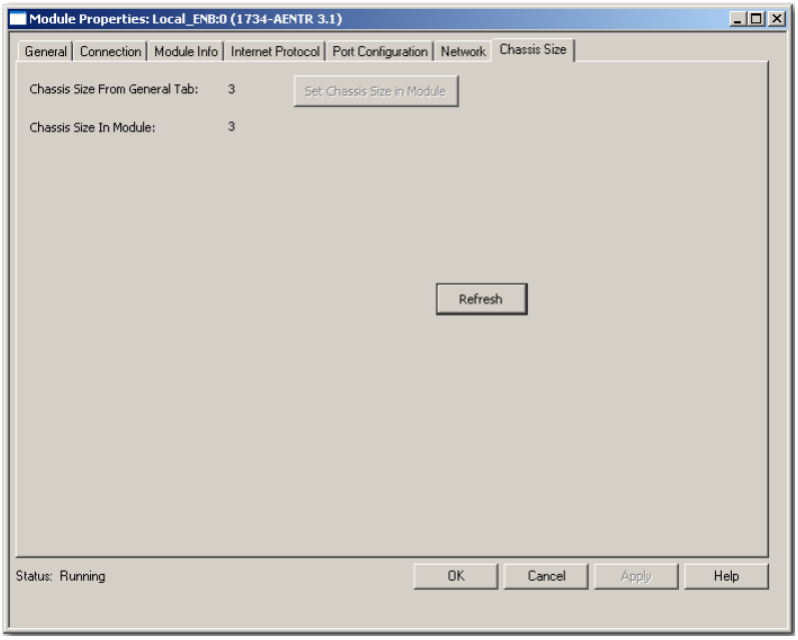


7. Read and acknowledge the warning dialog.




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.

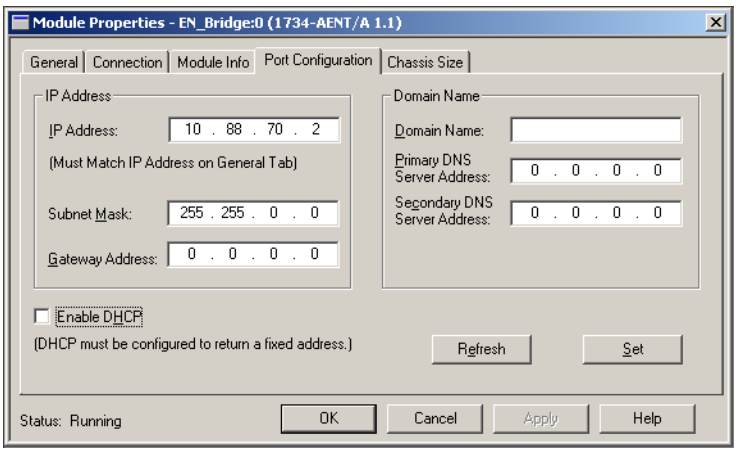



9. Click OK.

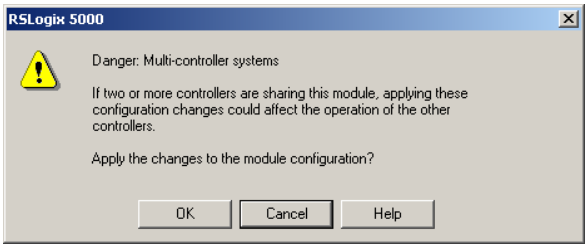
## Configure the Adapter with Fixed IP Address

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.




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



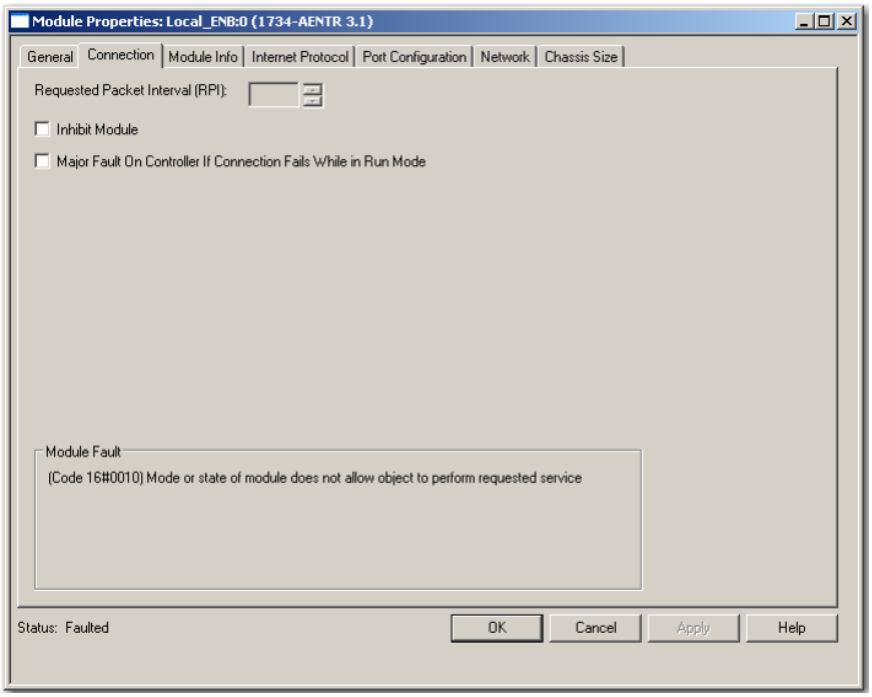

6. Click OK.
7. Click the Refresh button to verify the changes.

## 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.




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.



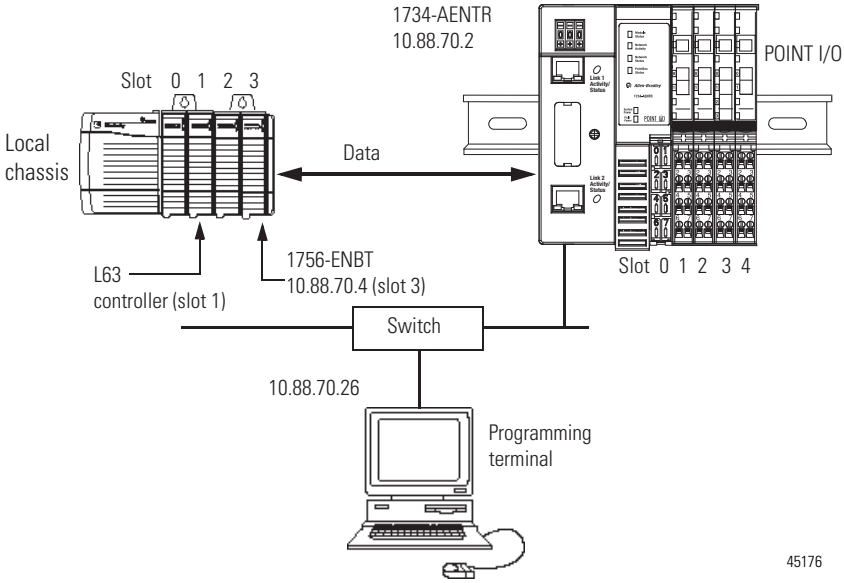
**ATTENTION:** You must use series C POINT I/O modules with the adapter. Series A or B POINT I/O modules do not work with the adapter.

# 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.



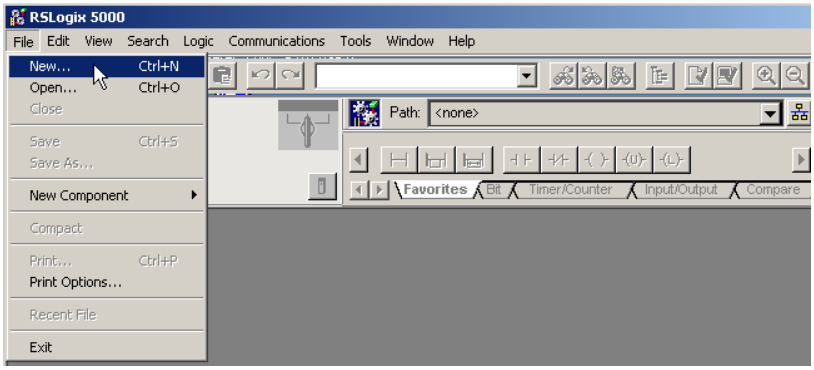

To work along with this example, set up your system as shown in the figure.

- 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.

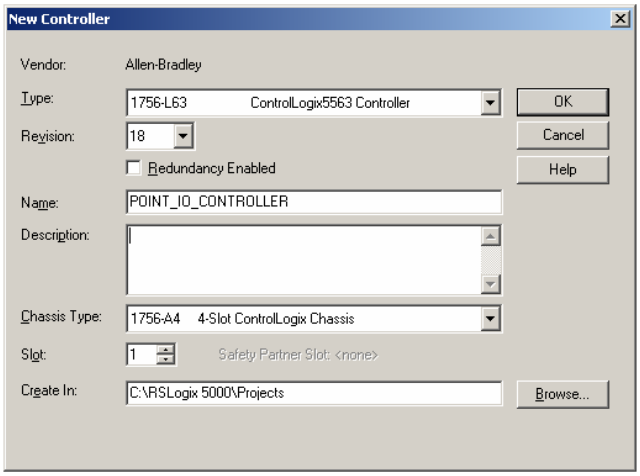
## Create the Example Application

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.




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.
7. 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.

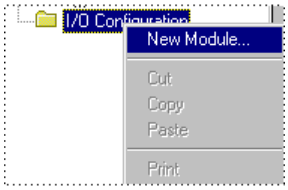
## Configure the I/O Modules

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.

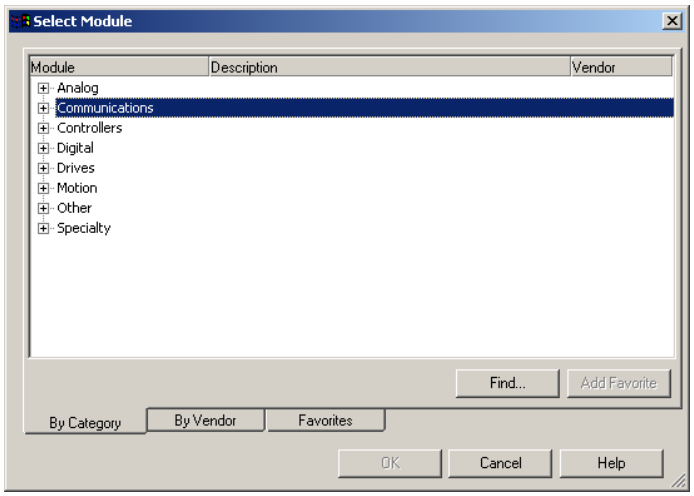
**IMPORTANT** Click the Help button on the configuration dialog shown in this section if you need assistance in selecting and setting the parameters.

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

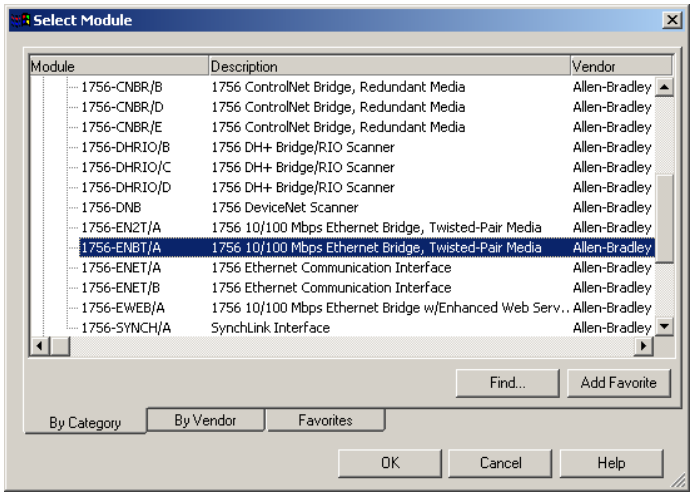
1. Right-click the I/O Configuration folder in the project dialog and select New Module...



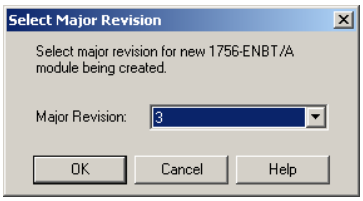

2. The Select Module dialog opens.



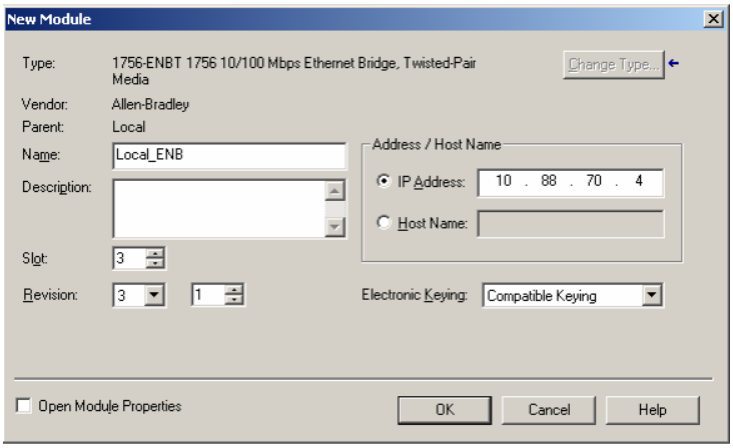
3. Expand the Communications tree, as in the following dialog and select the 1756-ENBT EtherNet/IP Bridge.




4. Click OK.
The Select Major Revision dialog opens.




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




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

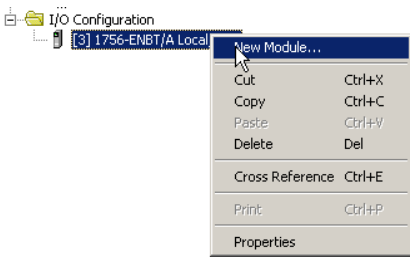
| | |
|---|---|
| Name | Local_ENB |
| IP Address | 10.88.70.4 |
| Slot | 3 |
| Electronic Keying | Compatible Module |
| Revision | 3.1 |

7. Click OK to accept the configuration.

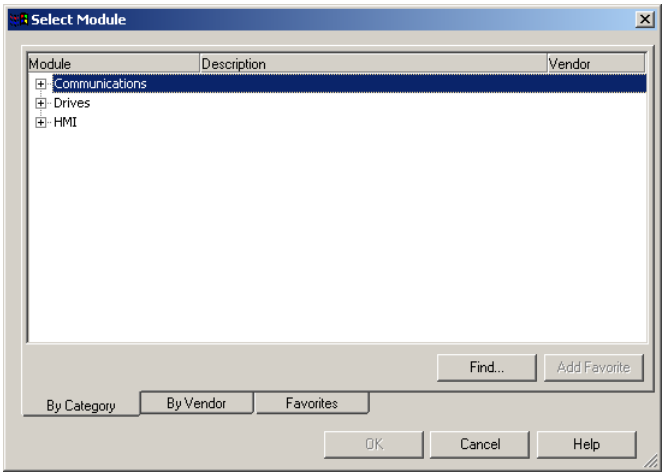
## Add the I/O Adapter to the I/O Configuration

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

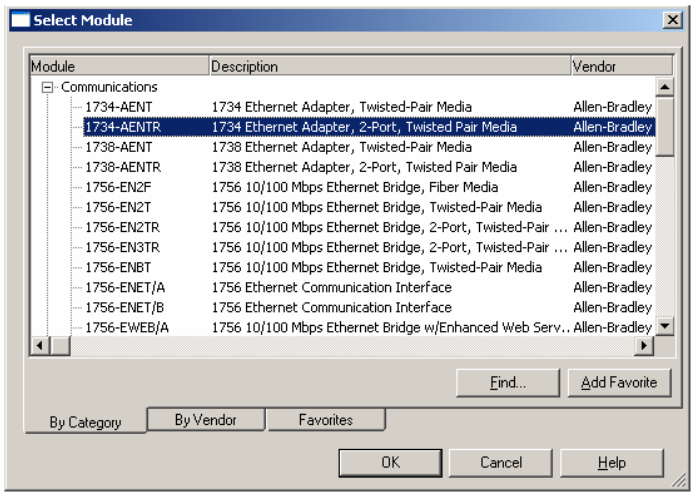
1. In the Project dialog, right-click the local 1756-ENBT module under the I/O Configuration folder, and select New Module from the dialog.




The Select Module dialog opens.

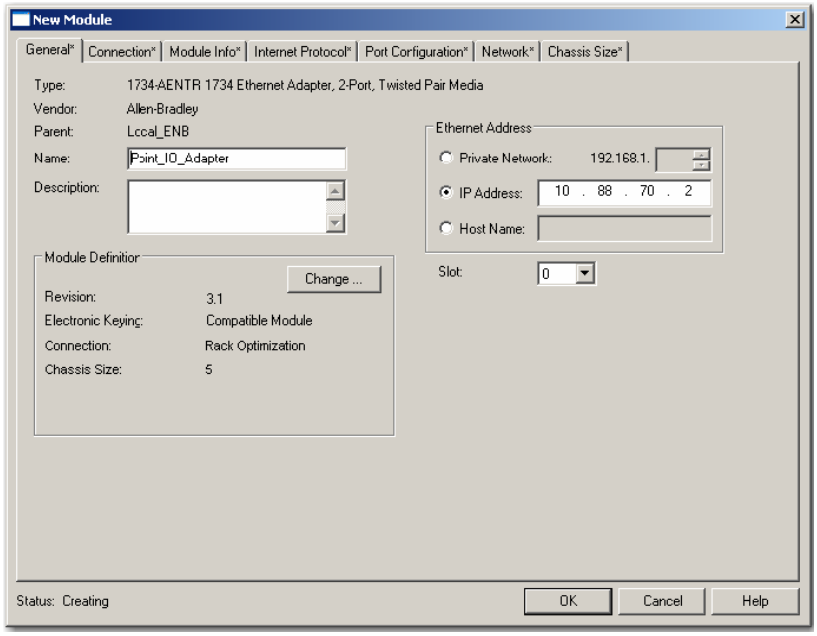


2. Expand the Communications tree and select the 1734-AENTR Ethernet Adapter from the list.




3. Click OK.

The New Module dialog opens.

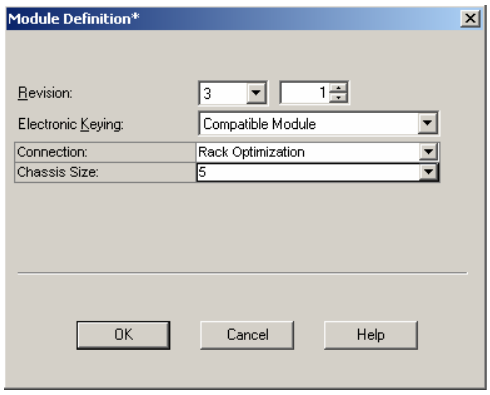



4. Enter values for Name and IP Address, noting we used the following values.

| | |
|---|---|
| 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.




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

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

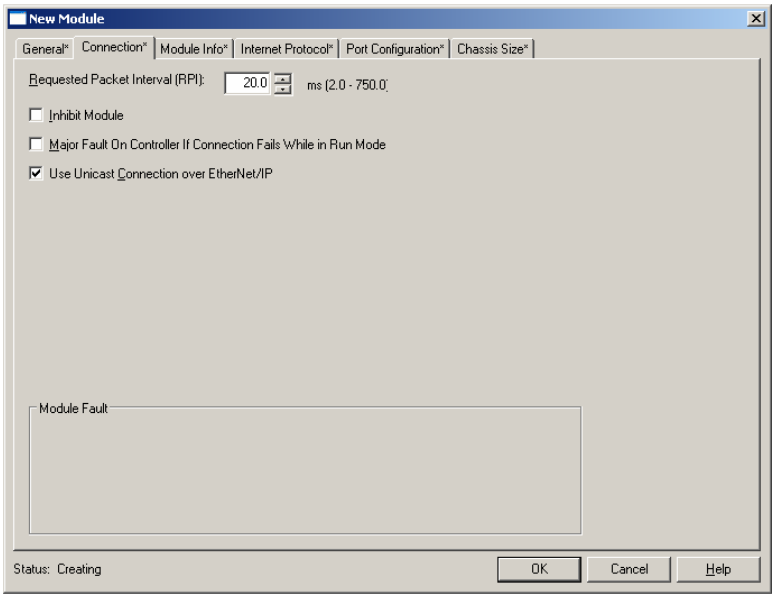
**IMPORTANT** The chassis size equals 1 for the adapter plus the number of I/O modules installed (physically present on the I/O backplane).

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.

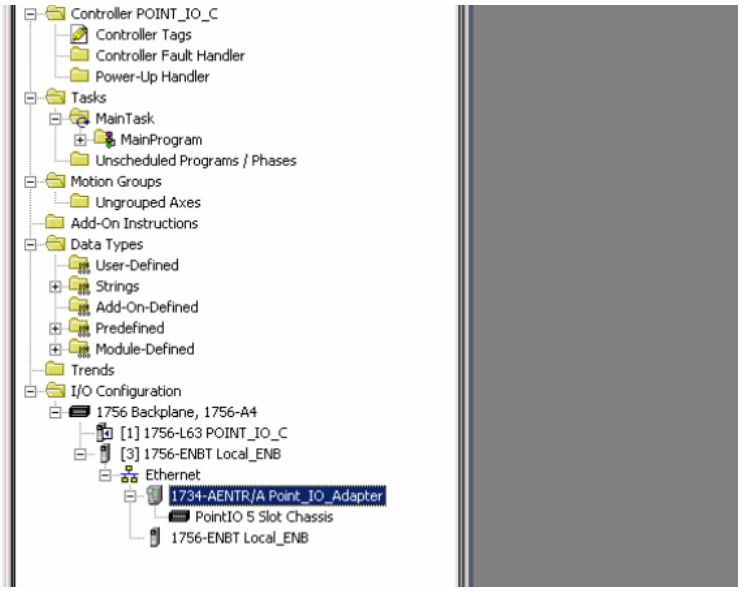
The New Module properties dialog opens.




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.

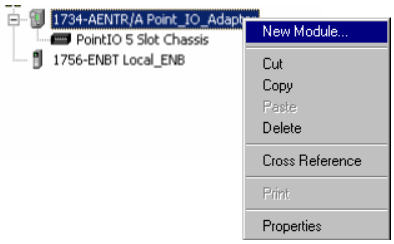
**IMPORTANT** To avoid overloading the adapter, we recommend that you set RPI no less than 10 ms for rack connections and 50 ms for direct connections.

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

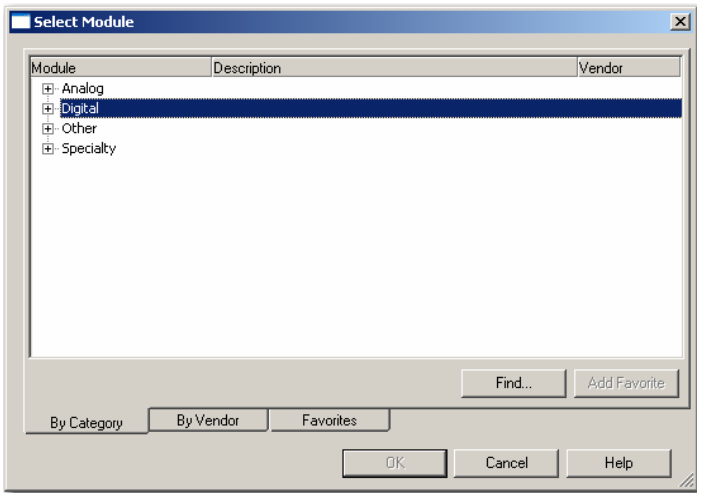


## Add the POINT I/O Module and Configure for Rack-optimized Connection

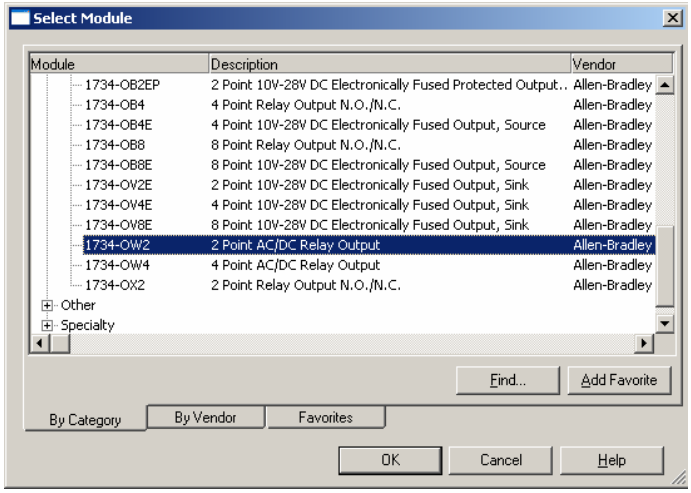
1. Right-click the POINT I/O Chassis in the I/O Configuration folder and select New Module...



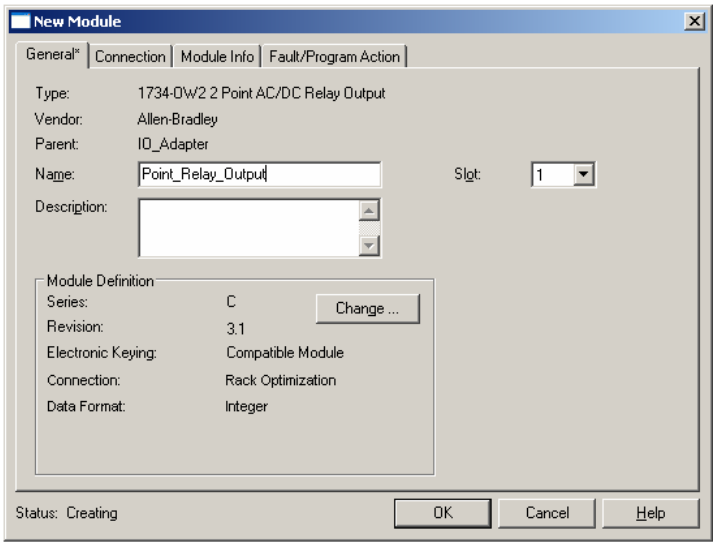

The Select Module dialog opens.




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



The New Module dialog opens.



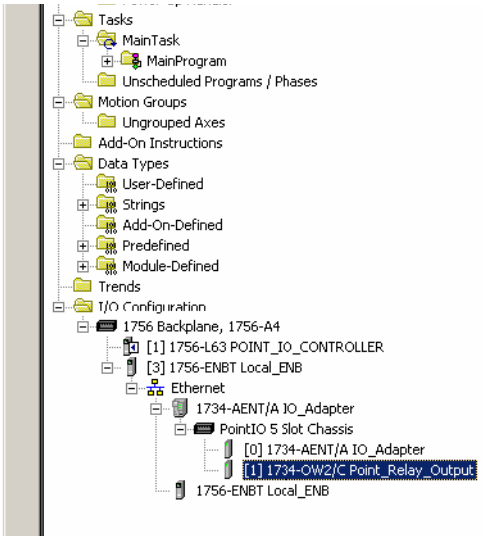

4. Click Change... and then enter values for Name and Slot, noting we used the following values.

| | |
|---|---|
| Name | POINT_Relay_Output |
| Slot | 1 |

5. 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.

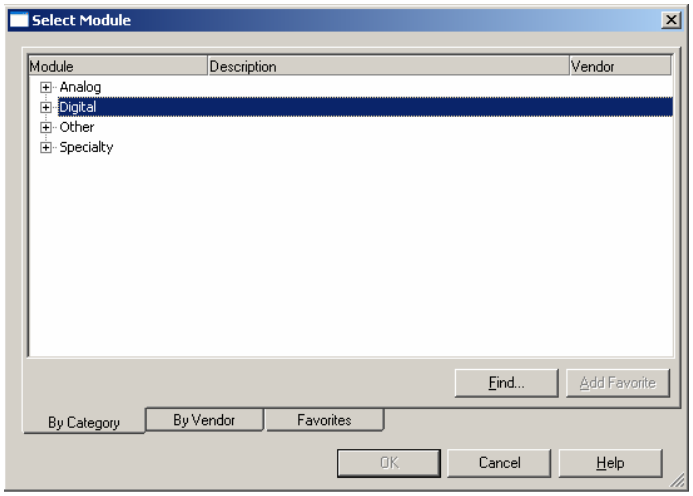


## Add the POINT I/O Module and Configure For Direct Connection

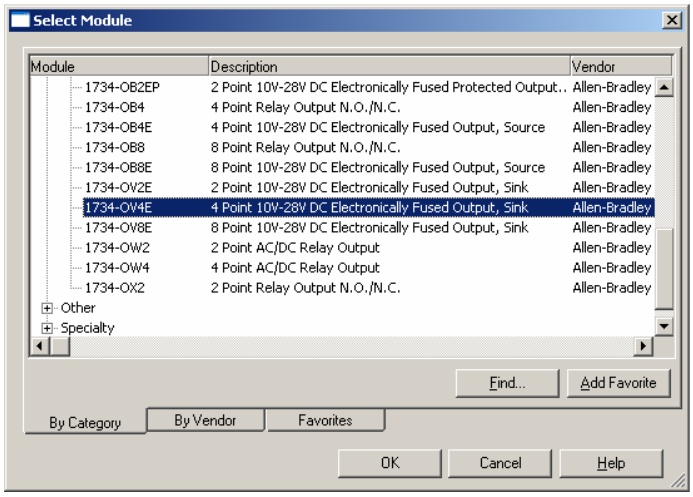
1. Right-click the POINT I/O Chassis in the I/O Configuration folder, and select New Module.

| **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. |
|---|---|

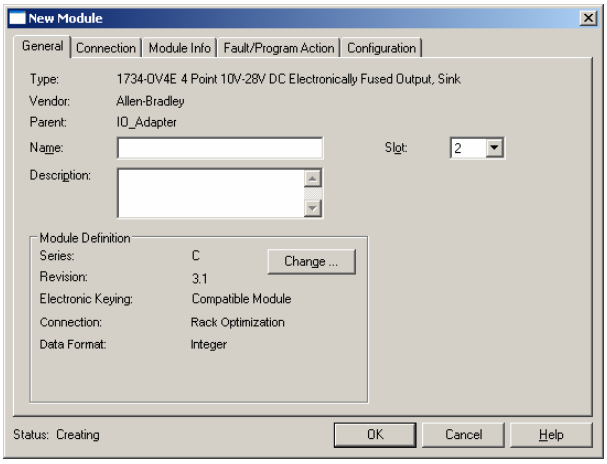
The Select Module dialog opens.




2. Expand the Digital tree.

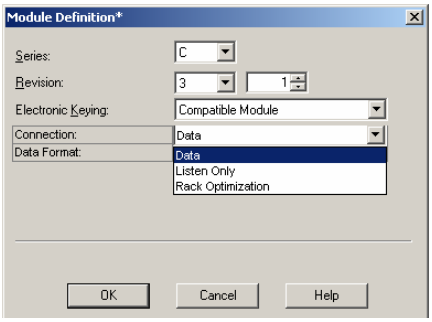


3. Choose the 1734-OV4E/C module and click OK.
   The New Module dialog opens..



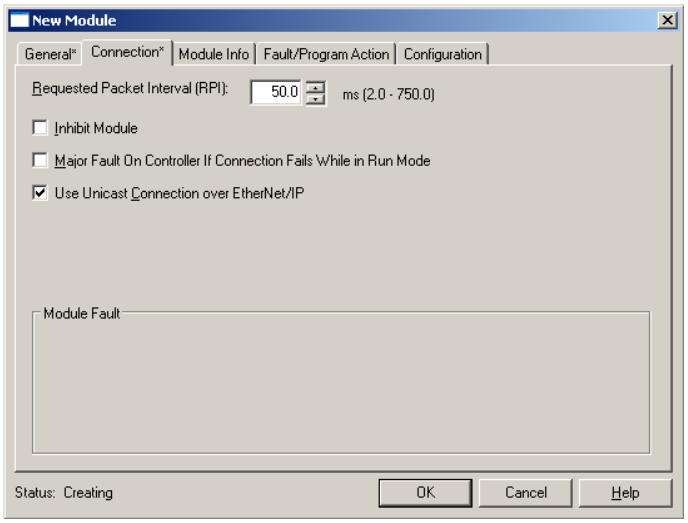

4. From the New Module dialog, complete the following:
   - Enter a value for Name.
   - Enter a value for Slot.
   - Click Change to modify the module definition values.

   The Module Definition dialog opens.




5. 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.

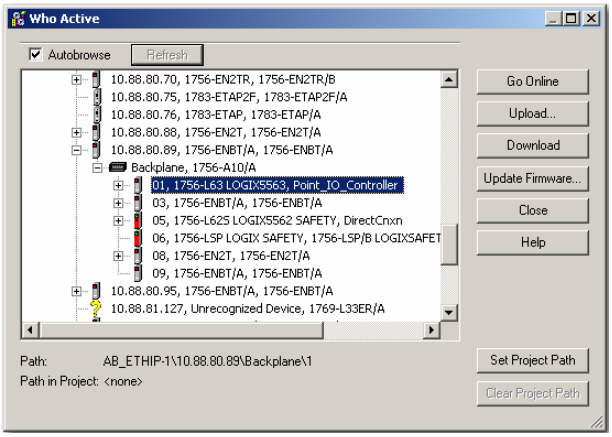



8. From the New Module dialog, enter 50 for the Requested Packet Interval (RPI).
9. Keep the following unchecked.
   a. Inhibit Module
   b. Major Fault on Controller If Connection fails While in Run Mode
10. Click OK.
11. Choose File →Save and enter the name and location of the file.

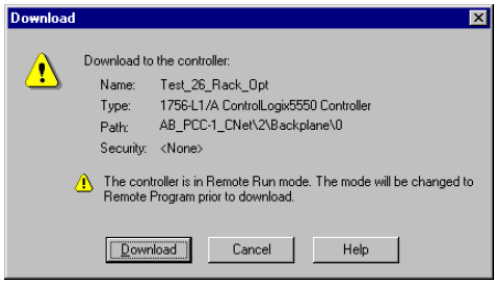
## Download the Program to the Controller

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

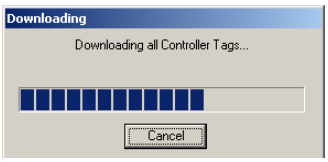
1. From the main menu, choose Communications>Who Active.
2. From the Who Active dialog, navigate to select the slot where the controller is located in the chassis.



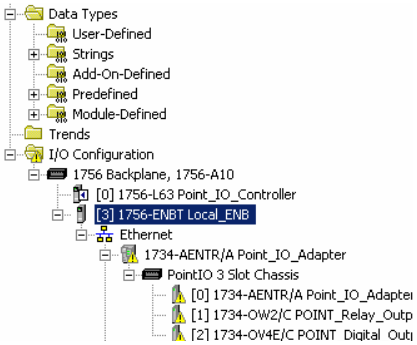
3. Click Set Project Path.
4. Click Download.
   The Download dialog opens.




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




Notice that the 1756-ENBT Bridge is now online.



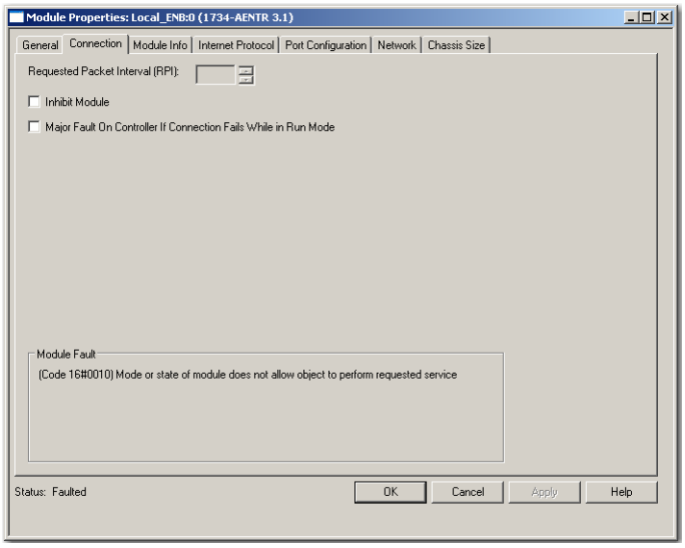

If yellow triangles are present, see the following section.

## Verify the Module Chassis Size

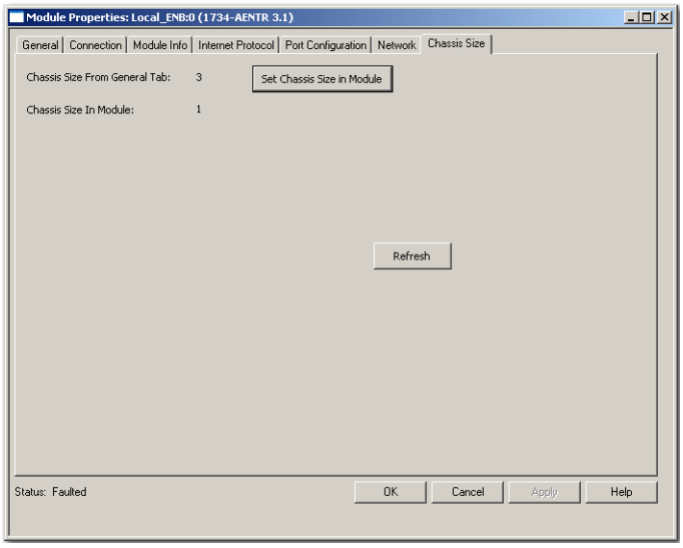
You have now built the I/O tree and the RSLogix 5000 software uses the chassis size from the General tab of the adapter for the rack-optimized I/O connection. Now you need to configure this new chassis size value into the adapter non-volatile memory. This procedure synchronizes the chassis size value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

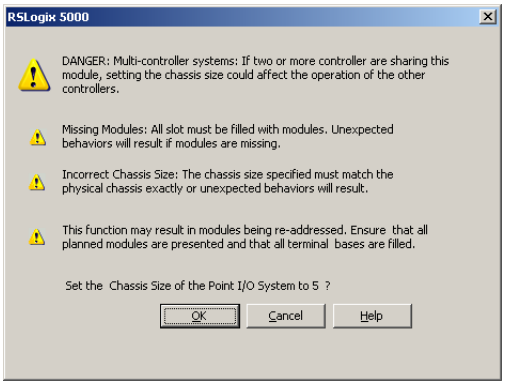
4. Click the Connection tab.
   The Module Fault error code displays at the bottom of the Connection tab.



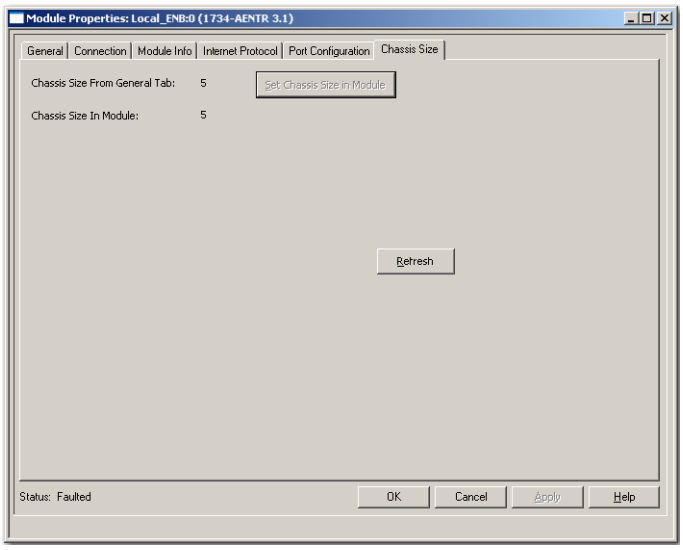

5. Click the Chassis Size tab.
6. Click Set Chassis Size in Module.



7. Read and acknowledge the warning dialog.




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

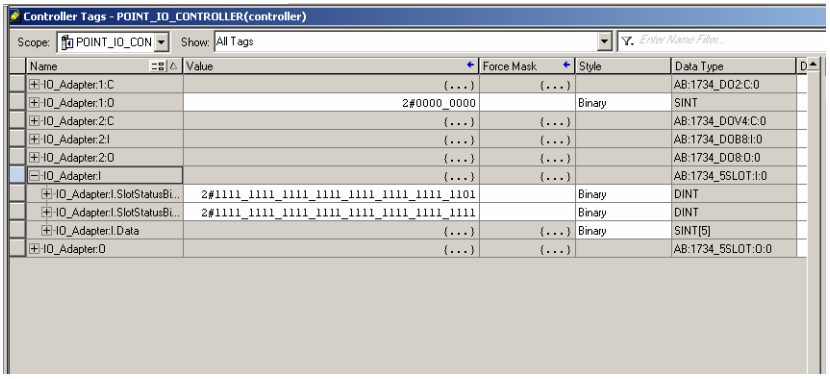



10. Click OK.
    At this point, your POINTBus status LED should be solid green. All the yellow triangles in your I/O configuration should be gone.
11. Click OK to close the dialog.
12. Click File →Save to save the project.

## 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




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 1756-UM001.
- 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 operating correctly:

    0 = module participating with no errors and
    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

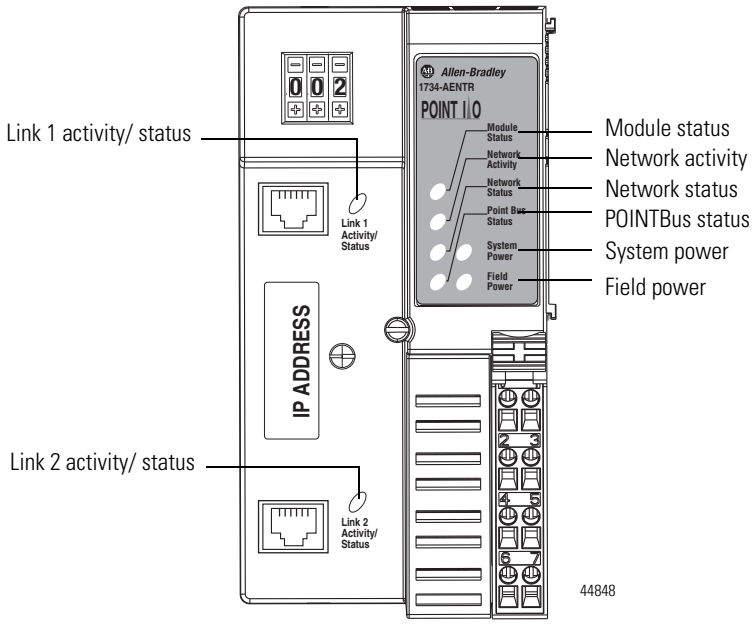


## Interpret the Status Indicators

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.<br>Complete firmware update, verify address switches. |
| | Solid red | Unrecoverable fault, may require device replacement. |
| Network status | Off | Device is not online<br>- Device has not completed Dup_MAC_ID test.<br>- 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.<br>Check for I/O module failure and controller operation. |
| | Solid red | Duplicate IP address detected.<br>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.<br>Link established with Port 1 and Port 2.<br>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.<br>Transmit or receive activity present on Port 1 and/or Port 2.<br>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 / Status | Off | No link established. |
| | 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.<br>Device has not completed Dup_MAC_ID test.<br>Device not powered - check module status indicator. |
| | Flashing green | Device is online but has no connections in the established state.<br>Firmware (NVS) update in progress. |
| | Solid green | Adapter online with connections established. |
| | Flashing red | Recoverable fault occurred:<br>• At cycle power, the number of expected modules does not equal the number of modules present.<br>• A module is missing.<br>• 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

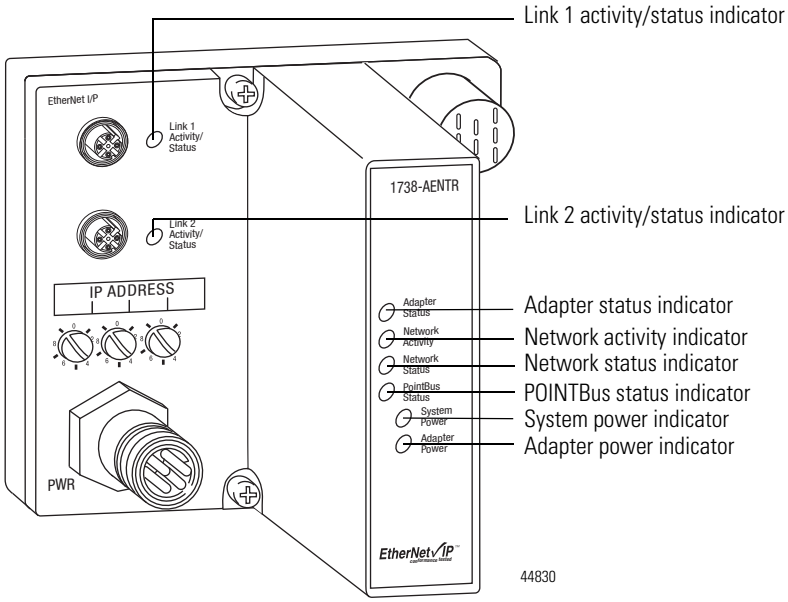
| | Status | Description |
|---|---|---|
| System power | Off | Not active. Adapter power is off, or there is a DC-DC converter problem. |
| | Solid green | System power is on. DC-DC converter output is active (5V). |
| Field power | Off | Not active. Adapter power is off. |
| | Solid green | Power is 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.<br>-Firmware (NVS) update.<br>-Address switches changed. |
| | Red | Unrecoverable fault<br>-Self-test failure (Flash checksum failure at power up,<br>RAM test failure or EEPRO< checksum failure at cycle power).<br>-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.<br>Link established with Port 1 and Port 2.<br>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.<br>Transmit or receive activity present on Port 1 and/or Port 2.<br>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.<br>- Device has not completed Dup_MAC_ID test.<br>- 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.<br>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.<br>Device has received and accepted an Identify Communication Faulted Request - long protocol message |
| | Red | Unrecoverable fault has occurred:<br>- 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<br>Network status - green/red<br>POINTBus status - green/red<br>Network activity - green<br>System power (POINTBus 5V power) - green<br>Field power (24V from field supply) - green<br>Link activity status - green/yellow |
| Input voltage ratings, nom | 24V DC |
| Input voltage range | 10…28.8V 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% (4.75…5.25) |
| Input overvoltage protection | Reverse polarity protected |
| Isolation voltage | 50V (continuous), Basic Insulation Type<br>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 | 10…28.8V 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<br>2 – on communications ports |

(1) Use this conductor category information for planning conductor routing. Refer to publication 1770-IN041, Industrial Automation Wiring and Grounding Guidelines.

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

| Specification | Description |
|---|---|
| Expansion I/O capacity | • Maximum of 63 modules<br>• Maximum of 5 Rack Optimized connections (for digital modules only)<br>• Maximum of 20 Direct connections<br>• 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.<br>• 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.<br>**Cat. No.POINTBus Current Requirements**<br>1734-IB2 75 mA<br>1734-IB4 75 mA<br>1734-IB8 75 mA<br>1734-IV2 75 mA<br>1734-IV4 75 mA<br>1734-OB2 75 mA<br>1734-OB4 75 mA<br>1734-OB8 75 mA<br>1734-OB2E 75 mA<br>1734-OB2EP 75 mA<br>1734-OB4E 75 mA<br>1734-OB8E 75 mA<br>1734-OV2E 75 mA<br>1734-OV4E 75 mA<br>1734-OW2 80 mA<br>1734-OX2 100 mA<br>1734-IE2C 75 mA<br>1734-OE2C 75 mA<br>1734-IE2V 75 mA<br>1734-OE2V 75 mA<br>1734-IA2 75 mA<br>1734-IM2 75 mA<br>1734-OA2 75 mA<br>1734-IJ2 160 mA<br>1734-IK2 160 mA<br>1734-IR2 220 mA<br>1734-IT2I 175 mA<br>1734-SSI 110 mA<br>1734-VHSC5 180 mA<br>1734-VHSC24 180 mA<br>1734-232ASC 75 mA<br>1734-485ASC 75 mA<br>1734-ARM 75 mA<br>1734-IB4D 50 mA<br>1734-IV8 75 mA<br>1734-OV8E 75 mA<br>1734-OW4 80 mA<br>1734-IE4C 75 mA<br>1734-IE8C 75 mA |

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

| Specification | Description |
|---|---|
| Expansion I/O capacity | 1734-OE4C75 mA<br>1734-IA475 mA<br>1734-IM475 mA<br>1734-OA475 mA<br>1734-IR2E75 mA<br>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<br>(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 in.-lb) |
| Conductors | #22…#14 AWG (0.324...2.08)<br>solid or stranded wire rated at 75 °C or higher |
| Wire size | 1.2 mm (3/4 in.) insulation, max |
| North American temp code | T4 |
| IEC temp code | T4 |

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

| Specification | Description |
|---|---|
| Expansion I/O capacity | • Maximum of 63 modules<br>• Maximum of 5 Rack Optimized connections (for digital modules only)<br>• Maximum of 20 Direct connections<br>• 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.<br>• 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.<br>**Cat. No.POINTBus Current Requirements**<br>1738-IB2M1275 mA<br>1738-IB4xxx75 mA<br>1738-IB8xxx75 mA<br>1738-IV4xxx75 mA<br>1738-IV8xxx75 mA<br>1738-OB2EM1275 mA<br>1738-OB2EPM1275 mA<br>1738-OB4Exxx75 mA<br>1738-OB8Exxx75 mA<br>1738-OB16xxx150 mA<br>1738-OV4EM1275 mA<br>1738-OW4xxx 90 mA<br>1738-IE2CM12 75 mA<br>1738-OE2CM1275 mA<br>1738-IE4Cxxx75 mA<br>1738-OE4Cxxx75 mA<br>1738-IE2VM12 75 mA<br>1738-OE2VM12 75 mA<br>1738-IA2xxx 75 mA<br>1738-OA2xxx 75 mA<br>1738-IJM23160 mA<br>1738-SSIM23110 mA<br>1738-IR2M12 220 mA<br>1738-IT2IM12 175 mA<br>1738-VHSC24M23 180 mA<br>1738-232ASCM1275 mA<br>1738-485ASCM1275 mA<br>1738-IB4Dxxx50 mA<br>1738-IB16Dxxx75 mA<br>1738-8CFGxxx100 mA |
| Dimensions (HxWxD), approx. | 76.2 x 73.0 x 133.4 mm<br>(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<br>1.81 Nm (16 in-lbs) in steel |
| Wire size | 1.2 mm (3/4 in.) insulation, max |

### Environmental Specifications

| Specification | Description |
|---|---|
| Temperature, operating | IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock):<br>-20…55 °C (-4…131 °F) – 1734-AENTR<br>-20…60 °C (-4…140 °F) – 1738-AENTR |
| Temperature, storage | IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock):<br>–40…85 °C (–40…185 °F) |
| Relative humidity | IEC 60068-2-30 (Test Db, Unpackaged Damp Heat):<br>5…95% noncondensing |
| Vibration | IEC 60068-2-6 (Test Fc, Operating):<br>5 g @ 10…500 Hz |
| Shock, operating | IEC60068-2-27 (Test Ea, Unpackaged Shock):<br>30 g |
| Shock, non-operating | IEC60068-2-27 (Test Ea, Unpackaged Shock):<br>50 g |
| Emissions | CISPR 11:<br>Group 1, Class A |
| ESD immunity | IEC 61000-4-2:<br>6 kV contact discharges – 1734-AENTR<br>8 kV contact discharges<br>8 kV air discharges |
| Radiated RF immunity | 10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz – 1734-AENTR |
| EFT/B immunity | IEC 61000-4-4:<br>±4 kV at 5 kHz on power ports<br>±2 kV at 5 kHz on communication ports<br>±3 kV at 5 kHz on communication ports – 1734-AENTR |
| Surge transient immunity | IEC 61000-4-5:<br>±1 kV line-line(DM) and ±2 kV line-earth(CM) on power ports<br>±2 kV line-earth(CM) on unshielded communications ports (tested as balanced circuits) |
| Conducted RF immunity | IEC 61000-4-6:<br>10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz |

### Certifications

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

(1) See the Product Certification link at http://www.rockwellautomation.com/products/certification/ 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.



## Work with the Home Page

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

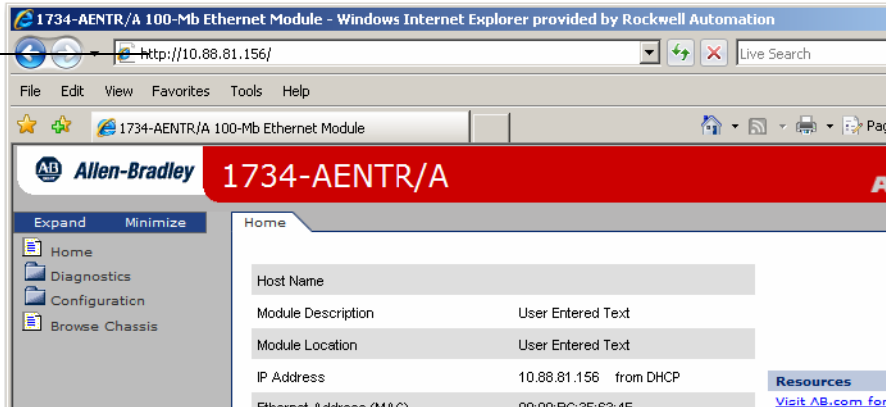
- Host Name
- Module Description
- Module Location
- IP Address
- Ethernet Address (MAC)
- DHCP Enabled
- Product Revision
- Serial Number
- Status
- Auto Negotiate
- Media Speed
- Half or Full Duplex

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. |
|---|---|

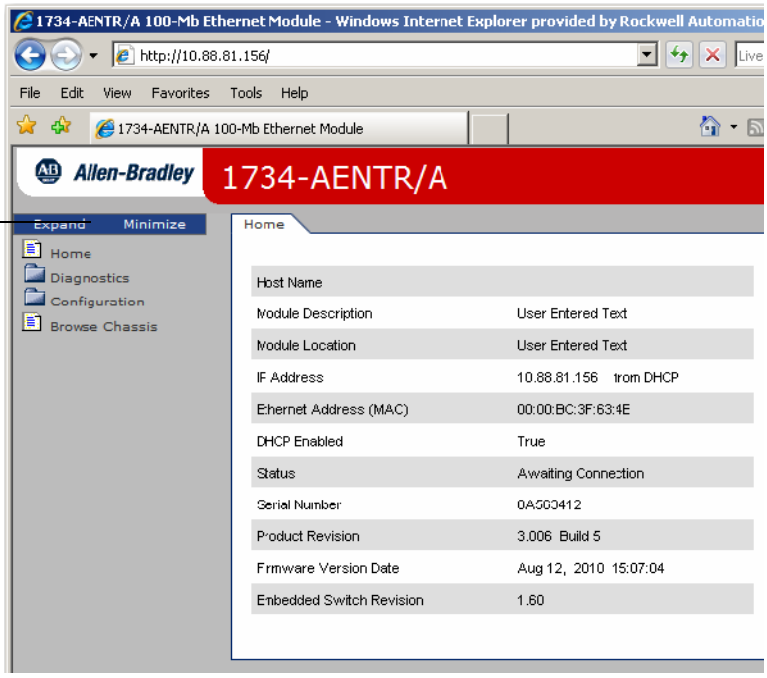
1. From your web browser, enter the adapter IP address to see the Home page.

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.

Click Expand to show options.




3. From the Home page, complete one of these, as desired.

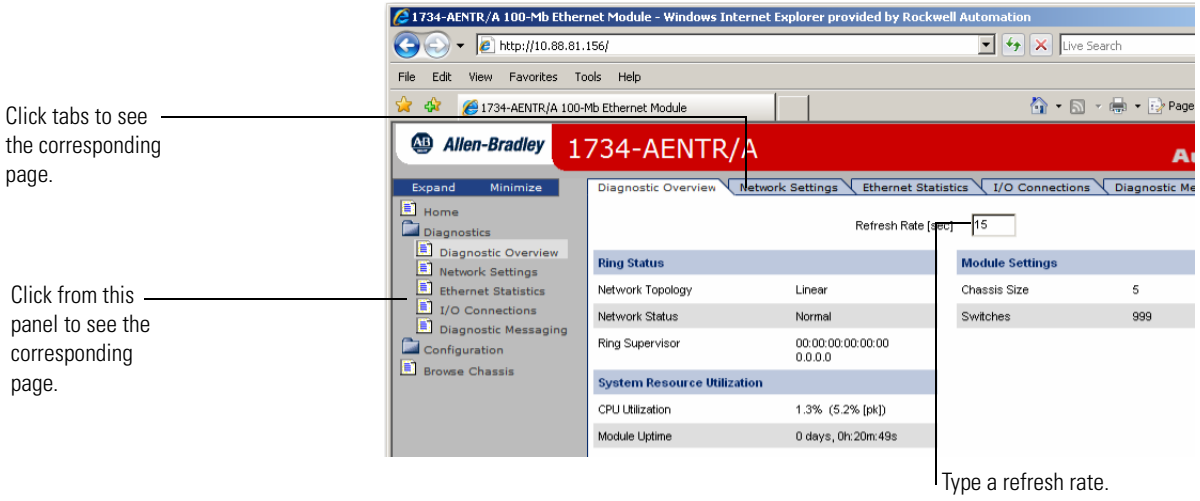
- Click one of the following to access www.ab.com.
  - Allen-Bradley logo at the top of the page
  - Visit ab.com for additional information statement under Resources

- Click Rockwell Automation at the top right to go to www.rockwellautomation.com.
- 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.

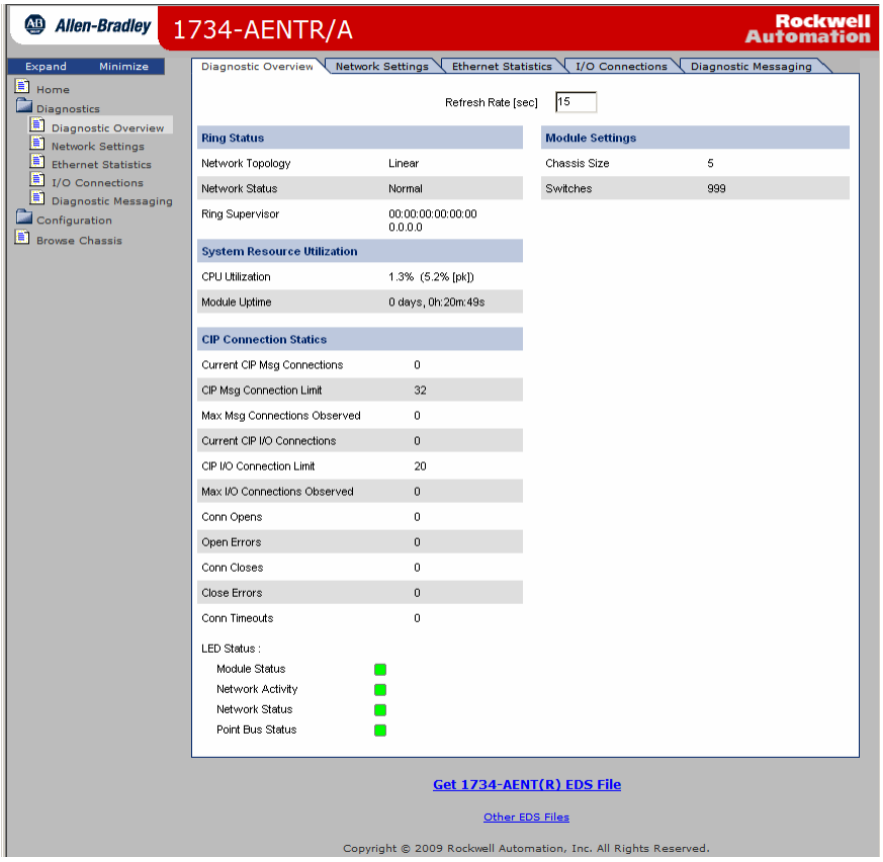
1. From the Home page, click Diagnostics or Expand to see the following diagnostics options from the panel at the left.
   - Diagnostic overview
   - Network settings
   - Ethernet statistics
   - I/O connections
   - Diagnostic messaging
2. In the Refresh Rate field, you can type a refresh rate, noting 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.




## 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.
   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

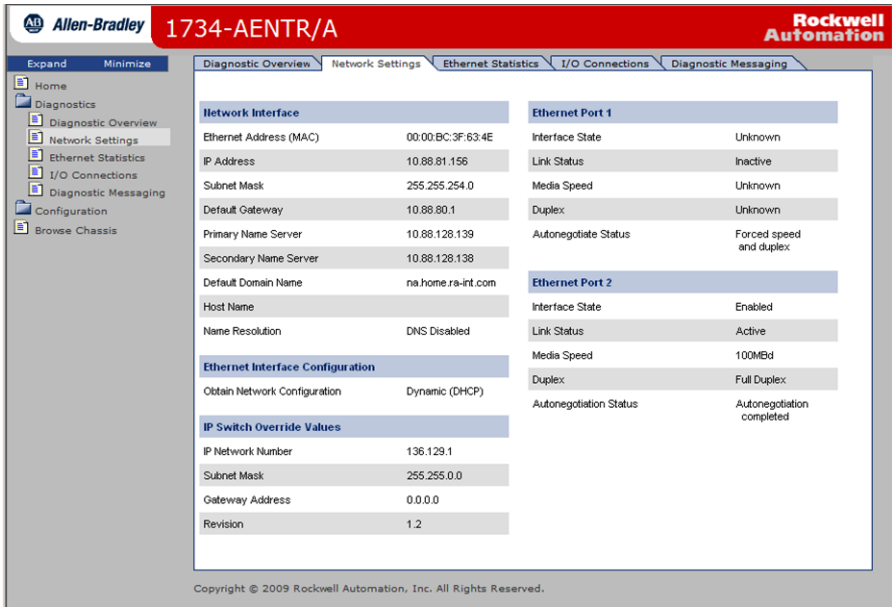
  - Conn Closes
  - Close Errors
  - Conn Timeout
  - Status
- Module Settings
  - Chassis Size
  - Switches

## 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.




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

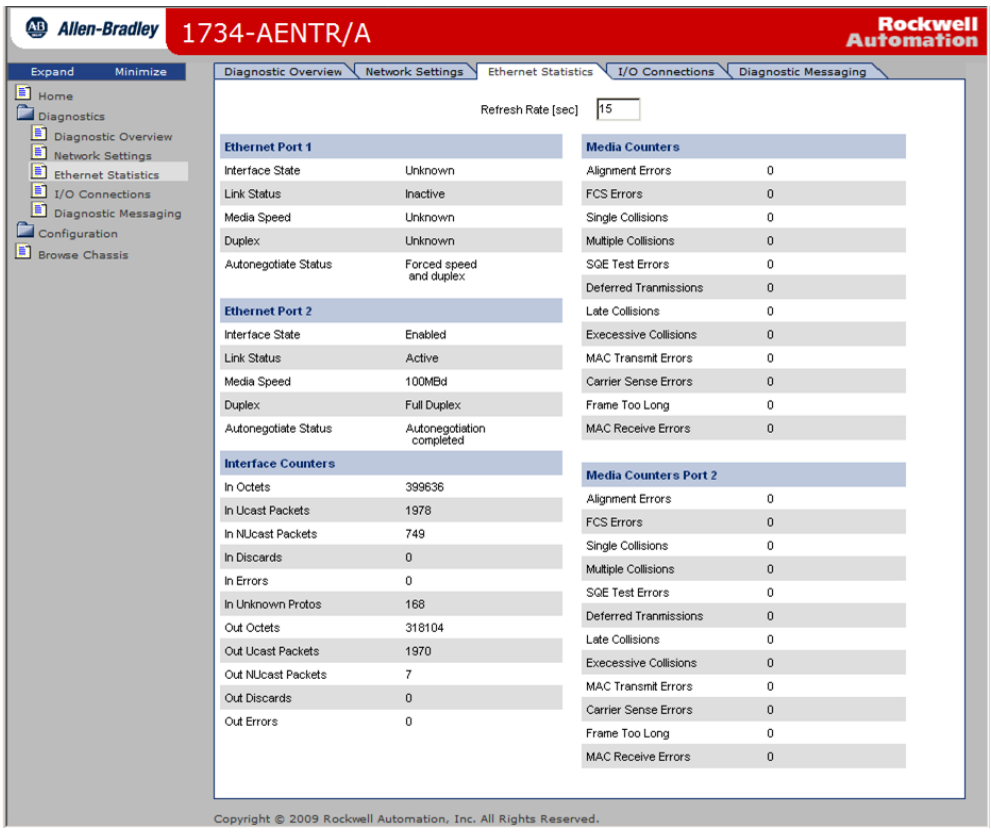
  - Host Name
  - Name Resolution
- Ethernet Interface Configuration
  - How the Network Configuration was obtained - Static or Dynamic
- Ethernet Link
  - Media Speed
  - Half or Full Duplex
  - Autonegotiate Status

## 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.

   The Ethernet Statistics page opens.




2. From the Ethernet Statistics page, view the following:

- Ethernet Link
  - Media Speed, Half or Full Duplex, Autonegotiate Status

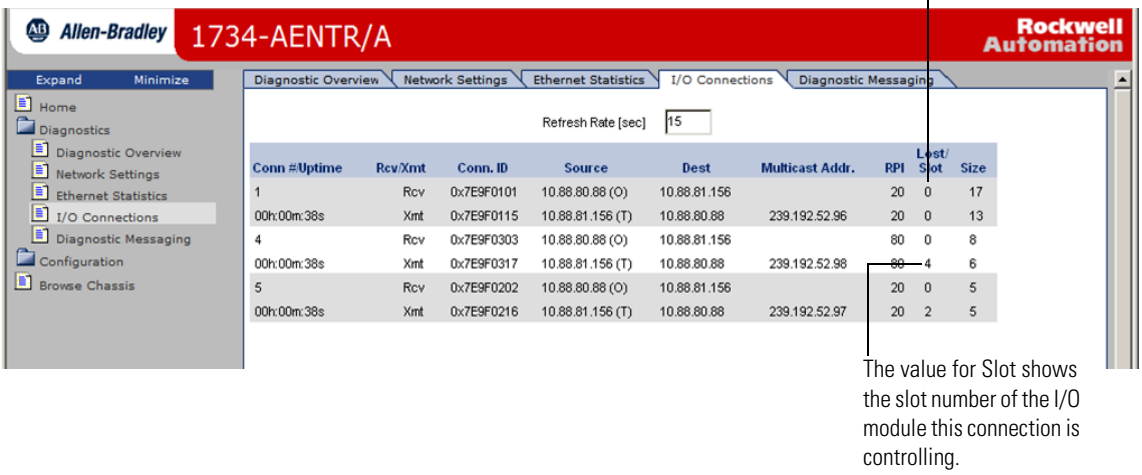
- Interface Counters
  - In Octets, In UCast Packets, In NUcast Packets, In Discards, In Errors, In Unknown Protos, Out Octets, Out Ucast Packets, Out NUcast Packets, Out Discards, Out Errors
- Media Counters
  - Alignment Errors
  - FCS Errors
  - Single Collisions
  - Multiple Collisions
  - SQE Test 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.




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

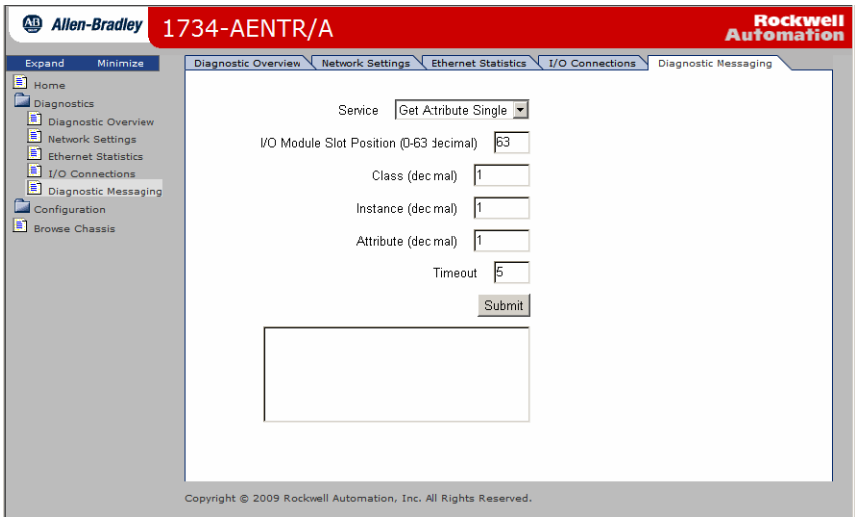
- Connection Number
- Uptime
- Receive and Transmit (Rcv/Xmt)
- Connection ID
- Source IP Address with an indication of the following:
  - (O) for originator
  - (T) for target
- Destination IP Address
- Multicast Address
- Requested Packet Interval (RPI)
- Lost/Slot that shows the number of lost packets 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.

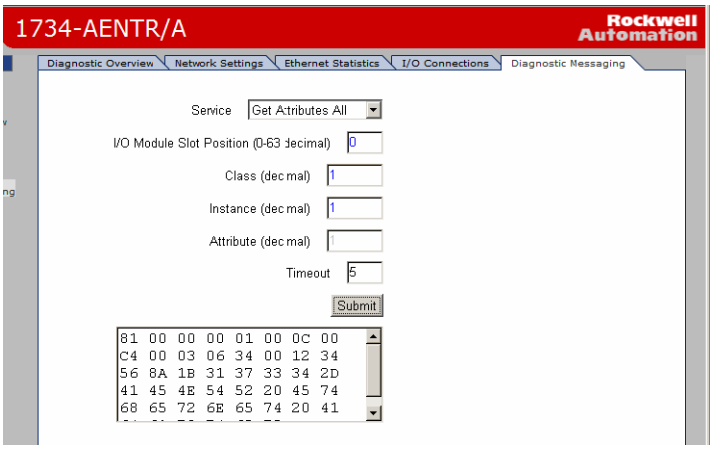



2. From the Diagnostic Messaging page, enter the following:

- 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.




## 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.

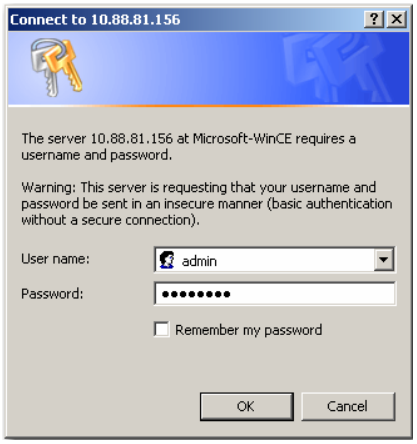
**IMPORTANT** If you set the value of the I/O adapters switch to 888 and then power cycle the module, the following occurs:

- 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.



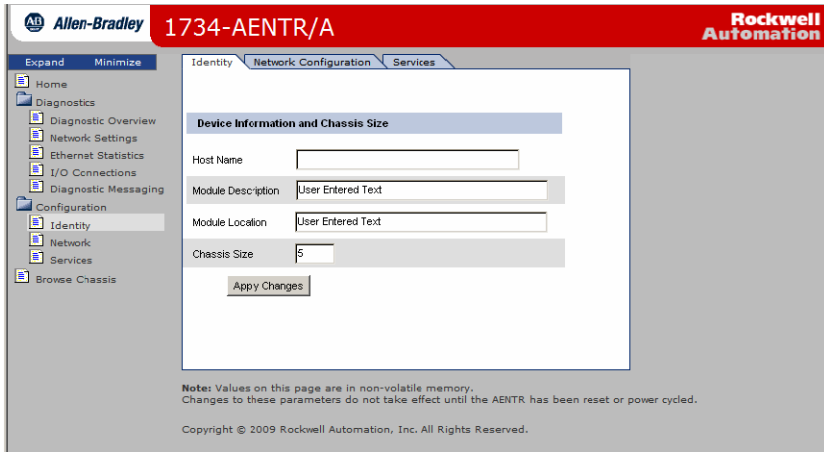

3. From the user name and password dialog, enter values, noting the following:
   - The values for user name and password are case sensitive.
   - The default user name is admin.
   - The default password is "password".
4. Click OK to log in. After you log in, you can go to any of the Configuration pages 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.

The Identity page opens

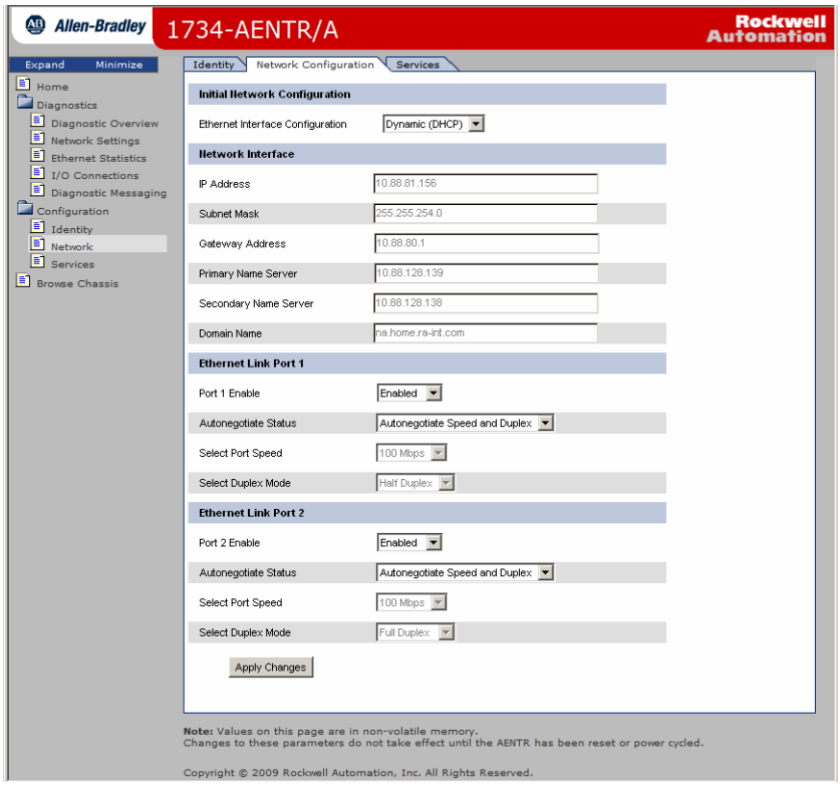



2. From the Identity page, complete entries for the following, noting that the description and location help you identify where modules are in the facility:
   - Host Name – the name a Domain Name Server uses to resolve this adapter's IP address
   - Module Description
   - Module Location
   - Chassis 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.



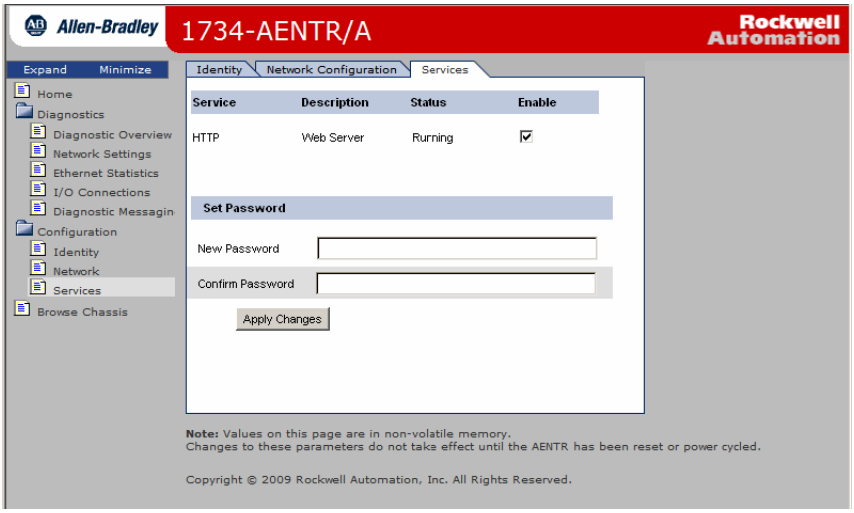

2. From the Network Configuration page, complete these entries, noting that values for Network Interface are disabled when DHCP is Dynamic DHCP and port speed and duplex mode are disabled when Autonegotiate Speed and Duplex is selected.
   - For Initial Network Configuration:
   - Ethernet Interface 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.




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.

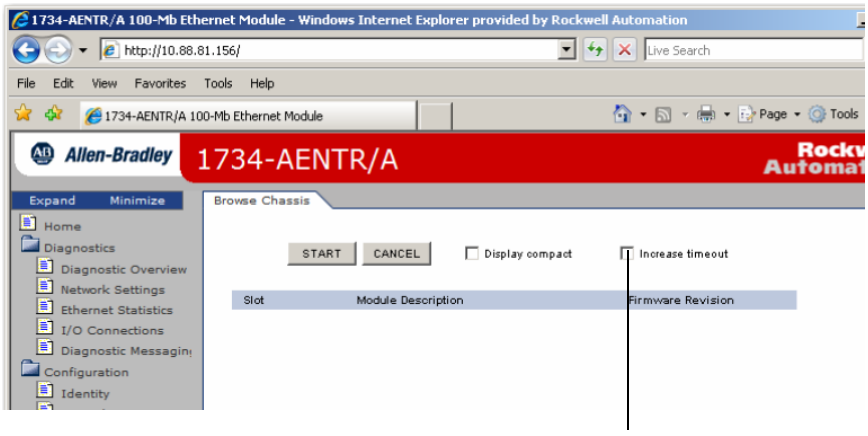
## Work with the Browse Chassis Page

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.

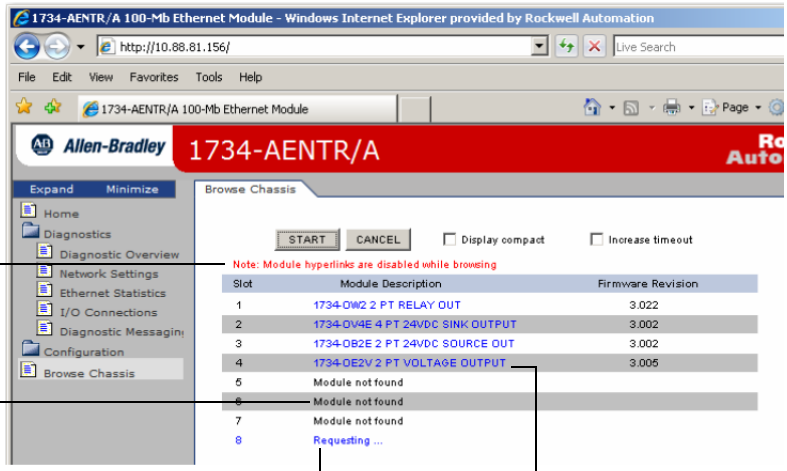
To work with the Browse Chassis page, follow these procedures.

1. From the Home page, click Browse Chassis.




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.
4. Click Start to run the query. A Browser Chassis page opens.
   Note that module hyperlinks are inactive before the query completes or is cancelled.



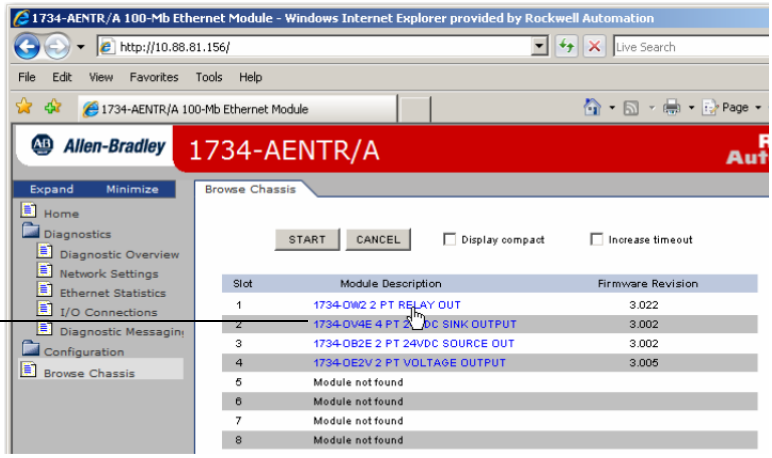

Before the query completes, this note about the disabled module hyperlinks appears.

If there is no response to the query, the Module not found message appears.

Before the query finds the module, the Requesting... message appears.

Before the query completes, module hyperlinks are inactive.

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.

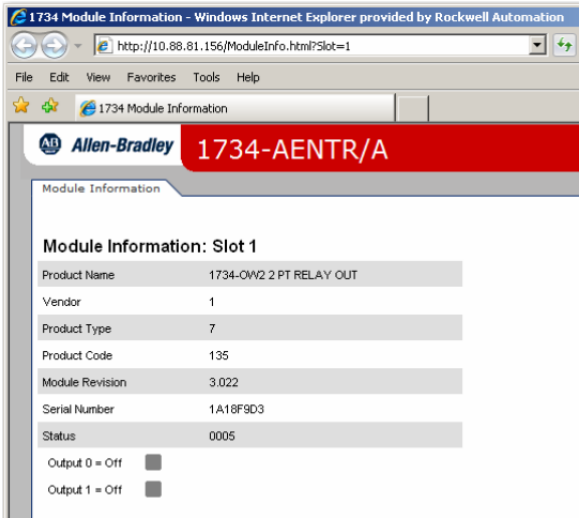



Click a module hyperlink to view information about the module

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.



## 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.

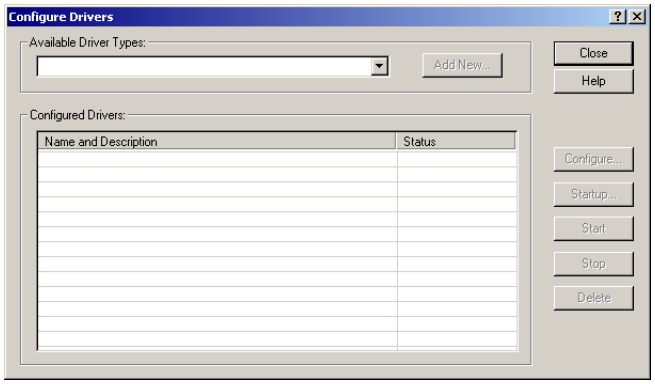
4. Click OK.
   The progress bar, followed by the welcome screen opens.

## Configure the AB_ETH Driver

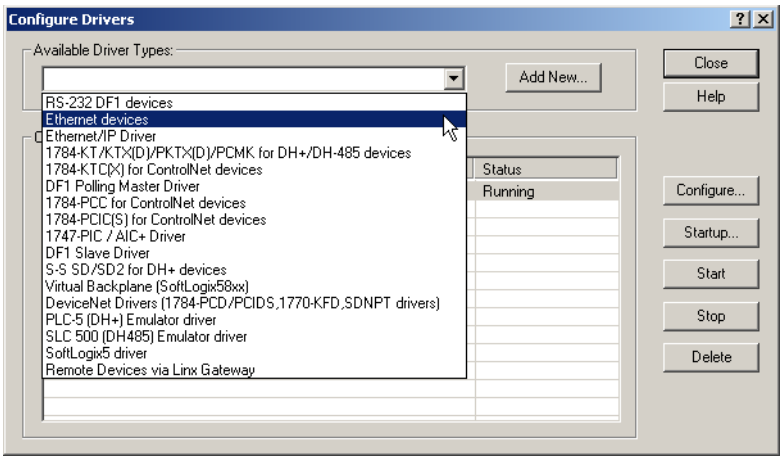
To configure the AB-ETH Ethernet communication driver perform the following steps:

1. Start the RSLinx software.

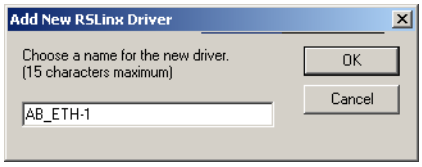
2. From the Communications menu, select Configure Drivers.




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

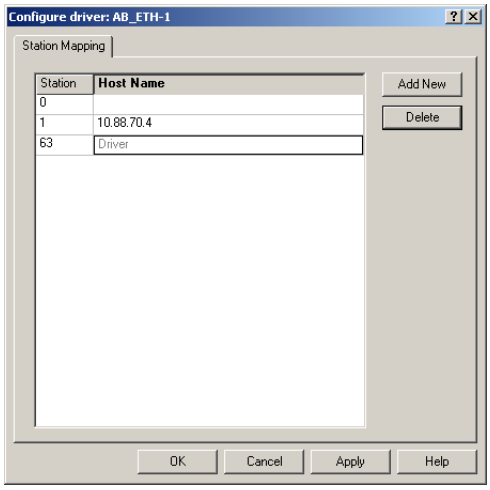



4. Select the default driver name (for example, AB_ETH-1) or type in a name and click OK.




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).

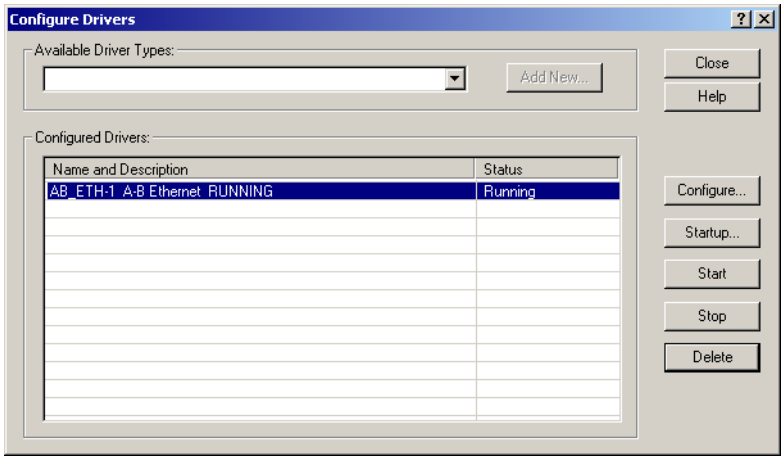



6. Repeat step 6 for each additional Ethernet device you need to access.

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.

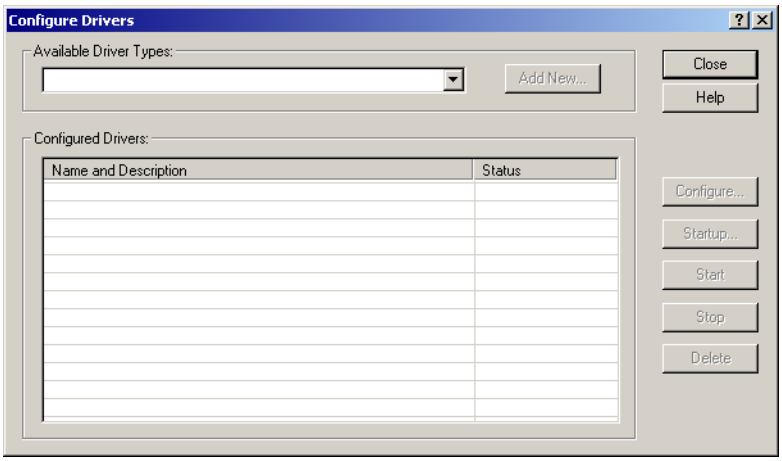



9. Close the RSLinx software.

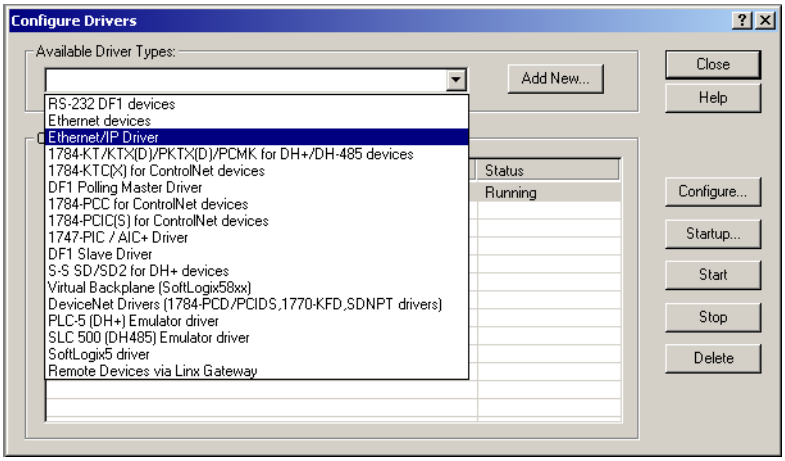
## Configure the AB_ETH/IP Driver

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

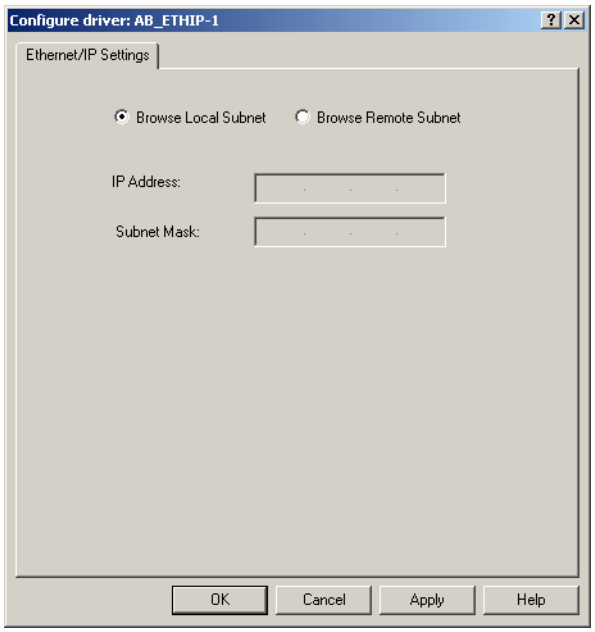
1. Start the RSLinx software.
2. From the Communications menu, select Configure Drivers.




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



The Configure Driver dialog box opens.

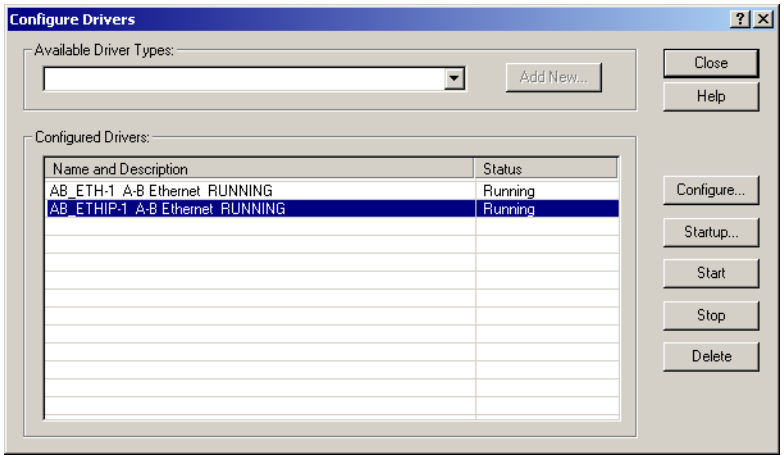



Make sure the Browse Local Subnet button is selected.

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.




5. Close the RSLinx software.

## Notes:

## Numerics



## A



## B



## C



## D



## E

## U



## V



## W

# Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products.
At http://www.rockwellautomation.com/support/, 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 http://www.rockwellautomation.com/support/.

## 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 Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html, 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 RA-DU002, available at http://www.rockwellautomation.com/literature/.

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