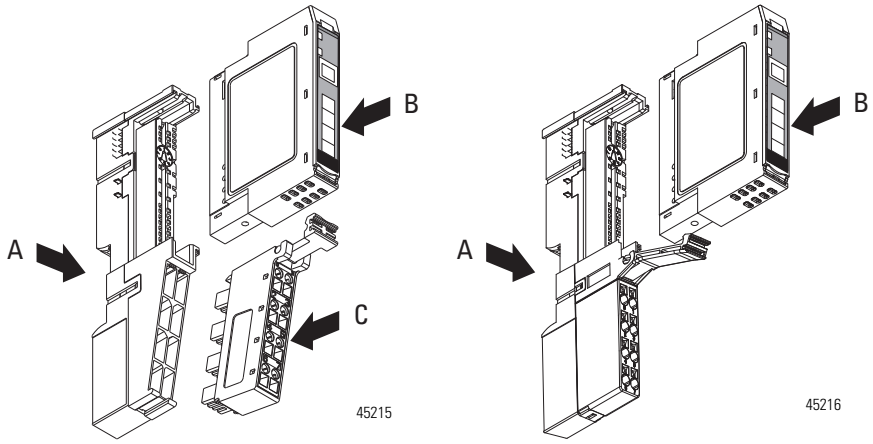
POINT I/O Family

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



1734-TOP or 1734-TOPS
One-piece Terminal Base with Screw or Spring Clamp

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	• ControlNet • DeviceNet • EtherNet I/P • Profibus
I/O Types	• Digital • Analog • AC/DC • Thermocouple • RTD • Specialty
Module Density	1…8 points
Specialty Modules	• Encoder • 1 MHz Counter In • Counter In with Outputs • Serial RS232 • RS485 • RS422 • Channel Isolated Thermocouple • RTD • Serial Synchronous Interface (SSI) • Address Reserve • 4 Channel IO-Link Master
Module Features	• Channel-level diagnostics (LED indicator and electronic) • Channel-level alarm and annunciation (electronic) • Channel-level open-wire detection with electronic feedback • Channel-level short-circuit detection with electronic feedback • Parameter-level explicit messaging • Removal and insertion under power (RIUP) • Horizontal or vertical mounting without derating • Automatic Device Replacement • Add-On-Profiles in RSLogix 5000
Network Connectivity	• DeviceNet (including SubNet connectivity) • ControlNet (Logix controller only) • EtherNet/IP (Logix controller only) • PROFIBUS DP • OPC/DDE Data Monitoring¨
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
✓	**1 Select a communication interface** Choose the interface module for your operating system.	• the appropriate interface module • a communication interface that meets the power requirements of your system
✓	**2 Select I/O devices based on field devices** • location of the device • number of points needed • appropriate catalog number • number of points available per module • number of modules	• I/O modules – some have diagnostic features, electronic fusing, isolated inputs/outputs, and unique configurable features
✓	**3 Select a wiring base assembly** Choose the appropriate wiring base assembly	• the appropriate wiring base assembly: Single piece screw, single piece spring, or RTB (Removable Terminal Base)
✓	**4 Select optional power components** Choose optional components to extend backplane power or change the field power distribution source.	• additional power components as necessary • adequate power capacity to meet I/O module backplane current requirements
✓	**5 Determine mounting requirements** Determine needed dimensions based on the communication interface chosen.	• the appropriate number of DIN rails based on the number of modules and the physical locations of those modules • horizontal or vertical mounting with no thermal derating

Analog and Temperature I/O Modules

The POINT I/O analog and temperature I/O modules support: on-board, channel-level data alarming (four set-points per channel); scaling to engineering units; channel-level diagnostics (electronic bits and LED indicators); and integer format.

Analog and temperature input modules support the following configurable parameters and diagnostics:

- open-wire detection with LED and electronic reporting
- four-alarm and annunciation set-points: low alarm; high alarm; low/low alarm; high/high alarm calibration mode detection and electronic reporting
- underrange detection and electronic reporting
- overrange detection and electronic reporting
- channel signal range and on-board scaling (scaling to any 16-bit integer under-/over-range alarms)
- filter type (notch for A/D, or first-order low-pass digital filter)
- temperature scale (Celcius, Fahrenheit, Kelvin, Rankine, or custom)
- channel update rate (step response plus 0…10,000 ms filter setting)

Choose analog or temperature I/O modules when you need:

- On-board scaling eliminates the need to scale the data in the controller, preserving controller processing time and power for more important tasks, such as I/O control, communications, or other user-driven functions.
- Over- and underrange detections and indications eliminate the need to test values in the control program, saving valuable processing power of the controller.
- Ability to individually configure each channel of the output module to hold its last value or assume a user-defined value on a fault condition.
- Ability to individually enable and disable channels improves module performance.
- Selectable input filters lets you select from several different filter frequencies for each channel that best meets the performance needs of your application based on environmental limitations
- Selectable response to broken input sensor feature provides feedback to the controller that a field device is not connected or operating properly. This lets you specify corrective action based on the bit or channel condition.
- The modules share a high accuracy rating of ±0.1% of full-scale accuracy at 25 °C (77 °F).

1734 Analog Temperature Input Modules Technical Specifications

	1734-IR2	1734-IR2E	1734-IT2I
External DC supply current, nom	15 mA @ 24V DC		—
Terminal base unit	1734-TB, 1734-TBS, 1734-TOP, or 1734-TOPS		1734-TBCJC
Keyswitch position	6		

(1) Includes offset, gain, non-linearity and repeatability error terms.

Analog Output Modules

1734 Analog Output Modules Technical Specifications

	1734-OE2C	1734-OE2V	1734-OE4C
Number of outputs	2		4
Output signal range	4…20 mA 0…20 mA	0…10V ±10V	4…20 mA 0…20 mA
Output resolution	13 bits - over 0…21 mA 2.5 μA/cnt	14 bits (13 plus sign) 1.28 mV/cnt in unipolar or bipolar mode	16 bits - over 0…21 mA 2.5 μA/cnt
Data format	Signed integer		
Accuracy	Current output: 0.1% Full Scale @ 25 °C(1)	Voltage output: 0.1% Full Scale @ 25 °C(1)	Current output: 0.1% Full Scale @ 25 °C(1)
Accuracy drift w/temp.	Current output: 30 ppm/°C	Voltage output: 5 ppm/ °C	Current output: <50 ppm/°C
Step response to 63% of FS, output	Current output: 24 μs	Voltage output: 20 μs	Current output: 40 μs
Output conversion rate	16 μs	20 μs	1 μs
POINTBus current	75 mA @ 5V DC		
Power dissipation, max	750 Ω load on each output - 1.23W 0 Ω load on each output - 1.83W	1.0W	750 Ω load on each output - 1.86W 0 Ω load on each channel - 2.15W
Thermal dissipation, max	750 Ω load on each output - 4.19 BTU/hr 0 Ω load on each output - 6.24 BTU/hr	3.4 BTU/hr	750 Ω load on each output - 6.34 BTU/hr 0 Ω load on each channel 7.33 BTU/hr
Terminal base unit	1734-TB, 1734-TBS, 1734-TOP, or 1734-TOPS		
Keyswitch position	4		

(1) Includes offset, gain, non-linearity and repeatability error terms.

Analog and Temperature I/O Modules Environmental Specifications

1734 Analog and Temperature I/O Modules Environmental Specifications

Attribute	Value
Operating temperature	-20…55 °C (-4…131 °F)
Nonoperating temperature	-40…85 °C (-40…185 °F)
Relative humidity	5…95% noncondensing
Operating shock	30 g
Nonoperating shock	50 g
Vibration	5 g @ 10...500 Hz
Enclosure type rating	None (open-style)
Mounting type	DIN Rail
Certifications (when product is marked)	c-UL-us, CE, C-Tick, Ex

Specialty I/O Modules

1734-232ASC and 1734-485ASC Serial Interface Modules

The 1734-232ASC and 1734-485ASC serial interface modules offer a serial-link communication interface solution for peripheral products with RS-232 (use the 1734-232ASC), RS-485, and RS-422 ports (use the 1734-485ASC). These modules allow a device with serial-interface output (for example, bar code readers) to communicate up to 128 bytes of ASCII data onto any network supported by the POINT I/O system. Each module is a single-channel, full-duplex interface and is rated for up to 38.4 Kbps. LED indicators on the modules offer diagnostics for the module, POINTBus backplane, and transmit/receive status indication.

1734 Serial Interface Modules Technical Specifications

	1734-232ASC, 1734-485ASC
Number of serial channels	1
POINTBus current (mA)	75
Power dissipation	0.75 W @ 28.8V DC
Thermal dissipation	2.5 BTU/hr max @ 28.8V DC
Terminal base unit	1734-TB, 1734-TBS, 1734-TOP, or 1734-TOPS
Keyswitch position	2 (specialty)
Serial port parameters	
Serial character framing	7N2, 7E1, 7O1, 8N1, 8N2, 8E1, 8O1, 7E2, 7O2
Serial port comm speed	9600 bps, 1200 bps, 2400 bps, 4800 bps, 19.2 kbps, 38.4 kbps

Mounting Requirements

Step 5 - Select:

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

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

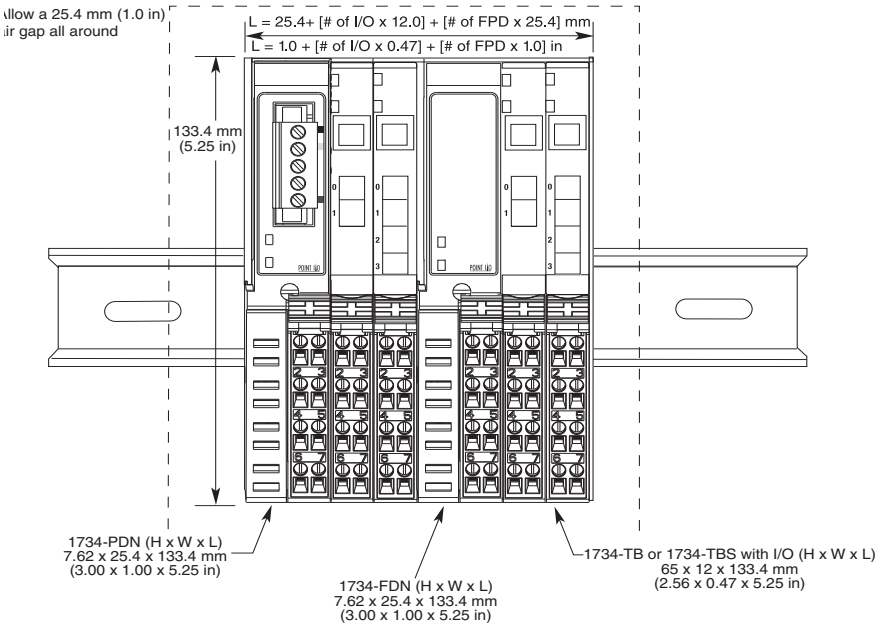
	POINTBus current	No. of I/O Modules with 24V DC Backplane Current (@ 75 mA each), max	No. of I/O Modules with Expansion Power Supplies, max	No. of I/O Module Connections, max
1734-PDN on DeviceNet network	1300 mA	Up to 17	Expansion power supply not allowed	Not to exceed scanner capacity
1734-ADN(X) on 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: 1000 mA @ 5V DC for 10…19.2V 1300 mA @ 5V DC for 19.2…28.8V	Up to 17	63	Not to exceed scanner capacity
	Vertical mounting: 1000 mA @ 5V DC for 10…28.8V	Up to 17	63	Not to exceed scanner capacity
1734-EPAC Expansion Power	Horizontal mounting: 1300 mA@ 5.2V DC	Up to 17	63	Not to exceed scanner capacity
	Vertical mounting: 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).

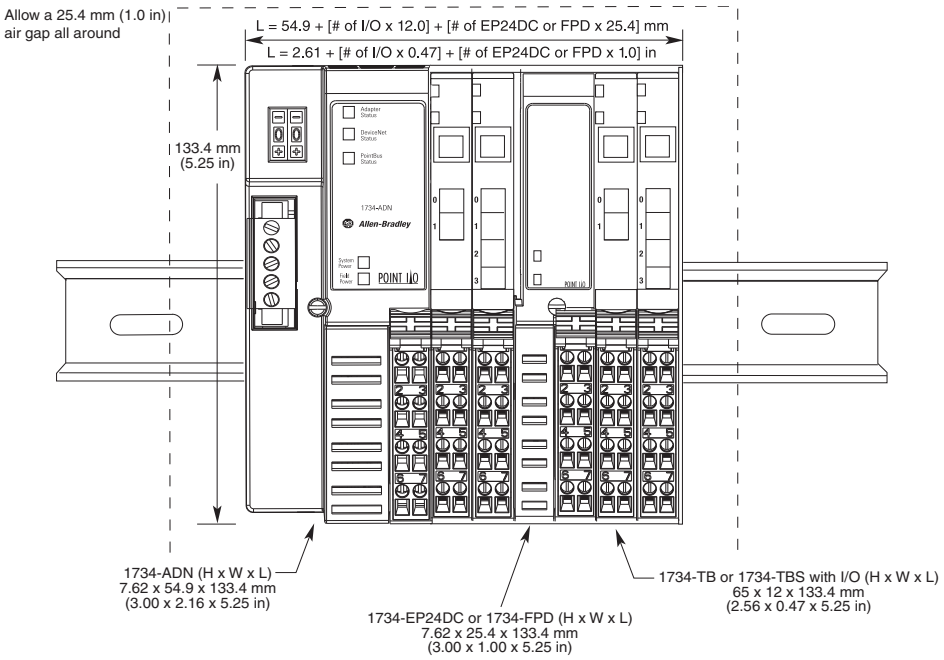
Approximate Mounting Dimensions

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.

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