Installation Instructions

A·B *Allen-Bradley*

POINT I/O Input Modules

Catalog numbers 1734-IB2, 1734-IB4, 1734-IB8, Series C

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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.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

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.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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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 consequences.
⚡	**SHOCK HAZARD:** Labels may be on or inside the equipment (for example, drive or motor) to alert people that dangerous voltage may be present.
🔥	**BURN HAZARD:** Labels may be on or inside the equipment (for example, 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.

Environment and Enclosure

ATTENTION: This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6562 ft) without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR 11. Without appropriate precautions, there may be difficulties with electromagnetic compatibility in residential and other environments due to conducted and radiated disturbances.

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 enclosure must have suitable flame-retardant properties to prevent or minimize the spread of flame, complying with a flame spread rating of 5VA, V2, V1, V0 (or equivalent) if nonmetallic. 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.

In addition to this publication, see:

- Industrial Automation Wiring and Grounding Guidelines, publication 1770-IN041, for additional installation requirements.
- NEMA Standard 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by enclosures.

Preventing Electrostatic Discharge

ATTENTION: 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.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

North American Hazardous Location Approval

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.
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.	**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 I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

European Hazardous Location Approval

The following applies when the product bears the Ex Marking

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC.

DEMKO certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in Zone 2 potentially explosive atmospheres, given in Annex II to this Directive.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0:2012+A11:2013, EN 60079-15:2010, reference certificate number DEMKO 04ATEX0330347X.

> **ATTENTION:** This equipment is not resistant to sunlight or other sources of UV radiation.

> **WARNING:** This equipment shall be mounted in an ATEX certified enclosure with a minimum ingress protection rating of at least IP54 (as defined in IEC60529) and used in an environment of not more than Pollution Degree 2 (as defined in IEC 60664-1) when applied in Zone 2 environments. The enclosure must utilize a tool removable cover or door.
>
> **WARNING:** This equipment shall be used within its specified ratings defined by Rockwell Automation.
>
> **WARNING:** Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 140% of the rated voltage when applied in Zone 2 environments.
>
> **WARNING:** Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
>
> **WARNING:** Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.

Before You Begin

You can use these Series C POINT I/O™ Input Modules with DeviceNet and PROFIBUS adapters. If you are using RSLogix 5000 software, version 11 or higher, you can also use the modules with ControlNet and Ethernet adapters.

Use this diagram to identify the external features of the module.

POINT I/O Input Module

45720
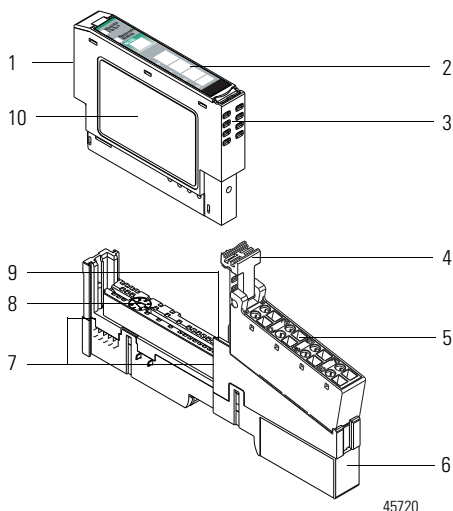
	Description		Description
1	Module locking mechanism	6	Mounting base
2	Slide-in writable label	7	Interlocking side pieces
3	Insertable I/O module	8	Mechanical keying
4	Removable Terminal Block handle	9	DIN rail locking screw
5	Removable Terminal Block (RTB)	10	Module wiring diagram

About the Module

The POINT I/O sink input modules are available in two-input, four-input, and eight-input options. They install on mounting bases that mount on a DIN rail. All wiring is made to a Removable Terminal Block (RTB) mounted on the mounting base.

Install the Mounting Base

To install the mounting base on the DIN rail, proceed as follows:

ATTENTION: This product is grounded through the DIN rail to chassis ground. Use zinc plated yellow-chromate 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.

1. Position the mounting base vertically above the installed units (adapter, power supply, or existing module).
2. Slide the mounting base down allowing the interlocking side pieces to engage the adjacent module or adapter.
3. Press firmly to seat the mounting base on the DIN rail. The mounting base snaps into place.

Install the Module

The module can be installed before or after base installation. Make sure that the mounting base is correctly keyed before installing the module into the mounting base. In addition, make sure that the mounting base locking screw is positioned horizontal referenced to the base.

⚠️ **WARNING:** When you insert or remove the module while backplane power is on, 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. 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.

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

1. Using a bladed screwdriver, rotate the keyswitch on the mounting base clockwise until the number required for the type of module being installed aligns with the notch in the base.

2. Verify the DIN rail locking screw is in the horizontal position. You cannot insert the module if the locking mechanism is unlocked.

3. Insert the module straight down into the mounting base and press to secure. The module locks into place.

⚠️ **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 Removable Terminal Block

A Removable Terminal Block (RTB) is supplied with your wiring base assembly. This allows the mounting base to be removed and replaced as necessary without removing any of the wirings.

To insert the Removable Terminal Block, proceed as follows:

1. Insert the end opposite the handle into the base unit. This end has a curved section that engages with the wiring base.

2. Rotate the terminal block into the wiring base until it locks itself in place.

3. If an I/O module is installed, snap the RTB handle into place on the module.

⚠ **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.

⚠ **WARNING:** When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method that complies with the governing electrical codes.

Remove a Mounting Base

To remove a mounting base, you must remove any installed module, and the module that is installed in the base to the right. Remove the Removable Terminal Block, if wired.

1. Unlatch the RTB handle on the I/O module.
2. Pull on the RTB handle to remove the Removable Terminal Block.
3. Press the module lock on the top of the module.
4. Pull on the I/O module to remove from the base.
5. Repeat steps 1, 2, 3 and 4 for the module to the right.
6. Use a small bladed screwdriver to rotate the orange base locking screw to a vertical position. This releases the locking mechanism.
7. Lift straight up to remove.

Communicate with Your Module

I/O messages are sent to (consumed) and received from (produced) the POINT I/O modules. These messages are mapped into the processor's memory.

This POINT I/O input module produces 1 Byte of input data (scanner Rx). It does not consume I/O data (scanner Tx).

Default Data Map for 1734-IB2

Message size: 1 Byte

	7	6	5	4	3	2	1	0
Produces (Rx)							I1	I0
Consumes (Tx)	No consumed data							
Where:	I1 = Channel 1, I0 = Channel 0, 0 = Off, 1 = On							

Default Data Map for 1734-IB4

Message size: 1 Byte

	7	6	5	4	3	2	1	0
Produces (Rx)					I3	I2	I1	I0
Consumes (Tx)	No consumed data							
Where:	I3 = Channel 3, I2 = Channel 2, I1 = Channel 1, I0 = Channel 0, 0 = Off, 1 = On							

Default Data Map for 1734-IB8

Message size: 1 Byte

|	7	6	5	4	3	2	1	0
Produces (Rx)	I7	I6	I5	I4	I3	I2	I1	I0
Consumes (Tx)	No consumed data							
Where:	I7 = Channel 7, I6 = Channel 6, I5 = Channel 5, I4 = Channel 4, I3 = Channel 3, I2 = Channel 2, I1 = Channel 1, I0 = Channel 0, 0 = Off, 1 = On							

Wire the Module

1734-IB2	1734-IB4	1734-IB8

Module status

Network status

1734-IB2

24VDC Sink Input

Status of input 0
Status of input 1

1734-IB4

Status of input 0
Status of input 1
Status of input 2
Status of input 3

1734-IB8

Status of inputs 0 & 4
Status of inputs 1 & 5
Status of inputs 2 & 6
Status of inputs 3 & 7

Input 0   Input 1
NC   NC
C   C
V   V

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Input = 0, 1
NC = No connection (2, 3)
C = Common (4, 5)
V = Supply (6, 7)

Input 0   Input 1
Input 2   Input 3
C   C
V   V

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Input = 0, 1, 2, 3
C = Common (4, 5)
V = Supply (6, 7)

Input 0   Input 1
Input 2   Input 3
Input 4   Input 5
Input 6   Input 7

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Input = 0, 1, 2, 3, 4, 5, 6, 7
V and C are daisy-chained from either the adapter, 1734-FPD, 1734-EP24DC, or from a user-supplied auxiliary terminal block.

> ⚠️ **WARNING:** If you connect or disconnect wiring while the field-side power is on, 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.

> ⚠️ **WARNING:** To comply with the CE Low Voltage Directive (LVD), this equipment must be powered from a source compliant with the following:
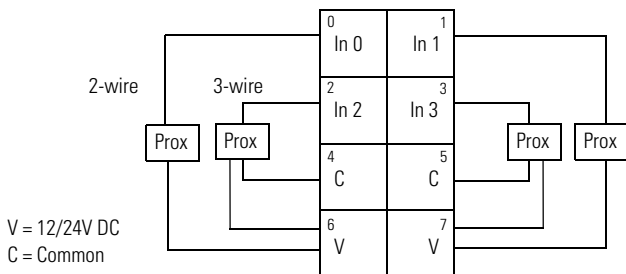> Safety Extra Low Voltage (SELV) or Protected Extra Low Voltage (PELV).

Wiring for 1734-IB2 – Sink Input
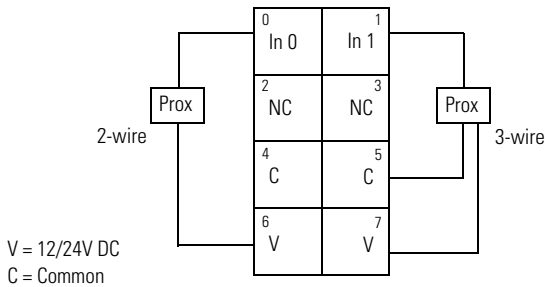
V = 12/24V DC
C = Common

| Channel	Input	Common	Voltage
0	0	4	6
1	1	5	7
Connect common on 3-wire proximity switches. 12/24V DC is supplied through the internal power bus.			

Wiring for 1734-IB4 – Sink Input

Channel	Input	Common	Voltage
0	0	4	6
1	1	5	7
2	2	4	6
3	3	5	7
Connect common on 3-wire proximity switches. 12/24V DC is supplied through the internal power bus.			

Wiring for 1734-IB8 – Sink Input

V = 12/24V DC
C = Common
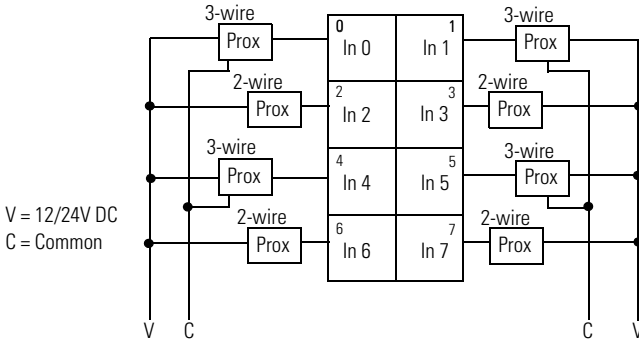
Channel	Input	Channel	Input
0	0	4	4
1	1	5	5
2	2	6	6
3	3	7	7

Daisychain common and power connections from 1734 adapter, 1734-FPD, 1734-EP24DC, or from user-supplied external auxiliary terminal block.

Note: When connecting more than one wire in a termination point, make sure that both wires are the same gauge and type.

Wiring Example for 1734-IB8 Using 2-Wire Proximity Switches

Terminal block with bus connector strip
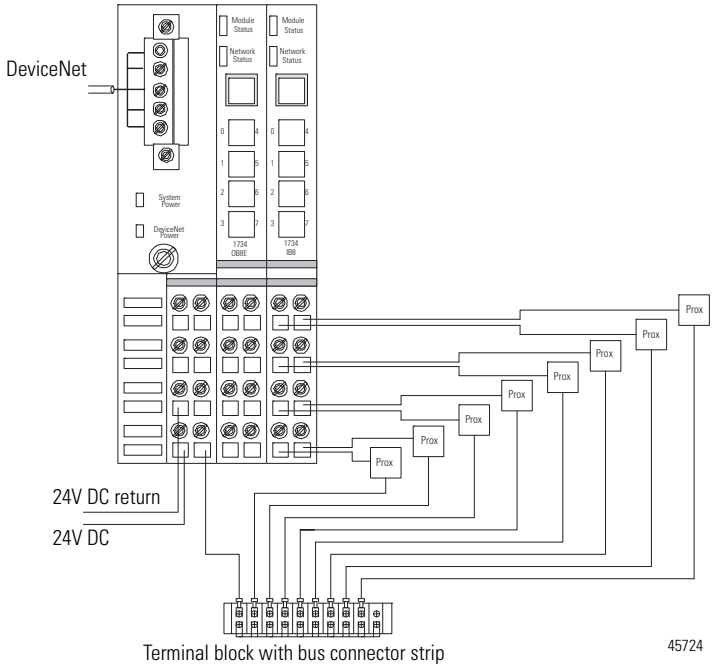
45724

Wiring Example for 1734-IB8 Using 3-Wire Proximity Switches
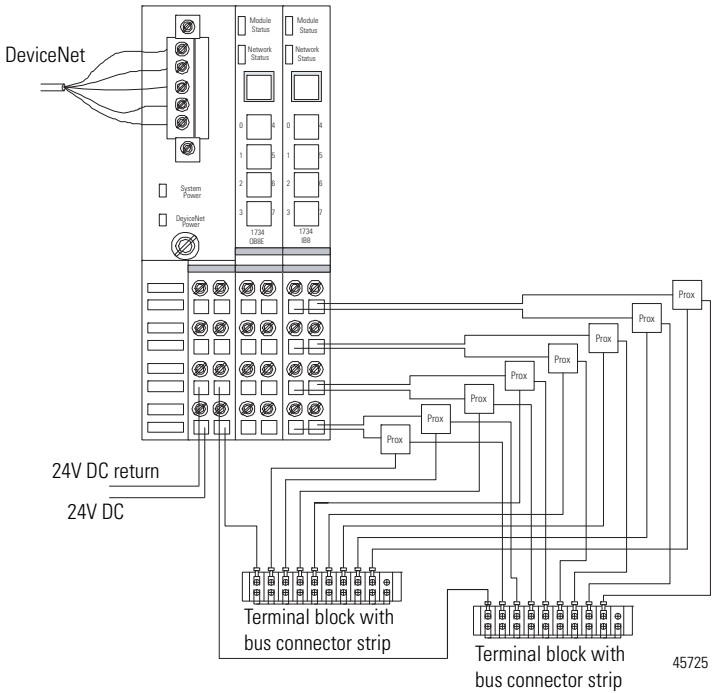
Interpret Status Indicators

Refer to the following diagram and table for information on how to interpret the status indicators.

1734-IB2

1734-IB4

1734-IB8

Module status

Network status

Status of input 0
Status of input 1

Status of input 0
Status of input 1
Status of input 2
Status of input 3

Status of inputs 0 & 4
Status of inputs 1 & 5
Status of inputs 2 & 6
Status of inputs 3 & 7

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45723
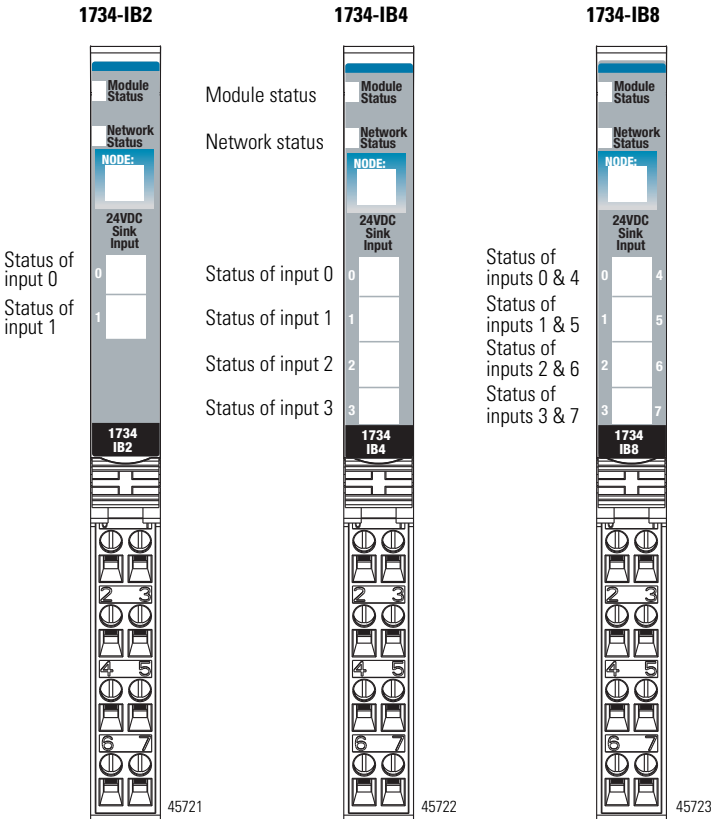
Indicator Status for Modules

	Status	Description
Module status	Off	No power applied to device.
	Green	Device operating normally.
	Flashing green	Device needs commissioning due to missing, incomplete, or incorrect configuration.
	Flashing red	Recoverable fault.
	Red	Unrecoverable fault – may require device replacement.
	Flashing red/green	Device is in self-test mode.
Network status	Off	Device is not online: - Device has not completed dup_MAC-id test. - Device not powered – check module status indicator.
	Flashing green	Device is online but has no connections in the established state.
	Green	Device is online and has connections in the established state.
	Flashing red	One or more I/O connections are in timed-out state.
	Red	Critical link failure – failed communication device. Device detected error that prevents it from communicating on the network.
	Flashing red/green	Communication faulted device – the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identity Communication Faulted Request – long protocol message.
I/O status	Off	Input is in the off state.
	Yellow	Input is in the on state.

Specifications

POINT I/O Input Module – 1734-IB2, 1734-IB4, 1734-IB8

Attribute	Value		
Inputs per module	**1734-IB2** – 2 (1 group of 2), sinking **1734-IB4** – 4 (1 group of 4), sinking **1734-IB8** – 8 (1 group of 8), sinking		
Voltage, on-state, min	10V DC		
Voltage, on-state, nom	24V DC		
Voltage, on-state, max	28.8V DC		
Current, on-state, min	2 mA		
Current, on-state, nom	4 mA @ 24V DC		
Current, on-state, max	5 mA		
Voltage, off-state, max	5V DC		
Current, off-state, min	1.5 mA		
Impedance, input, nom	3.6 kΩ		
Impedance, input, max	4.7 kΩ		
Input filter time[1] OFF to ON ON to OFF	0.5 ms hardware plus 0...63 ms (user-selectable) 0.5 ms hardware plus 0...63 ms (user-selectable)		
Field wiring terminations	**1734-IB2** 0 – Input 0 1 – Input 1 2 – No connection 3 – No connection 4 – Common 5 – Common 6 – User supply 7 – User supply	**1734-IB4** 0 – Input 0 1 – Input 1 2 – Input 2 3 – Input 3 4 – Common 5 – Common 6 – User supply 7 – User supply	**1734-IB8** 0 – Input 0 1 – Input 1 2 – Input 2 3 – Input 3 4 – Input 4 5 – Input 5 6 – Input 6 7 – Input 7

[1] Input off-to-on filter time is the time from a valid input signal to recognition by the module. Input on-to-off time is the time from a valid input signal to recognition by the module.

General Specifications[1]

Attribute	Value
Terminal base screw torque	0.8 Nm (7 lb-in.)
Module location	1734-TB or 1734-TBS wiring base assembly
Indicators, network status	1 green/red, logic side

General Specifications[1]

Attribute	Value
Indicators, module status	1 green/red, logic side
Indicators, input status	**1734-IB2** – 2 yellow, logic side **1734-IB4** – 4 yellow, logic side **1734-IB8** – 8 yellow, logic side
POINTBus current, max	75 mA @ 5V DC
Power dissipation @ 28.8V DC, max	**1734-IB2** – 0.7 W **1734-IB4** – 1.0 W **1734-IB8** – 1.6 W
Thermal dissipation @ 28.8V DC, max	**1734-IB2** – 2.4 BTU/hr **1734-IB4** – 3.4 BTU/hr **1734-IB8** – 5.5 BTU/hr
Isolation voltage	50V (continuous), Reinforced Insulation Type Tested @ 2500V DC for 60 s, field-side to system
Field power supply voltage, nom	24V DC
Field power voltage range	10...28.8V DC
Dimensions, HxWxD, approx.	56 x 12 x 75.5 mm (2.2 x 0.47 x 2.97 in.)
Wiring category[2]	1 – on signal ports
Wire size	Determined by installed terminal block.
Weight, approx.	**1734-IB2** – 30.9 g (1.09 oz) **1734-IB4** – 31.8 g (1.12 oz) **1734-IB8** – 32.3 g (1.14 oz)
Enclosure type rating	None (open-style)
Keyswitch position	1
North American Temp Code	T4A
IEC Temp Code	T4

(1) IEC 3 24V DC input compliant.

(2) Use this conductor category information for planning conductor routing as described in Industrial Automation Wiring and Grounding Guidelines, publication 1770-IN041.

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...55 °C (-4...131 °F)
Temperature, surrounding air, max.	55 °C (131 °F)
Temperature, nonoperating	IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock): -40...85 °C (-40...185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Nonoperating 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
Emissions	CISPR 11: Group 1, Class A
ESD immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz
EFT/B immunity	IEC 61000-4-4: ±4 kV @ 5 kHz on signal ports
Surge transient immunity	±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz

Certifications

Certification (when product is marked)[1]	Value
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.
	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: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A and B)
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex CE ⟨Ex⟩	European Union 94/9/EC ATEX Directive, compliant with: EN 60079-0:2012 + A11:2013; General Requirements EN 60079-15:2010; Potentially Explosive Atmospheres, Protection "n" II 3 G Ex nA IIC T4 Gc DEMKO 04 ATEX 0330347X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

(1) See the Product Certification link at http://www.rockwellautomation.com/products/certification/ for Declaration of Conformity, Certificates, and other certification details.

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, please review the information that's contained in this manual. You can also contact a special Customer Support number 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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