Allen-Bradley 1734-AENT

POINT I/O EtherNet/IP Adapter

The Allen-Bradley 1734-AENT is the network interface for a distributed POINT I/O station. Its single RJ45 port links the EtherNet/IP network to the POINTBus backplane, allowing a compatible controller to exchange input and output data with the local I/O modules. It also carries configuration messages. The adapter manages communication, while the selected POINT I/O modules connect to the application's field devices.



Technical Specifications

Product Identity	
Brand	Allen-Bradley / Rockwell Automation
Catalog number	1734-AENT
Product family	POINT I/O
Functional Configuration	
Function	EtherNet/IP adapter
Network connector	1 × RJ45
Communication rate	10/100 Mbit/s; half or full duplex
POINTBus output	5 V DC, 1.0 A maximum
I/O expansion	Up to 63 POINT I/O modules, subject to power and connection limits
Performance & Power	
Nominal supply	24 V DC
Supply voltage range	10–28.8 V DC
Environment	
Mounting / enclosure	DIN rail / open-style
Operating temperature	–20 to +55 °C

Selected original manufacturer material follows on pages 3–6.

Compatibility & Selection Guide

Expansion and power planning. A station can accommodate up to 63 I/O modules, subject to module compatibility, connection limits and the POINTBus current budget. The 1734-AENT supplies up to 1.0 A of backplane current; the number of modules it can power directly depends on their combined demand. Where more backplane power is needed, 1734-EP24DC or 1734-EPAC expansion supplies support additional module groups while maintaining POINTBus data continuity. Size the supply for each group and recheck the station configuration when adding modules.

Wiring & Installation Reference

Wiring terminals

0, 1 · NC · Leave unconnected

2, 3 · Chas GND · Chassis ground

4, 5 · C · DC common

6, 7 · V · DC supply

DIN rail mounting

1. Prepare the rail With power isolated, use a grounded 35 × 7.5 mm steel rail with zinc plating and chromate passivation. Fasten it approximately every 200 mm.

2. Fit the adapter Place the adapter above the rail with its locking mechanism horizontal. Press down until it locks onto the rail.

3. Leave clearance and fit the end cap Leave 25.4 mm (1 in.) between adjacent equipment for ventilation. Fit the safety end cap to the final mounting base.

Installation precautions

Use a SELV/PELV-compliant source. Never apply 120/240 V AC to the adapter's DC supply input. Limit each terminal to two conductors.

Isolate power before removing or replacing the adapter. For Ethernet or removable-terminal-block connections, disconnect power or establish that the location is nonhazardous before unplugging or reconnecting; follow the manual's complete precautions.

View terminal diagram (PDF) — page 4 · View mounting diagram — page 3

Before You Begin

To effectively use your adapter, note the following considerations.

Firmware Backward Compatibility

The 1734-AENT and 1734-AENTK Add-on Profiles are compatible with Studio 5000 Logix Designer® application.

Download Add-on Profiles from rok.auto/pcdc.

Understand Messaging

Class 3 (Explicit Message) requests through the 1734-AENT or 1734-AENTK adapter to a specific POINT I/O module do not always receive a response from the I/O modules. Where an I/O module does not reply to a request, the adapter responds with an error code indicating a timeout.

Configure Autobaud

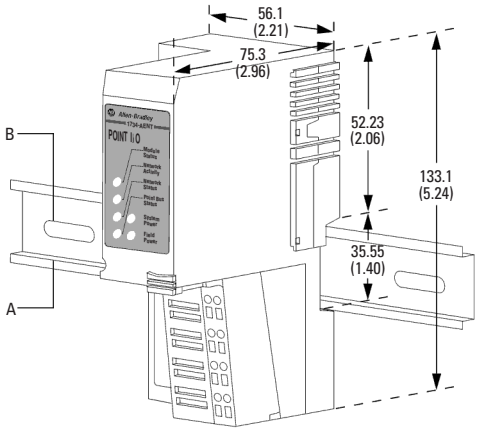
The adapter cannot reconfigure an I/O module that you previously configured to operate at a fixed communication rate. When you reuse a POINT I/O module from another POINT I/O system, configure the module to autobaud before using it with the adapter.

Install the Adapter

Follow this procedure to install the adapter on the DIN rail.

ATTENTION: This product is grounded through the DIN rail to chassis ground. Use zinc-plated chromate-passivated steel DIN rail to assure proper grounding. The use of other DIN rail materials (for example, aluminum or plastic) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding. Secure DIN rail to mounting surface approximately every 200 mm (7.8 in.) and use end-anchors appropriately. Be sure to ground the DIN rail properly. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for more information.

1. Position the adapter vertically above an IEC standard (35 mm x 7.5 mm x 1 m) top-hat DIN rail at a slight angle (DIN rail: Allen-Bradley® part number 199-DR1; 46277-3; EN50022). Make sure that the DIN rail lock is in a horizontal position.



Dimensions are in mm (in.).
A = DIN rail
B = Secure DIN rail approximately every 200 mm (7.8 in.)

2. Press down firmly to install the adapter on a DIN rail, noting that the locking mechanism locks the adapter to the DIN rail.

ATTENTION: Do not remove or replace an adapter while power is applied. Interruption of the backplane can result in unintentional operation or machine motion.

ATTENTION: Allow 25.4 mm (1 in.) of space between adjacent equipment for adequate ventilation.

3. Set the network address thumbwheel switches to the desired value. See Set the Network Address on page 6 for more information on setting the IP address.
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.

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

Replace the Adapter

Use these procedures to install a replacement adapter to an existing system.

1. Disconnect the Ethernet connectors from the adapter.

WARNING: If you connect or disconnect the communications cable with power applied to this module or any device on the network, an electric 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.

2. Pull up on the RTB handle to remove the terminal block.

WARNING: When you connect or disconnect the removable terminal block (RTB) with field side power applied, an electric 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.

3. Remove the adjacent module from its base.

WARNING: When you insert or remove the module while backplane power is on, an electric 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. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

4. Use a small bladed screwdriver to rotate the DIN rail locking screw to a vertical position. This releases the locking mechanism.
5. Lift straight up to remove.

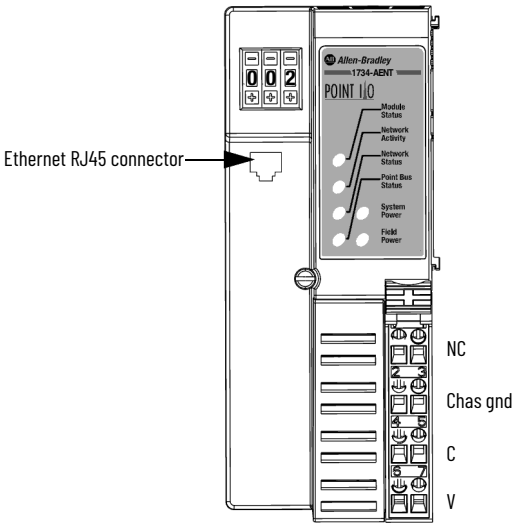
ATTENTION: Do not remove or replace an adapter while power is applied. Interruption of the backplane can result in unintentional operation or machine motion.

6. Slide the safety end cap up to remove it, which exposes the backplane and power connections.
7. Position the replacement adapter vertically above the DIN rail, verifying that the DIN rail lock is in the horizontal position.
8. Slide the adapter down, allowing the interlocking side pieces to engage the adjacent module.
9. Press firmly to seat the adapter on the DIN rail, noting that the adapter locking mechanism snaps into place.
10. Set the node address on the Node Address pen push thumbwheel using a pen tip.

Press a pen tip into the center of the button cross, perpendicular to the button. You only need a small amount of force to press the button (approximately 2N).

11. Insert the end of the terminal block opposite the handle into the base unit, noting that this end has a curved section that engages with the wiring base.
12. Rotate the terminal block into the wiring base until it locks itself into place.
13. Replace the adjacent module in its base.
14. Reconnect the Ethernet cable to the adapter.
15. Set the IP address for this module.
16. Configure the adapter chassis size.

Wire the Adapter



NC = No connection
Chas gnd = Chassis ground
C = Common
V = Supply

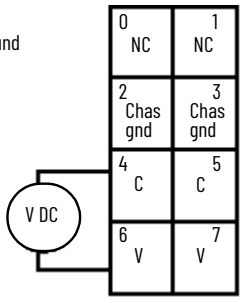


Table 1 - Indicator Status for Modules (Continued)

Indicator	Status	Description
POINTBus status	Off	The device is not powered – Check the module status indicator.
	Flashing red/green	A status indicator cycle power test is present.
	Flashing red	A recoverable fault has occurred: At cycle power, the number of expected modules does not equal the number of modules present. A module is missing. A node fault (I/O connection timeout) has occurred.
	Steady red	An unrecoverable fault has occurred – The power to the POINTBus is off.
	Flashing green	A firmware (NVS) update is in progress.
	Steady green	The adapter is online with connections established (normal operation, Run mode).
System power	Off	Not active. The adapter power is off or there is a DC-DC converter problem.
	Steady green	System power is on. The DC-DC converter is active (5V).
Field power	Off	Not active. Adapter power is off.
	Steady green	Power is on. 24V is present.

Specifications

General Specifications

<table>
<tr><th>Attribute</th><th>Value</th></tr>
<tr><td>Expansion I/O capacity, max</td><td>• 63 modules
• Up to 5 rack-optimization (for digital modules only) and/or enhanced rack-optimization (for digital, analog, and specialty modules) connections
• 31 direct connections [3]
• 1734-AENT, 1734-AENTK backplane current output = 1.0 A.
• Actual number of modules can vary
• Add up current requirements of modules that you want to use to make sure that they do not exceed the amperage limit of 1.0 A for 1734-AENT and 1734-AENTK adapters.
• Backplane current can be extended beyond 1.0 A by adding 1734-EP24DC or 1734-EPAC backplane extension power supplies.
• Add multiple 1734-EP24DC or 1734-EPAC power supplies to reach the 63 module max</td></tr>
<tr><td>POINTBus current requirements, max</td><td><table><tr><th>Cat. No.</th><th>Value</th></tr><tr><td>1734-IB4D</td><td>50 mA</td></tr><tr><td>1734-IB2, 1734-IB4, 1734-IB8, 1734-IV2, 1734-IV4, 1734-OB2, 1734-OB4, 1734-OB8, 1734-OB2E, 1734-OB2EP, 1734-OB4E, 1734-OB8E, 1734-OV2E, 1734-OV4E, 1734-232ASC, 1734-485ASC, 1734-ARM, 1734-IV8, 1734-OV8E, 1734-IE4C, 1734-IE8C, 1734-OE4C, 1734-IA4, 1734-IM4, 1734-OA4, 1734-IR2E, 1734-IE2C, 1734-OE2C, 1734-IE2V, 1734-OE2V, 1734-IA2, 1734-IM2, 1734-OA2</td><td>75 mA</td></tr><tr><td>1734-OW2</td><td>80 mA</td></tr><tr><td>1734-OW4</td><td>90 mA</td></tr><tr><td>1734-OX2, 1734-8CFG, 1734-8CFGDLX, 1734-4IOL</td><td>100 mA</td></tr><tr><td>1734-SSI</td><td>110 mA</td></tr><tr><td>1734-IJ, 1734-IK</td><td>160 mA</td></tr><tr><td>1734-IT2I</td><td>175 mA</td></tr><tr><td>1734-VHSC5, 1734-VHSC24</td><td>180 mA</td></tr><tr><td>1734-IR2, 1734-IR2E</td><td>220 mA</td></tr></table></td></tr>
<tr><td>Indicators</td><td>3 red/green status indicators on CPU:
– Module status
– Network status
– POINTBus status
1 green status indicator on CPU:
– Network activity
2 green power supply status indicators on DC-DC Converter:
– System power (5V DC to POINTBus Out)
– Field power (24V DC from Field In)</td></tr>
<tr><td>Power consumption, max</td><td>10.4 W @ 28.8V DC</td></tr>
<tr><td>Power dissipation, max</td><td>5.2 W @ 28.8V DC</td></tr>
<tr><td>Thermal dissipation, max</td><td>17.75 BTU/hr @ 28.8V DC</td></tr>
<tr><td>Isolation voltage</td><td>50V (continuous), Reinforced Insulation Type, between all circuits.
Type tested at 500V AC for 60 s</td></tr>
<tr><td>Field power supply</td><td>10…28.8V DC @ 10 A</td></tr>
<tr><td>Field power output</td><td>10…28.8V DC @ 9 A</td></tr>
<tr><td>Module input</td><td>10…28V DC @ 1000 mA</td></tr>
<tr><td>POINTBus output, max</td><td>5V DC @ 1.0 A</td></tr>
</table>

General Specifications (Continued)

Attribute	Value
Dimensions (HxWxD), approx	75.3 x 56.1 x 133.1 mm (2.96 x 2.21 x 5.24 in.)
Enclosure type rating	None (open-style)
Terminal base screw torque	0.8 N•m (7 lb•in)
Weight, approx	255 g (0.56 lb)
Wiring category(1)(2)	1 – on power ports 1 – on communications ports
Wire size	Power connections: 0.34…2.1 mm^2 (22…14 AWG) solid or stranded copper wire rated @ 75 °C (167 °F) or greater, 1.2 mm (3/64 in.) insulation max or 90 °C (194 °F) for ControlLogix® controllers Ethernet wiring: RJ45 connector according to IEC 60603-7, 2 or 4 pair Category 5e min cable according to TIA 568-B.1, or Category 5 cable according to ISO/IEC 24702.
North American temp code	T4A
UKEX/ATEX temp code	T4
IECEx temp code	T4

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.
(2) Use the Conductor Category information for planning conductor routing as described in the appropriate System Level Installation Manual.
(3) Maximum 31 direct connections for standard I/O or maximum 20 direct connections if any safety I/O module resides in the backplane.

Power Supply

Attribute	Value
Input voltage rating	24V DC @ 10 A
Input voltage, range	10…28.8V DC
Field side power requirements, max	24V DC @ 400 mA
Inrush current, max	6.0 A for 10 ms
Input overvoltage protection	Reverse polarity protected
POINTBus output current, max	5V DC @ 1.0 A
Interruption	Output voltage stays within specifications when input drops out for 10 ms @ 10V with maximum load

Ethernet Communication

Attribute	Value
Ethernet communication rate	10/100 Mbits/s, half or full-duplex
Ethernet ports	1
Ethernet network topologies supported	Star or Tree
Ethernet connector	RJ45, Category 5
Ethernet cable	Category 5: Shielded or unshielded
Ethernet wire connections, max	See Wire size

Environmental Specifications

Attribute	Value
Temperature, operating	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -20 °C ≤ Ta ≤ +55 °C (-4 °F ≤ Ta ≤ +131 °F)
Temperature, surrounding air, max	55 °C (131 °F)
Temperature, nonoperating	IEC60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock): -40…+85 °C (-40…+185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5…95% noncondensing
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5 g @ 10…500 Hz
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock) 30 g
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock) 50 g