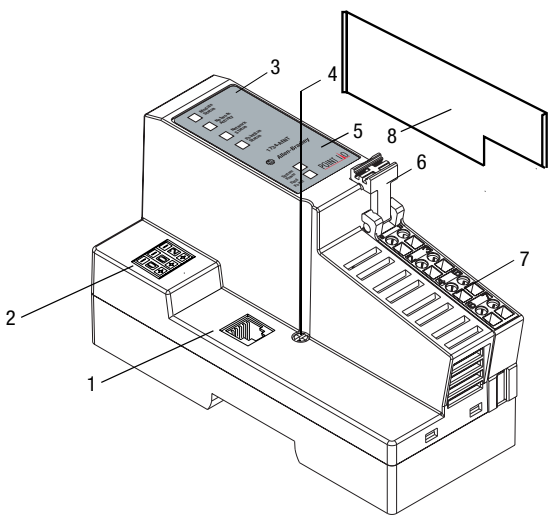
*Installation Instructions*

# POINT I/O EtherNet/IP Adapter

(Cat. No. 1734-AENT)




| | Description | | Description |
|---|---|---|---|
| 1 | EtherNet Network RJ45 Connector | 5 | System Power and Field Power Indicators |
| 2 | Network Address Thumbwheel | 6 | RTB Removal Handle |
| 3 | Indicators - Adapter Status, PointBus Status, Network Activity, and Network Status | 7 | Removable Terminal Block (RTB) |
| 4 | DIN Rail Locking Screw (orange) | 8 | Safety Endcap |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## Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Rockwell Automation office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.



Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard:

**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.

**IMPORTANT**

Identifies information that is critical for successful application and understanding of the product.

**ATTENTION**

**Environment and Enclosure**

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as "open type" equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

**ATTENTION**

**Preventing Electrostatic Discharge**

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

**ATTENTION**

POINT I/O is grounded through the DIN rail to chassis ground. Use zinc-plated, yellow-chromated steel DIN rail to assure proper grounding. Using other DIN rail materials (e.g. aluminum, plastic, etc.) which can corrode, oxidize or are poor conductors, can result in improper or intermittent platform grounding.

**WARNING**

When you connect or disconnect the Removable Terminal Block (RTB) with field side power applied, 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.

## Installing the EtherNet/IP Adapter

To install the adapter on the DIN rail prior to installing other base units, proceed as follows.

1. Position the adapter vertically above the DIN rail.
2. Press down firmly to install the adapter on the DIN rail. The locking mechanism will lock the adapter to the DIN rail.
3. Set the node address on the node address thumbwheel.

**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.

4. Slide the safety end cap up to remove. This exposes the backplane and power interconnections.

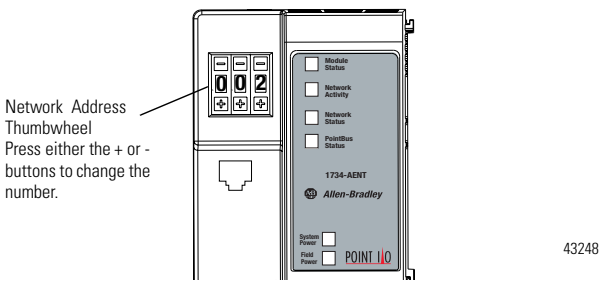
**ATTENTION**

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.

## Setting the Network Address

You can set the network Internet Protocol (IP) address 3 different ways:

1. using the thumbwheel switches located on the module
2. using a Dynamic Host Configuration Protocol (DHCP) server, such as Rockwell Automation BootP/DHCP
3. retrieving the IP address from nonvolatile memory.




The adapter reads the thumbwheel switches first to determine if the switches are set to a valid number. You set the node address using the 3-position thumbwheel switch. Press either the + or - buttons to change the number. Valid settings range from 001 to 254. When the switches are set to a valid number, the adapter's IP address will be 192.168.1.xxx (where xxx represents the number set on the switches). The adapter's subnet mask will be 255.255.255.0 and the gateway address is set to 0.0.0.0. The adapter will not have a host name assigned, or use any Domain Name System when using the thumbwheel settings.

If the switches are set to an invalid number (i.e. 000 or a value greater than 254), the adapter checks to see if DHCP is enabled. If DHCP is enabled, the adapter asks for an address from a DHCP server. The DHCP server will also assign other Transport Control Protocol (TCP) parameters.

If DHCP is not enabled, the adapter will use the IP address (along with other TCP configurable parameters) stored in nonvolatile memory.

Refer to publication 1734-UM010, POINT I/O EtherNetIP Adapter User Manual, for more information.

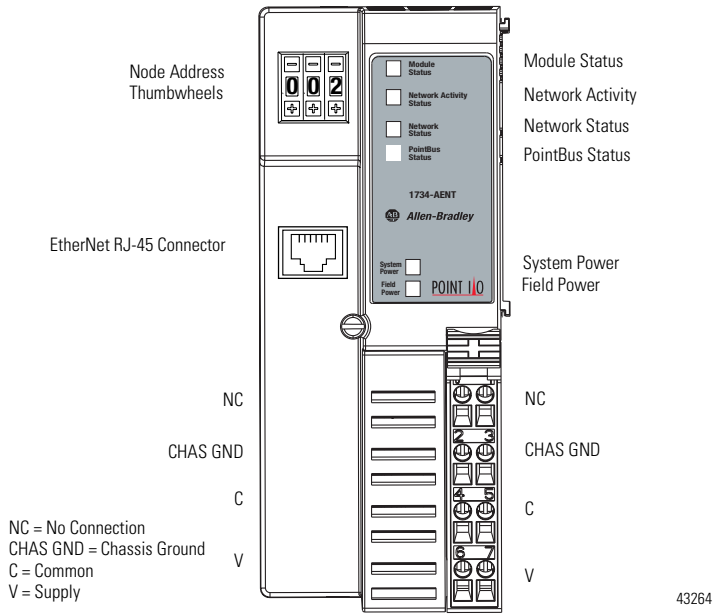
## Installing a Replacement EtherNet/IP Adapter to an Existing System

**ATTENTION**

You must use Series C POINT I/O modules with the 1734-AENT adapter. Series A or B POINT I/O modules will not work with this adapter.

1. Remove the existing adapter from the DIN rail as follows:
   a. Disconnect the EtherNet connector from the adapter.
   b. Pull up on the RTB removal handle to remove the terminal block.
   c. Remove the adjacent module from its base.
   d. Use a small bladed screwdriver to rotate the DIN rail locking screw to a vertical position. This releases the locking mechanism.
   e. Lift straight up to remove.
2. Slide the safety end cap up to remove. This exposes the backplane and power connections.
3. Position the replacement adapter vertically above the DIN rail. (Make certain the DIN rail lock is in the horizontal position.) Slide the adapter down, allowing the interlocking side pieces to engage the adjacent module.
4. Press firmly to seat the adapter on the DIN rail. The adapter locking mechanism will snap into place.
5. Set the node address on the node address thumbwheel.
6. Insert the end of the terminal block (RTB) opposite the handle into the base unit. This end has a curved section that engages with the wiring base.
7. Rotate the terminal block into the wiring base until it locks itself into place.
8. Replace the adjacent module in its base.
9. Reconnect the Ethernet cable to the adapter.

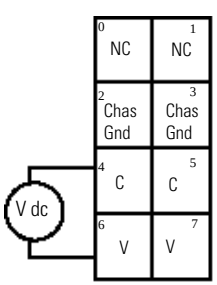
## Wiring the EtherNet/IP Adapter




### 12/24V dc

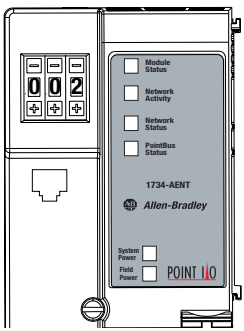
**Do not connect 120/240V ac power to this supply.**

This dc supply will be connected to the internal power bus.




NC = No Connection
Chas GND = Chassis Ground
C = Common
V = Supply

## Troubleshooting with the Indicators




| Indication | Probable Cause |
|---|---|
| **System Power** | |
| Off | Not active; field power is off or dc-dc converter problem |
| Green | System power on; dc-dc converter active (5V) |
| **Field Power** | |
| Off | Not active; field power is off |
| Green | Power on; 24V present |

| Indication | Probable Cause |
|---|---|
| **Module Status** | |
| Off | No power applied to device |
| Flashing Red/Green | LED powerup test (module self-test) |
| Green | Device is operating normally |
| Flashing Red | Recoverable fault has occurred:<br>• Firmware (NVS) update<br>• Network IP Address changed<br>• CPU load exceeded |
| Solid Red | Unrecoverable fault has occurred:<br>• Self-test failure (checksum failure, or ramtest failure at powerup)<br>• Firmware fatal error |

| Indication | Probable Cause |
|---|---|
| **Network Status** | |
| Off | Device not initialized. The module does not have an IP address. |
| Flashing Green | No CIP connections. Device has an IP address, but no CIP connections are established. |
| Green | CIP connections. Device on-line and has an IP address, and CIP connections are established. |
| Flashing Red | One or more EtherNet connections has timed-out. |
| Red | No link. The module is not physically connected to a powered EtherNet Device. |
| Flashing Red/Green | The module is performing a self-test (only occurs during powerup test). |
| **Network Activity** | |
| Off | No link established. |
| Flashing Green/Off | Transmit or receive activity. |
| Steady Green | Link established. |
| **PointBus Status** | |
| Off | Device not powered - check module status indicator. |
| Flashing Red/Green | LED powerup test. |
| Flashing Red | Recoverable fault has occurred:<br>• at powerup 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). |
| Red | Unrecoverable fault has occurred:<br>• the adapter is bus off<br>• the adapter has failed its duplicate MAC ID check. |
| Flashing Green | Adapter online with no connections established:<br>• adapter chassis size has not been configured<br>• controller in program/idle mode<br>• EtherNet cable open |
| Green | Adapter online with connections established (normal operation, run mode). |

## Safety Approvals

| **The following information applies when operating this equipment in hazardous locations:** | **Informations sur l'utilisation de cet équipement en environnements dangereux:** |
|---|---|
| Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation. | Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation. |

**WARNING**

**EXPLOSION HAZARD -**

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Substitution of components may impair suitability for Class I, Division 2.
- If this product contains batteries, they must only be changed in an area known to be nonhazardous.

**AVERTISSEMENT**

**RISQUE D'EXPLOSION –**

- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.
- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit.
- La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe 1, Division 2.
- S'assurer que l'environnement est classé non dangereux avant de changer les piles.

## Specifications

| Specifications - 1734-AENT EtherNet/IP Adapter | |
|---|---|
| Expansion I/O Capacity | Maximum of 63 modules<br>Maximum of 5 Rack Optimized connections (for digital modules only)<br>Maximum of 25 direct connections<br>1734-AENT backplane current output = 1.0A.<br>The actual number of modules can vary. Add up the current requirements of the modules you want to use to make sure they do not exceed the amperage limit of 1.0A for the 1734-AENT.<br>Backplane current can be extended beyond 1.0A by using 1734-EP24DC backplane extension Power Supplies. Add multiple 1734-EP24DC modules to reach the 63 module maximum).<br>**Cat. No. — PointBus Current Requirements**<br>1734-IB2 — 75mA<br>1734-IB4 — 75mA<br>1734-IV2 — 75mA<br>1734-IV4 — 75mA<br>1734-OB2E — 75mA<br>1734-OB2EP — 75mA<br>1734-OB4E — 75mA<br>1734-OV2E — 75mA<br>1734-OV4E — 75mA<br>1734-OW2 — 80mA<br>1734-OX2 — 100mA<br>1734-IE2C — 75mA<br>1734-OE2C — 75mA<br>1734-IE2V — 75mA<br>1734-OE2V — 75mA<br>1734-IA2 — 75mA<br>1734-IM2 — 75mA<br>1734-OA2 — 75mA<br>1734-IJ2 — 160mA<br>1734-IK2 — 160mA<br>1734-IR2 — 220mA<br>1734-IT2I — 175mA<br>1734-SSI — 110mA<br>1734-VHSC5 — 180mA<br>1734-VHSC24 — 180mA<br>1734-232ASC — 75mA<br>1734-485ASC — 75mA |
| EtherNet Communication Rate | 10/100Mbits/s, half or full-duplex |
| Module Location | Starter module - left side of the 1734 system |

| **Power Supply Specifications** | |
|---|---|
| Input Voltage Rating | 24V dc nominal<br>10-28.8V dc range |
| Field Side Power Requirements | 24V dc (+20% = 28.8V dc maximum) @ 400mA maximum |
| Inrush Current | 6A maximum for 10ms |
| Interruption | Output voltage will stay within specifications when input drops out for 10ms at 10V with maximum load. |
| **General Specifications** | |
| Indicators | 4 red/green status indicators<br>Adapter status<br>PointBus status<br>Network activity status<br>Network status<br>2 green power supply status indicators:<br>System Power (PointBus 5V power)<br>Field Power (24V from field supply) |
| Power Consumption | 4.5W maximum @ 28.8V dc |
| Power Dissipation | 15.5W maximum @ 28.8V |
| PointBus Output Current | 1A maximum @ 5V dc ±5% (4.75 - 5.25) |
| Input Overvoltage Protection | Reverse polarity protected |
| Thermal Dissipation | 9.5 BTU/hr maximum @ 28.8V dc |
| Isolation Voltage | Tested to withstand 1250V rms for 60s |
| Field Power Bus<br>Nominal Voltage<br>Supply Voltage Range<br>Supply Current | <br>24V dc<br>10-28.8V dc range,<br>10A maximum |
| Dimensions Inches<br>(Millimeters) | 3.0H x 2.16W x 5.25L<br>(76.2H x 54.9W x 133.4L) |

| Environmental Conditions | |
|---|---|
| Operational Temperature | 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 to 55°C (-4 to 131°F) |
| Storage Temperature | 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): -40 to 85°C (-40 to 185°F) |
| Relative Humidity | IEC 60068-2-30 (Test Db, Unpackaged Nonoperating Damp Heat): 5 to 95% noncondensing |
| Shock | IEC 60068-2-27 (Test Ea, Unpackaged Shock) |
| Operating | 30g peak acceleration |
| Nonoperating | 50g peak acceleration |
| Vibration | IEC 60068-2-6 (Test Fc, Operating)<br>Tested 5g @ 10-500Hz |
| ESD Immunity | IEC 61000-4-2:<br>4kV contact discharges<br>8kV air discharges |
| Radiated RF Immunity | IEC 61000-4-3:<br>10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz<br>10V/m with 200Hz 50% pulse 100%AM from 900MHz |
| EFT/B Immunity | IEC 61000-4-4:<br>±4kV at 2.5kHz on power ports<br>±2kV at 5.0kHz on signal ports |
| Surge Transient Immunity | IEC 61000-4-5:<br>±1kV line-line(DM) and ±2kV line-earth(CM) on signal ports<br>±1kV line-line(DM) and ±2kV line-earth(CM) on power ports |
| Conducted RF Immunity | IEC 61000-4-6:<br>10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz |
| Emissions | CISPR 11<br>Group 1, Class A |
| Enclosure Type Rating | None (open-style) |

| | |
|---|---|
| Conductors Wire Size | 14- 22 AWG (2.5-0.25mm$^2$) solid or stranded wire rated at 75$^0$C or higher<br>3/64 inch (1.2mm) insulation maximum |
| Category | 2[1] |
| EtherNet Connector | RJ-45, Category 5 |
| Terminal Base Screw Torque | 7 pound-inches (0.8Nm) |
| Mass | 9.0 oz/255 grams |
| Certifications (when product is marked) | **c-UL-us** UL Listed Industrial Control Equipment, certified for US and Canada<br>**c-UL-us** UL Listed for Class I, Division 2, Groups A, B, C and D Hazardous locations, certified for US and Canada<br>**CE**[2] European Union 89/336/EEC EMC Directive, compliant with:<br>EN 61000-6-4; Industrial Emissions<br>EN 50082-2; Industrial Immunity<br>EN 61326; Meas./Control/Lab., Industrial Requirements<br>EN 61000-6-2; Industrial Immunity<br>**C-Tick**[2] Australian Radiocommunications Act, compliant with:<br>AS/NZS CISPR 11; Industrial Emissions<br>**ODVA** ODVA conformance tested to EtherNet/IP specifications |

1 Use this conductor category information for planning conductor routing as described in publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

2 See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

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