Installation Instructions

Allen-Bradley

POINT I/O Source Input Modules

Catalog numbers 1734-IV2,1734-IV4, 1734-IV8, Series C

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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 publication 60664-1), and at altitudes of 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 non-metallic. 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, Rockwell Automation publication 1770-4.1, for additional installation requirements.
- NEMA Standard 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

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 wrist strap.
- 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: This equipment must be used only with ATEX certified Rockwell Automation backplanes.

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.

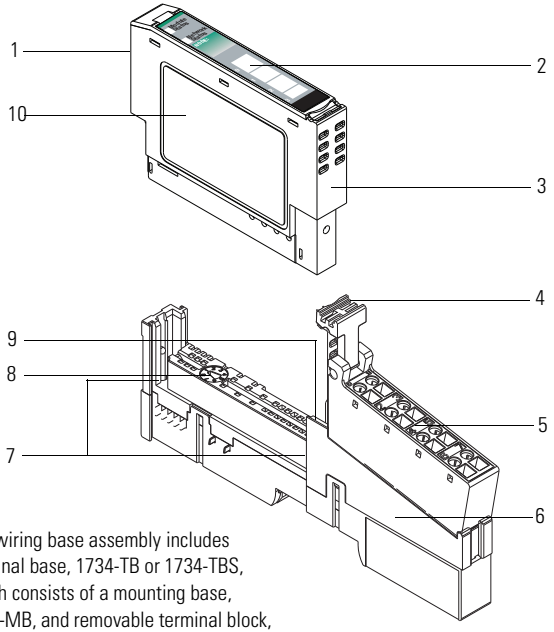
WARNING: The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.

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 with 1734-TB or 1734-TBS Base



The wiring base assembly includes terminal base, 1734-TB or 1734-TBS, which consists of a mounting base, 1734-MB, and removable terminal block, 1734-RTB or 1734-RTBS.

	Description		Description
1	Module locking mechanism	6	1734-TB or 1734-TBS mounting base
2	Slide-in writable label	7	Interlocking side pieces
3	Insertable I/O module	8	Mechanical keying (orange)
4	Removable terminal block (RTB) handle	9	DIN rail locking screw (orange)
5	Removable terminal block with screw (1734-RTB) or spring clamp (1734-RTBS)	10	Module wiring diagram

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, 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. Be sure that the orange DIN rail locking screw is in the horizontal position and that it has engaged the DIN rail.

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.

ATTENTION: 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.

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.
4. 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. To remove, pull up on the RTB handle. This allows the mounting base to be removed and replaced as necessary without removing any of the wirings. To reinsert 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 can cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

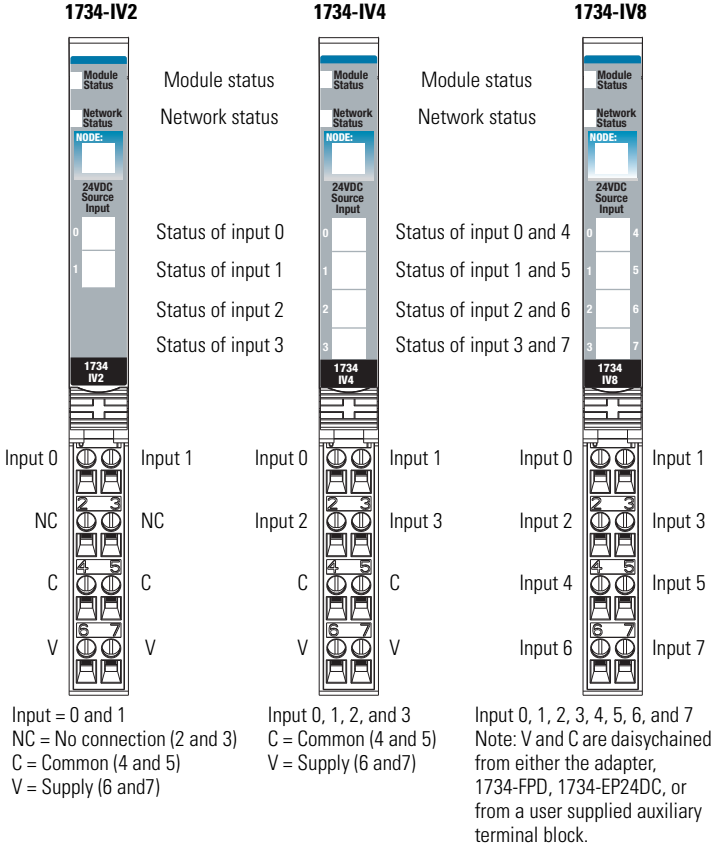
Remove a Mounting Base

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.

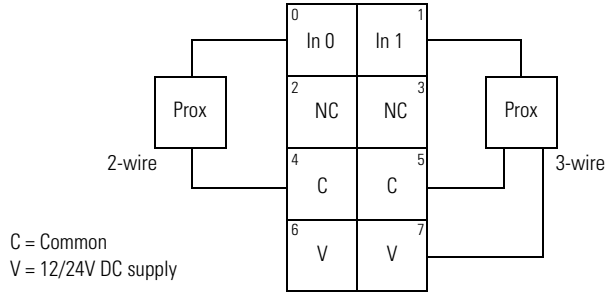
Wire the Module

To wire the module, refer to the diagrams and tables.



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.

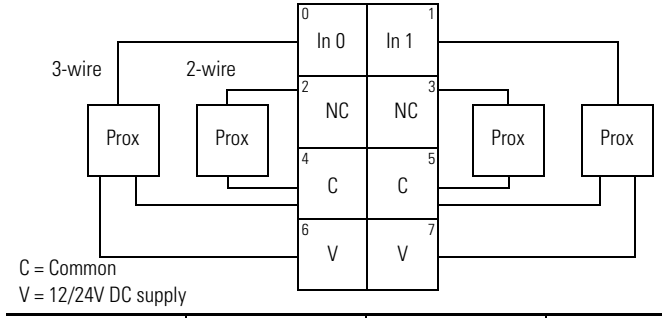
POINT I/O Source Input Module Wiring – 1734-IV2



Channel	Input Terminal	Common Terminal	Power
0	0	4	6
1	1	5	7

Connect power on 3-wire proximity switches.
12/24V DC is provided by the internal field power bus.

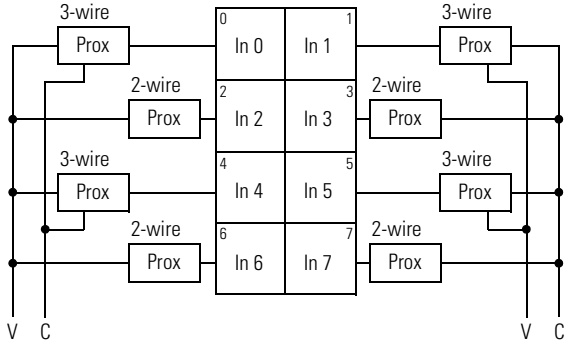
POINT I/O Source Input Module Wiring – 1734-IV4



Channel	Input Terminal	Common Terminal	Power
0	0	4	6
1	1	5	7
2	2	4	6
3	3	5	7

Connect power on 3-wire proximity switches.
12/24V DC is provided by the internal field power bus.

POINT I/O Source Input Module Wiring – 1734-IV8

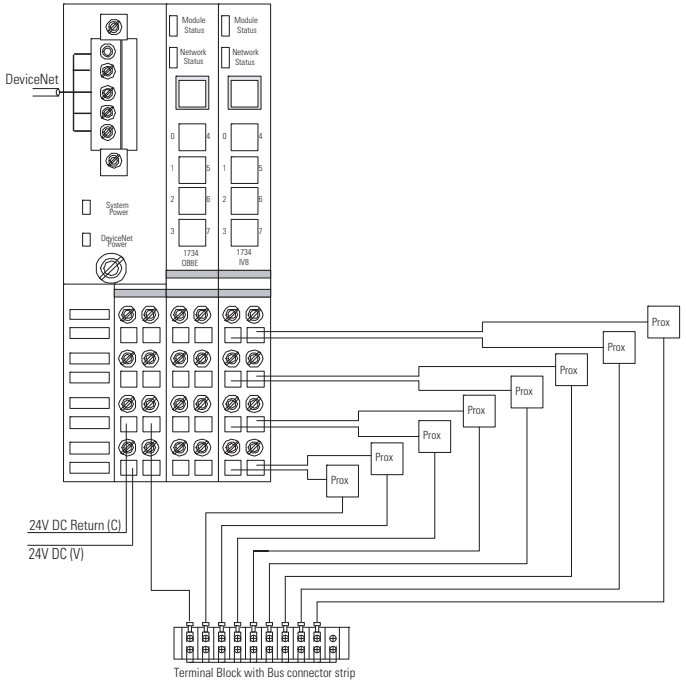


C = Common
V = 12/24V DC supply

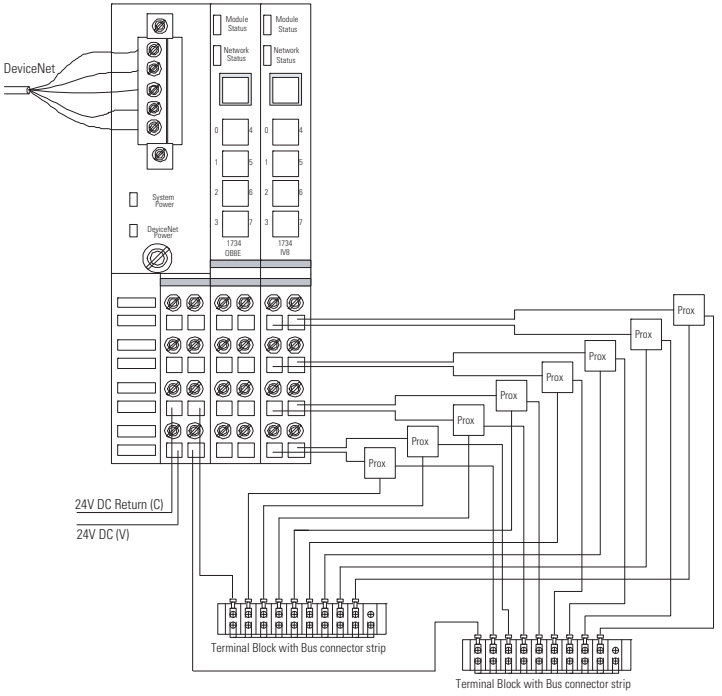
Channel	Input Terminal	Channel	Input Terminal
0	0	4	4
1	1	5	5
2	2	6	6
3	3	7	7

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

Wiring Example of 1734-IV8 using 2-Wire Proximity Switches



Wiring Example of 1734-IV8 using 3-Wire Proximity Switches



Communicate with the Module

POINT I/O modules send (produce) and receive (consume) I/O data (messages). You map this data into the processor's memory.

The 1734-IV2, 1734-IB4, and 1734-IV78 modules produce 1 byte of input data (scanner Rx). The modules do not consume I/O data (scanner Tx).

Default Data Map for 1734-IV2

Message size: 1 Byte

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

Default Data Map for 1734-IV4

Message size: 1 Byte

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

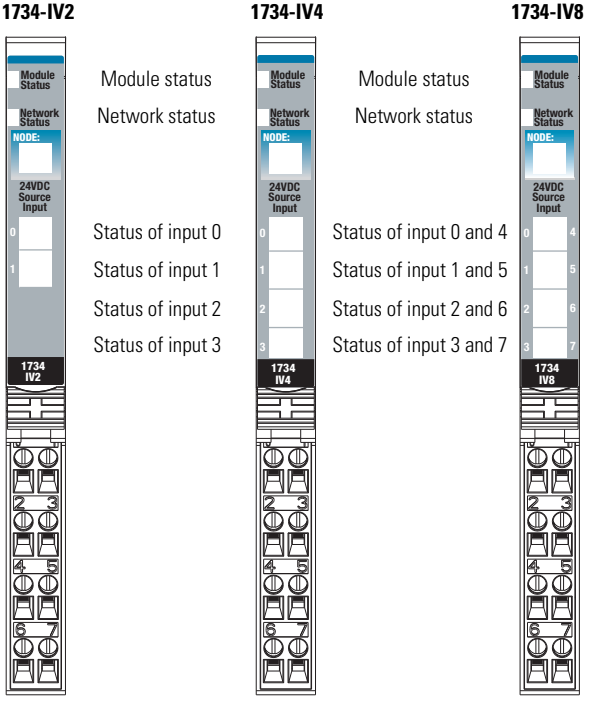
Default Data Map for 1734-IV2

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:	I0 = Channel 0, I1 = Channel 1, I2 = Channel 2, I3 = Channel 3, I4 = Channel 4, I5 = Channel 5, I6 = Channel 6, I7 = Channel 7							

Interpret Status Indicators

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



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.
Channel status	Off	Input is in the off state.
	Yellow	Input is in the on state.

Specifications

POINT I/O Source Input Modules – 1734-IV2, 1734-IV4, 1734-IV8

Attribute	Value
Number of inputs	**1734-IV2** – 2 (1 group of 2), sourcing **1734-IV4** – 4 (1 group of 4), sourcing **1734-IV8** – 8 (1 group of 8), sourcing
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 hardware plus 0...63 ms (user selectable) 0.5 hardware plus 0...63 ms (user selectable)
Field wiring terminations	**1734-IV2** 0 – Input 0 1 – Input 1 2 – No connection 3 – No connection 4 – Common 5 – Common 6 – User supply 7 – User supply **1734-IV4** 0 – Input 0 1 – Input 1 2 – Input 2 3 – Input 3 4 – Common 5 – Common 6 – User supply 7 – User supply **1734-IV8** 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

Attribute	Value
Terminal base screw torque	0.8 Nm (7 lb-in.)
Indicators	1 green/red – module status indicator, logic side 1 green/red – network status indicator, logic side **1734-IV2** – 2 yellow – input status indicators, logic side **1734-IV4** – 4 yellow – input status indicators, logic side **1734-IV8** – 8 yellow – input status indicators, logic side
Module location	1734-TB or 1734-TBS wiring base assembly
POINTBus current, max	75 mA @ 5V DC
Power dissipation, max	**1734-IV2** – 0.7W @ 28.8V DC **1734-IV4** – 1.0W @ 28.8V DC **1734-IV8** – 1.6W @ 28.8V DC
Thermal dissipation, max	**1734-IV2** – 2.4 BTU/hr @ 28.8V DC **1734-IV4** – 3.4 BTU/hr @ 28.8V DC **1734-IV8** – 5.5 BTU/hr @ 28.8V DC
Isolation voltage	50V continuous Tested to withstand 2500V DC for 60s
Field power bus Supply voltage, nom Voltage range	 24V DC 10...28.8V DC
Dimensions, approx., HxWxD	56 x 12 x 75.5 mm (2.21 x 0.47 x 2.97 in.)
Wiring category[1]	1 – on signal ports
Wire size	0.25…2.5 mm^2 (22…14 AWG) solid or stranded shielded copper wire rated at 75 °C (167 °F) or greater 1.2 mm (3/64 in.) insulation max
Weight, approx.	**1734-IV2** – 31.2 g (1.10 oz) **1734-IV4** – 31.8 g (1.12 oz) **1734-IV8** – 32.3 g (1.14 oz)
Enclosure type rating	None (open-style)
Keyswitch position	1

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

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, storage	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 Damp Heat): 5…95% noncondensing
Vibration	IEC60068-2-6 (Test Fc, Operating): 5 g @ 10…500 Hz
Shock, operating	EC 60068-2-27 (Test Ea, Unpackaged Shock): 30 g
Shock, nonoperating	EC 60068-2-27 (Test Ea, Unpackaged Shock): 50 g
Emissions	CISPR11 Group 1, Class A
ESD immunity	IEC6100-4-2: 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 30…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz
EFT/B immunity	IEC 61000-4-4: ±4 kV at 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line(DM) and ±2kV line-earth (CM) on signal ports
Conducted RF immunity	IEC61000-4-6: 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 89/336/EEC EMC Directive, compliant with: EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions
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
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR11; Industrial Emissions.

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

Notes:

Notes:

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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