

## POINT I/O Family

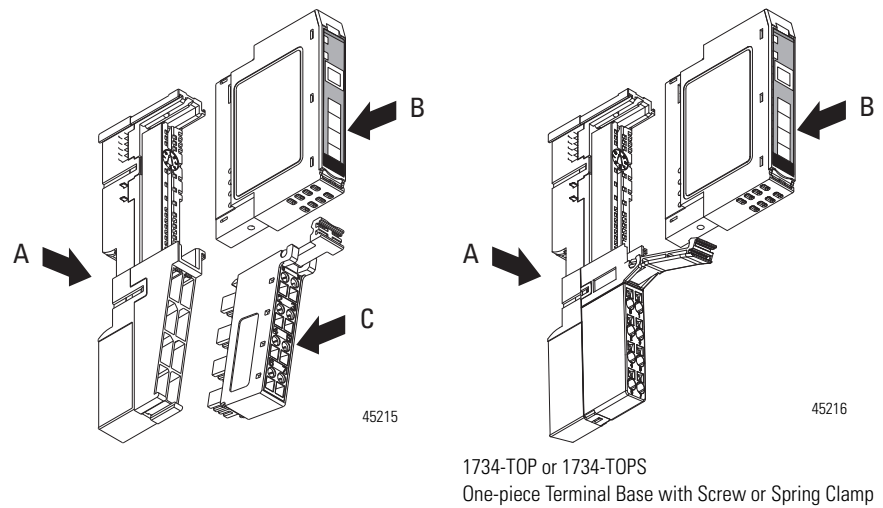
### Overview



The POINT I/O family has modular I/O modules that are ideal for applications where flexibility and low-cost of ownership are key for successful control system design and operation. As a key element in the Rockwell Automation Integrated Architecture, its comprehensive diagnostics and configurable features allow the product to be easily applied to any automation system and reduce engineering costs through standardization. It can be used in remote device panels, local control panels, and can be accessed from many locations including the Internet. This product has just-what-you-need granularity in 1 to 8 points to reduce system cost and size.

Available features include Channel Level Diagnostics for quick troubleshooting, multiple termination options and flexibility to save money, cabinet space and commissioning/troubleshooting time, the ability to mix/match Safety I/O on the same bus, and available DeviceLogix for local control, fast response time. Self-Configuring modules are also available to reduce/simplify your design and your inventory.

## The POINT I/O System



The base (A) mounts onto the DIN rail and provides the backplane. The POINT I/O module (B) snaps into the base. The removable terminal block (C) also snaps into the base and provides the wiring and terminations for field-side connections, as well as system power for the backplane.

POINT I/O has 4 major components:

- I/O modules provide the field interface and system-interface circuitry
- Communication interface modules provide the network-interface circuitry
- Terminal base units provide the wiring and signal termination for field-side connections and system power for the backplane
- Power distribution modules provide the expandability of the POINT I/O system and the flexibility to mix a variety of signal types

1734 POINT I/O modules offer 1 to 8 points per module. The I/O modules are interfaced to a network through a communication interface, which includes a built-in power supply that converts incoming 24V DC power to 5V DC backplane power. Each type of communication interface (Network Adaptor) supports a maximum of 13 to 17 I/O modules, with a maximum of 10 A field power. The I/O modules receive power from the power supply through the backplane. With an external power supply, you can expand a POINT I/O assembly up to a maximum of 63 I/O modules or 504 channels.

## POINT I/O Features

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adapters              | <ul style="list-style-type: none"> <li>• ControlNet</li> <li>• DeviceNet</li> <li>• EtherNet I/P</li> <li>• Profibus</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| I/O Types             | <ul style="list-style-type: none"> <li>• Digital</li> <li>• Analog</li> <li>• AC/DC</li> <li>• Thermocouple</li> <li>• RTD</li> <li>• Specialty</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Module Density        | 1...8 points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Specialty Modules     | <ul style="list-style-type: none"> <li>• Encoder</li> <li>• 1 MHz Counter In</li> <li>• Counter In with Outputs</li> <li>• Serial RS232</li> <li>• RS485</li> <li>• RS422</li> <li>• Channel Isolated Thermocouple</li> <li>• RTD</li> <li>• Serial Synchronous Interface (SSI)</li> <li>• Address Reserve</li> <li>• 4 Channel IO-Link Master</li> </ul>                                                                                                                                                                                                                  |
| Module Features       | <ul style="list-style-type: none"> <li>• Channel-level diagnostics (LED indicator and electronic)</li> <li>• Channel-level alarm and annunciation (electronic)</li> <li>• Channel-level open-wire detection with electronic feedback</li> <li>• Channel-level short-circuit detection with electronic feedback</li> <li>• Parameter-level explicit messaging</li> <li>• Removal and insertion under power (RIUP)</li> <li>• Horizontal or vertical mounting without derating</li> <li>• Automatic Device Replacement</li> <li>• Add-On-Profiles in RSLogix 5000</li> </ul> |
| Network Connectivity  | <ul style="list-style-type: none"> <li>• DeviceNet (including SubNet connectivity)</li> <li>• ControlNet (Logix controller only)</li> <li>• EtherNet/IP (Logix controller only)</li> <li>• PROFIBUS DP</li> <li>• OPC/DDE Data Monitoring"</li> </ul>                                                                                                                                                                                                                                                                                                                      |
| Environmental Style   | Class I, Division 2/Zone 2, Marine Certification, European ATEX Zone 2 3G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Modules per Node, max | Up to 63                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Specify a POINT I/O System

Follow these steps as you specify your POINT I/O system:

|   | Step                                                                                                                                                                                                                                                                       | Remember to select                                                                                                                                                                                                                 |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ✓ | <b>1 Select a communication interface</b><br><br>Choose the interface module for your operating system.                                                                                                                                                                    | <ul style="list-style-type: none"> <li>the appropriate interface module</li> <li>a communication interface that meets the power requirements of your system</li> </ul>                                                             |
| ✓ | <b>2 Select I/O devices based on field devices</b> <ul style="list-style-type: none"> <li>location of the device</li> <li>number of points needed</li> <li>appropriate catalog number</li> <li>number of points available per module</li> <li>number of modules</li> </ul> | <ul style="list-style-type: none"> <li>I/O modules – some have diagnostic features, electronic fusing, isolated inputs/outputs, and unique configurable features</li> </ul>                                                        |
| ✓ | <b>3 Select a wiring base assembly</b><br><br>Choose the appropriate wiring base assembly                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>the appropriate wiring base assembly:<br/>Single piece screw, single piece spring, or RTB (Removable Terminal Base)</li> </ul>                                                              |
| ✓ | <b>4 Select optional power components</b><br><br>Choose optional components to extend backplane power or change the field power distribution source.                                                                                                                       | <ul style="list-style-type: none"> <li>additional power components as necessary</li> <li>adequate power capacity to meet I/O module backplane current requirements</li> </ul>                                                      |
| ✓ | <b>5 Determine mounting requirements</b><br><br>Determine needed dimensions based on the communication interface chosen.                                                                                                                                                   | <ul style="list-style-type: none"> <li>the appropriate number of DIN rails based on the number of modules and the physical locations of those modules</li> <li>horizontal or vertical mounting with no thermal derating</li> </ul> |

# Select POINT I/O Modules

Step 2 - Select:

- I/O modules – some modules have diagnostic features, electronic fusing, or individually isolated inputs/outputs

|                                         |         |
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## Select POINT I/O Modules

The POINT I/O family provides a wide range of input and output modules to span many applications, from high-speed digital to process control. POINT I/O modules support producer/consumer technology, which allows input information and output status to be shared among multiple Logix controllers.



Each POINT I/O module mounts adjacent to the network adapter or another I/O module and removable terminal block (RTB) to connect all field-side wiring. The RTBs are part of the terminal base assembly. They are not included with the I/O modules and must be ordered separately.

The POINT family of I/O modules includes:

- 1734 digital I/O modules.
- 1734 analog I/O modules.
- 1734 specialty I/O modules.
- 1734 wiring systems.
- 1734 network communication adapters.
- 1734 POINT Guard I/O modules.

## Digital I/O Modules

Choose digital I/O modules when you need:

- a wide variety of voltage interface capabilities
- isolated and non-isolated module types
- point-level output fault states
- choice of direct-connect or rack-optimized communications
- field-side diagnostics (on select modules)

Most output modules have built-in surge suppression to reduce the effects of high-voltage transients. However, we recommend that you use an additional suppression device if an output is being used to control inductive devices, such as:

- relays
- motor starters
- solenoids
- motors

Additional suppression is especially important if your inductive device is in series with or parallel to hard contacts, such as push buttons or selector switches.

## Digital DC Input Modules

### 1734 Digital DC Input Modules Technical Specifications

|                               | 1734-IB2                                                | 1734-IB4              | 1734-IB4D             | 1734-IB8              | 1734-IV2                      | 1734-IV4              | 1734-IV8              |
|-------------------------------|---------------------------------------------------------|-----------------------|-----------------------|-----------------------|-------------------------------|-----------------------|-----------------------|
|                               | <b>Sinking Input Modules</b>                            |                       |                       |                       | <b>Sourcing Input Modules</b> |                       |                       |
| Number of inputs              | 2                                                       | 4                     | 4                     | 8                     | 2                             | 4                     | 8                     |
| Diagnostics                   | —                                                       | —                     | Yes                   | —                     | —                             | —                     | —                     |
| Voltage, on-state input, nom  | 24V DC                                                  |                       |                       |                       |                               |                       |                       |
| Voltage, on-state input, min  | 10V DC                                                  |                       |                       |                       |                               |                       |                       |
| Voltage, on-state input, max  | 28.8V DC                                                |                       |                       |                       |                               |                       |                       |
| Input delay time, on to off   | 0.5 ms hardware + (0...65 ms selectable) <sup>(1)</sup> |                       |                       |                       |                               |                       |                       |
| Current, on-state input, min  | 2 mA                                                    |                       |                       |                       |                               |                       |                       |
| Current, on-state input, max  | 5 mA                                                    |                       |                       |                       |                               |                       |                       |
| Current, off-state input, max | 1.5 mA                                                  |                       |                       |                       |                               |                       |                       |
| POINTBus current (mA)         | 75 mA max @ 5V DC                                       |                       | 50 mA max @ 5V DC     | 75 mA max @ 5V DC     |                               |                       |                       |
| Power dissipation, max        | 0.7 W @ 28.8V DC                                        | 1.0 W @ 28.8V DC      | 0.6 W max @ 28.8V DC  | 1.6 W @ 28.8V DC      | 0.7 W @ 28.8V DC              | 1.0 W @ 28.8V DC      | 1.6 W @ 28.8V DC      |
| Thermal dissipation, max      | 2.4 BTU/hr @ 28.8V DC                                   | 3.4 BTU/hr @ 28.8V DC | 1.9 BTU/hr @ 28.8V DC | 5.5 BTU/hr @ 28.8V DC | 2.4 BTU/hr @ 28.8V DC         | 3.4 BTU/hr @ 28.8V DC | 5.5 BTU/hr @ 28.8V DC |
| Terminal base unit            | 1734-TB, 1734-TBS, 1734-TOP, or 1734-TOPS               |                       |                       |                       |                               |                       |                       |

<sup>(1)</sup> Input ON-to-OFF delay time is the time from a valid input signal to recognition by the module.

## Digital DC Output Modules

### 1734 Digital DC Output Modules Technical Specifications

|                               | 1734-OB2 <sup>(1)</sup>        | 1734-OB2E | 1734-OB2EP | 1734-OB4 <sup>(1)</sup> | 1734-OB4E | 1734-OB8 <sup>(1)</sup> | 1734-OB8E | 1734-OV2E                     | 1734-OV4E | 1734-OV8E |
|-------------------------------|--------------------------------|-----------|------------|-------------------------|-----------|-------------------------|-----------|-------------------------------|-----------|-----------|
|                               | <b>Sourcing Output Modules</b> |           |            |                         |           |                         |           | <b>Sinking Output Modules</b> |           |           |
| Number of outputs             | 2                              |           |            | 4                       | 4         | 8                       |           | 2                             | 4         | 8         |
| Diagnostics                   | —                              | Yes       | Yes        | —                       | Yes       | —                       | Yes       | Yes                           | Yes       | Yes       |
| Electronically protected      | Yes                            |           |            |                         |           |                         |           |                               |           |           |
| Voltage, on-state output, nom | 24V DC                         |           |            |                         |           |                         |           |                               |           |           |
| Voltage, on-state output, min | 10V DC                         |           |            |                         |           |                         |           |                               |           |           |

## Mounting Requirements

Step 5 - Select:

- appropriate number of DIN rails based on the number of modules and the physical requirements

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The producer/consumer model multicasts messages. This means that multiple nodes can consume the same data at the same time from a single device.

Where you place POINT I/O modules in the control system determines how the modules exchange data.

For a Rockwell Automation controller to control 1734 I/O, the I/O must be on one of the following:

- the same network as the controller.
- a ControlNet network that is local to that controller.
- an EtherNet/IP network that is local to that controller.

### Power Supply Distance Rating

Place modules to the right of the power supply. Each 1734 I/O module can be placed in any of the slots right of the power supply until the usable backplane current of that supply has been exhausted. An adapter provides 1000 mA current to the POINTBus backplane. The 1734-EP24DC or 1734-EPAC Expansion power supply provides up to 1300 mA. I/O modules require from 75 mA (typical for the digital and analog I/O modules) up to 220 mA or more.

Use the following table to plan the maximum size layout of your POINT I/O system.

### Maximum Size Layout

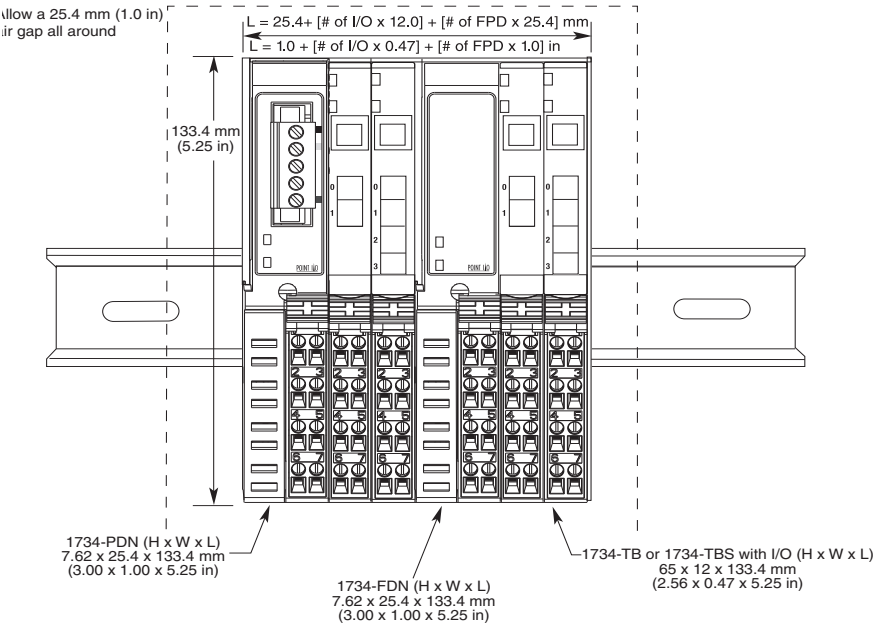
|                                  | <b>POINTBus current</b>                                                                    | <b>No. of I/O Modules with 24V DC Backplane Current (@ 75 mA each), max</b> | <b>No. of I/O Modules with Expansion Power Supplies, max</b> | <b>No. of I/O Module Connections, max</b>                                                           |
|----------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1734-PDN on DeviceNet network    | 1300 mA                                                                                    | Up to 17                                                                    | Expansion power supply not allowed                           | Not to exceed scanner capacity                                                                      |
| 1734-ADN(X) on DeviceNet network | 1000 mA                                                                                    | Up to 13                                                                    | 63                                                           | Not to exceed scanner capacity                                                                      |
| 1734-ACNR on ControlNet network  | 1000 mA                                                                                    | Up to 13                                                                    | 63                                                           | 5 rack and 25 direct                                                                                |
| 1734-AENT on EtherNet/IP network | 1000 mA                                                                                    | Up to 13                                                                    | 63                                                           | 31 total connections (reduced to 20 with safety connections present) including 5 rack/enhanced rack |
| 1734-APB on PROFIBUS network     | 1000 mA                                                                                    | Up to 13                                                                    | 63                                                           | Not to exceed scanner capacity                                                                      |
| 1734-EP24DC Expansion Power      | Horizontal mounting:<br>1000 mA @ 5V DC for 10...19.2V<br>1300 mA @ 5V DC for 19.2...28.8V | Up to 17                                                                    | 63                                                           | Not to exceed scanner capacity                                                                      |
|                                  | Vertical mounting:<br>1000 mA @ 5V DC for 10...28.8V                                       | Up to 17                                                                    | 63                                                           | Not to exceed scanner capacity                                                                      |
| 1734-EPAC Expansion Power        | Horizontal mounting:<br>1300 mA @ 5.2V DC                                                  | Up to 17                                                                    | 63                                                           | Not to exceed scanner capacity                                                                      |
|                                  | Vertical mounting:<br>1000 MA @ 5.2V DC                                                    | Up to 17                                                                    | 63                                                           | Not to exceed scanner capacity                                                                      |

## Mount the POINT I/O System

Mount the POINT I/O system on a DIN rail in the horizontal or vertical orientation. Use steel, 35 x 75.5 mm DIN rails (Cat. No. 199-DR1; 46277-3; EN 50022). The DIN rails for all POINT I/O system components must be mounted on a common, conductive surface to ensure proper electro-magnetic interference (EMI) performance. Secure DIN rail approximately every 200 mm (7.87 in).

# Approximate Mounting Dimensions

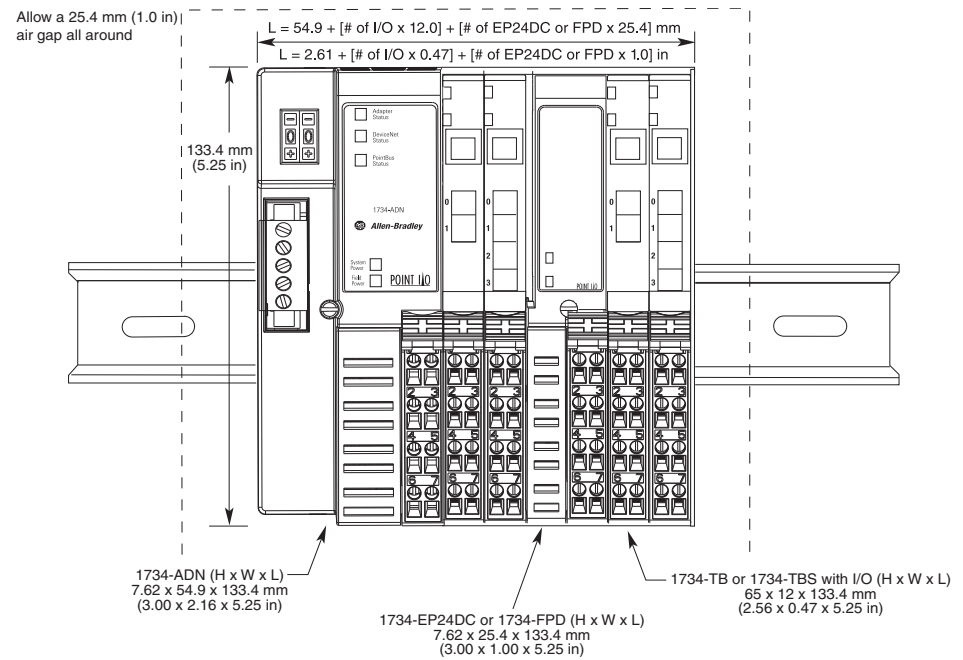
## POINT I/O with 1734-PDN Mounting Dimensions



### IMPORTANT

When mounting the 1734-IB8S, 1734-OB8S, and 1734-IE4S modules, ensure that there is 2 in. of clearance space above the POINT rail.

### POINT I/O with 1734-ADN(X), 1734-ACNR, 1734-AENT, 1734-APB Mounting Dimensions



#### IMPORTANT

When mounting the 1734-IB8S, 1734-OB8S, and 1734-IE4S modules, ensure that there is 2 in. of clearance space above the POINT rail.

|                    | <b>Cat. No.</b>                                     | <b>Description</b>                                                                                                                       |
|--------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bases</b>       | 1734-TB,<br>1734-TBS                                | Wiring Base Assembly with 8 Point Cage-Clamp Removable Terminal Block Installation Instructions, publication <a href="#">1734-IN511</a>  |
|                    | 1734-TBS,<br>1734-TB3S,<br>1734-RTBS,<br>1734-RTB3S | Wiring Base Assembly with 12 Point Cage-Clamp Removable Terminal Block Installation Instructions, publication <a href="#">1734-IN013</a> |
|                    | 1734-TOP,<br>1734-TOPS,<br>1734-TOP3,<br>1734-TOP3S | POINT I/O One-piece Terminal Bases Installation Instructions, publication <a href="#">1734-IN028</a>                                     |
|                    | 1734-TBCJC                                          | Cold Junction Compensation Wiring Base Assembly Installation Instructions, publication <a href="#">1734-IN583</a>                        |
| <b>Power Units</b> | 1734-FPD                                            | Field Potential Distributor Module Installation Instructions, publication <a href="#">1734-IN059</a>                                     |
|                    | 1734-EP24DC                                         | 24V DC Expansion Power Supply Installation Instructions, publication <a href="#">1734-IN058</a>                                          |
|                    | 1734-EPAC                                           | 120/240V AC Expansion Power Supply Installation Instructions, publication <a href="#">1734-IN017</a>                                     |
| <b>Safety</b>      | 1734-IB8S,<br>1734-OB8S,<br>1734-IE4S               | POINT Guard I/O Safety Modules Installation and User Manual, publication <a href="#">1734-UM013</a>                                      |