Installation Instructions

Allen-Bradley

POINT I/O 4 Channel IO-Link Master Module

Catalog number 1734-4IOL

Table of Contents

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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 60664-1), at altitudes up to 2000 m (6562 ft) without derating. This equipment is not intended for use in residential environments and may not provide adequate protection to radio communication services in such environments.

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 or be approved for the application 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, Rockwell Automation publication 1770-4.1, for additional install 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.

⚠️ **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.

⚠️ **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.

⚠️ **ATTENTION:** To comply with UL restrictions, this equipment and all connected I/O must be powered from a source compliant with the following:
Safety Extra Low Voltage (SELV)

⚠️ **ATTENTION:** To comply with CE Low Voltage Directive (LVD), this equipment and all connected I/O must be powered from a source compliant with the following:
Safety Extra Low Voltage (SELV)

⚠️ **ATTENTION:** Do not wire more than 2 conductors on any single terminal.

About the Module

The POINT I/O 4 Channel IO-Link Master Module provides four channels that can be individually configured as IO-Link master or as a standard digital I/O module. The IO-Link channel master module can be configured to fit any IO-Link and/or discrete application.

In IO-Link mode, the module supports four channels for IO-Link master communication with IO-Link compatible devices. In standard digital I/O mode, the module supports four channels of digital input or output. Standard digital input channels support IEC61131-2 type 1 input. Channels can also be disabled if not in use.

You must use this module with the 1734-AENT or 1734-AENTR, Series B EtherNet/IP adapters, firmware version 5.012 or later, and RSLogix™ 5000/Studio 5000® software, version 20 or later. Use this diagram to identify the external features of the module.

POINT I/O 4 Channel IO-Link Master Module with 1734-TB, 1734-TBS, 1734-TB3, or 1734-TB3S Wiring Base Assembly
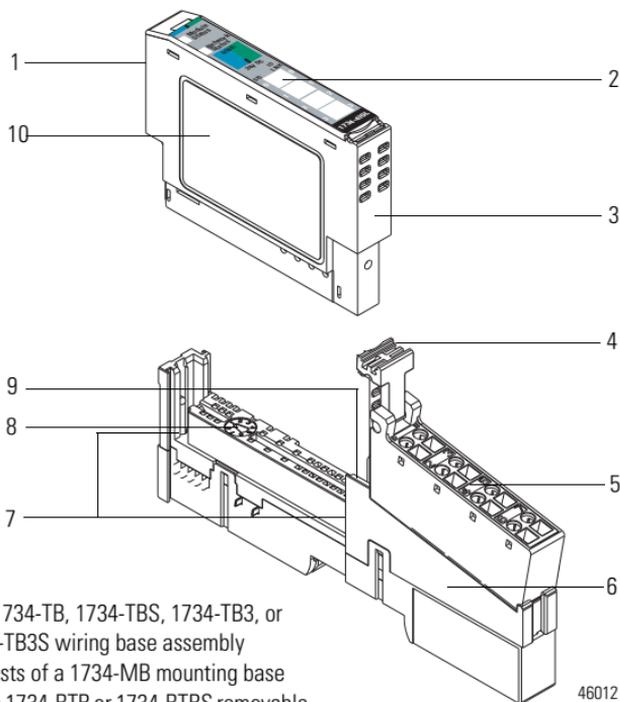

The 1734-TB, 1734-TBS, 1734-TB3, or 1734-TB3S wiring base assembly consists of a 1734-MB mounting base and a 1734-RTB or 1734-RTBS removable terminal block.

46012

	Description		Description
1	Module locking mechanism	6	Terminal 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	10	Module wiring diagram

POINT I/O 4 Channel IO-Link Master Module with 1734-TOP, 1734-TOPS, 1734-TOP3, or 1734-TOP3S One-Piece Terminal Base

46013
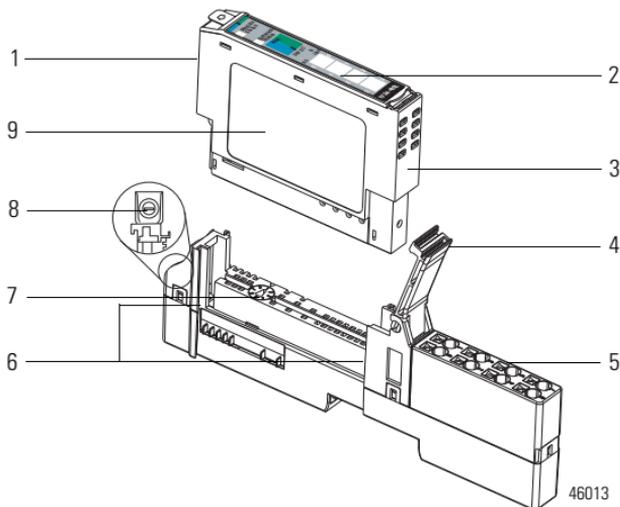
	Description		Description
1	Module locking mechanism	6	Interlocking side pieces
2	Slide-in writable label	7	Mechanical keying (orange)
3	Insertable I/O module	8	DIN rail locking screw (orange)
4	Terminal block handle	9	Module wiring diagram
5	One-piece terminal base		

Install the Mounting Base

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

1. Position the mounting base vertically above the installed units (adapter, power supply or existing module).

Slide the mounting base until the interlocking side pieces engage the adjacent module or adapter.

46014
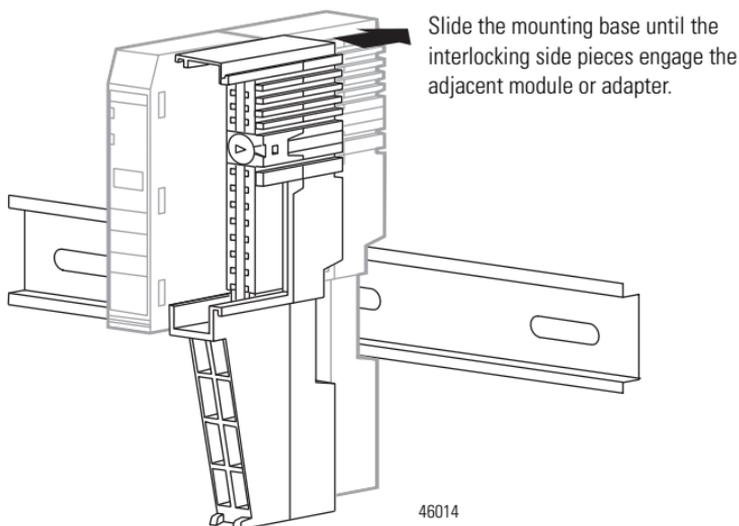
2. Slide the mounting base down allowing the interlocking side pieces to engage the adjacent module or adapter.

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.

⚠ **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 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 the mounting base locking screw is positioned horizontal referenced to the base.

1734-TB Base

Turn the keyswitch to align the number with the notch. Notch position 2 is shown.

Be sure the DIN-rail locking screw is in the horizontal position.

44229

1734-TOP Base

Be sure the DIN-rail locking screw is in the horizontal position.

Turn the keyswitch to align the number with the notch. Notch position 2 is shown.

44228
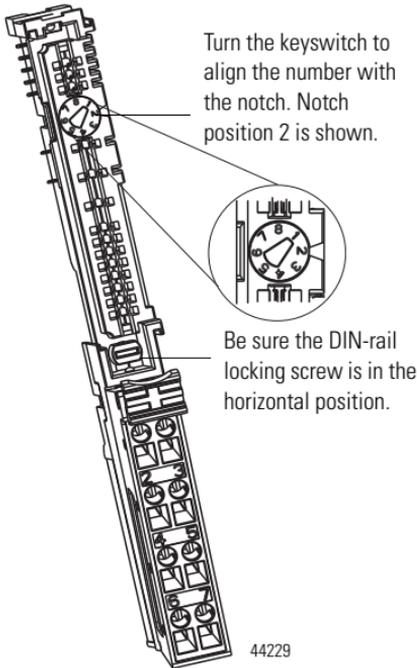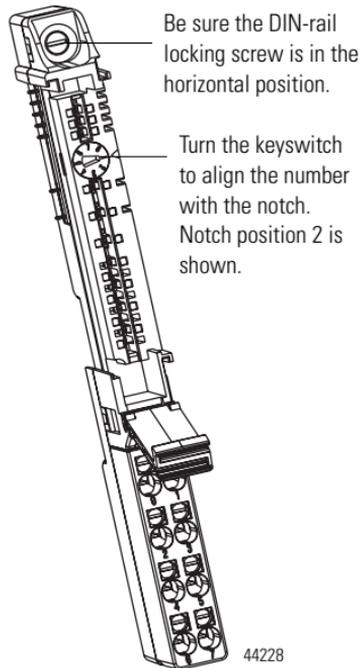
1. Using a bladed screwdriver, rotate the keyswitch on the mounting base clockwise until the number required for the type of module being installed aligns with the notch in the base.

2. Make certain 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.

44013
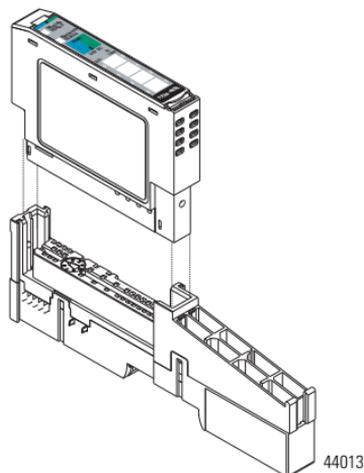
Install the Removable Terminal Block

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 wiring. 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.

Insert the module straight down into the mounting base.

Hook the RTB end into the mounting base end and rotate until it locks into place.

44012
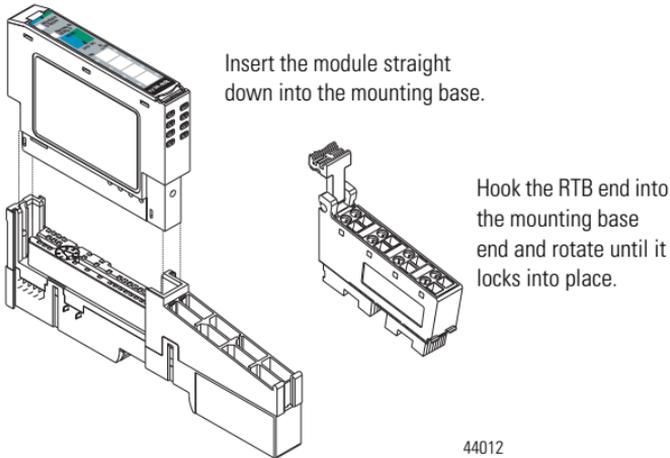
Remove a Mounting Base

To remove a mounting base, you must remove any installed module and the module 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 on 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.

POINT I/O 4 Channel IO-Link Master Module – 1734-4IOL
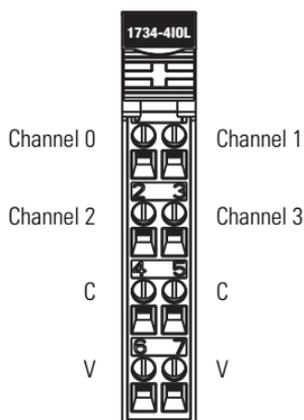
POINT I/O 4 Channel IO-Link Master Module Wiring - IO-Link Mode

Ch = IO-Link channel
C = Common
V = Voltage
Device = IO-Link device
(actuators, sensors)
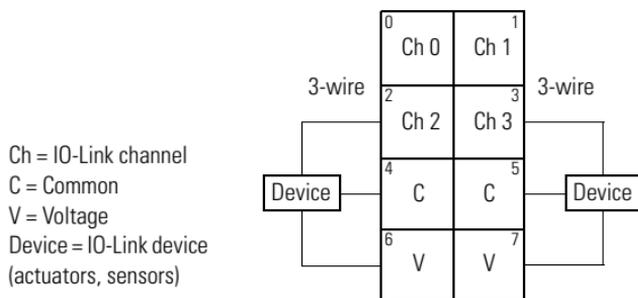
Channel	Common	Voltage
0	4	6
1	5	7
2	4	6
3	5	7
Power is supplied through the internal power bus.		

POINT I/O 4 Channel IO-Link Master Module Wiring - Standard Digital Input Mode

In = Input channel
C = Common
V = Voltage
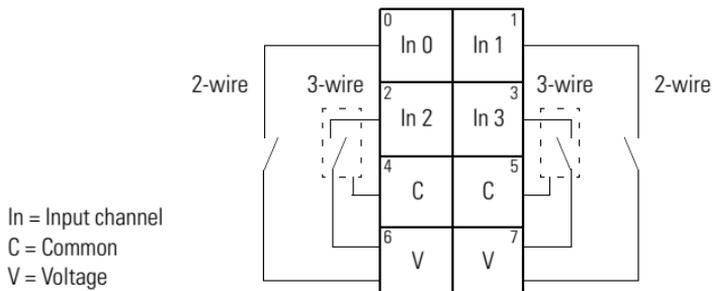
Channel	Input	Common	Voltage
Channel 0	0	4	6
Channel 1	1	5	7
Channel 2	2	4	6
Channel 3	3	5	7

Connect common on 3-wire inputs. Power is supplied through the internal power bus.

POINT I/O 4 Channel IO-Link Master Module Wiring - Standard Digital Output Mode

Out = Output channel
C = Common
V = Voltage
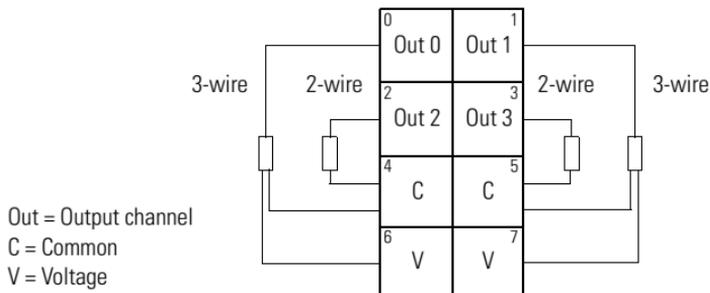
Channel	Output	Common	Voltage
Channel 0	0	4	6
Channel 1	1	5	7
Channel 2	2	4	6
Channel 3	3	5	7

Connect voltage on 3-wire outputs. Power is supplied through the internal power bus.

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 consumed and produced connection sizes may range from 0...32 bytes.

Default Data Map for 1734-4IOL – Configuration Assembly Instance 100

Message size: 46 Bytes

Consumed Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
36	Channel 0 Fault Mode [1]							
37	Channel 0 Idle Mode [1]							
38	Channel 1 Fault Mode [1]							
39	Channel 1 Idle Mode [1]							
40	Channel 2 Fault Mode [1]							
41	Channel 2 Idle Mode [1]							
42	Channel 3 Fault Mode [1]							
43	Channel 3 Idle Mode [1]							
44	Channel 0 Input Off to On Time Delay [2]							
45	Channel 0 Input On to Off Time Delay [2]							
46	Channel 1 Input Off to On Time Delay [2]							
47	Channel 1 Input On to Off Time Delay [2]							
48	Channel 2 Input Off to On Time Delay [2]							
49	Channel 2 Input On to Off Time Delay [2]							
50	Channel 3 Input Off to On Time Delay [2]							
51	Channel 3 Input On to Off Time Delay [2]							

(1) Fault and Idle conditions are only valid when the channel is configured for IO-Link or DO. Mode and Value behavior is defined in the IO-Link Channel object specification.
(2) Time delays are specified in 1ms increments, valid range is 0 to 65 (a value of zero disables the input filter).

Default Data Map for 1734-4IOL – Consumed Assembly Instance 101

Message size: 0...128 Bytes

Consumed Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0...a	Output data for Channel 0 [1]							
a+1...b	Output data for Channel 1 [1]							

Default Data Map for 1734-4IOL – Consumed Assembly Instance 101

Message size: 0...128 Bytes

Consumed Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
b+1...c	Output data for Channel 2 [1]							
c+1...d	Output data for Channel 3 [1]							

(1) Consumed sizes can be in the range of 0...32. Output data for each channel always begin on a 32-bit boundary, and is enforced by software using the data description for the channel.

Default Data Map for 1734-4IOL – Produced Assembly Instance 102

Message size: 0...132 Bytes

Consumed Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Status [1]							
2	Channel 1 Status [1]							
4	Channel 2 Status [1]							
6	Channel 3 Status [1]							
8	Channel 0 Most Recent Event							
12	Channel 1 Most Recent Event							
16	Channel 2 Most Recent Event							
20	Channel 3 Most Recent Event							
24...a	Input data from Channel 0 [2]							
a+1...b	Input data from Channel 1 [2]							
b+1...c	Input data from Channel 2 [2]							
c+1...d	Input data from Channel 3 [2]							

(1) Channel status:
   Bit 0: 0 = Roll Up Status, an OR of bits 1 through 7
    Bit 1: 0 = Connection to device, 1 = No Connection to device
    Bit 2: 1 = Configuration to device in progress
    Bit 3: 1 = Device configuration failed
    Bit 4: 1 = IO-Link Key failure
    Bit 5: 1 = DO Short Circuit
    Bit 6: 1 = Process Data Invalid
    Bit 7: 1 = Low Power Fault
    Bit 8: 1 = IO-Link output value is forced to limit
    Bit 9...15: Reserved
(2) Produced sizes can be in the range of 0...32. Input data for each channel always begin on a 32-bit boundary, and is enforced by software using the data description for the channel.

Interpret Status Indicators

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

POINT I/O 4 Channel IO-Link Master Module – 1734-4IOL

Module status	
Network status	
	NODE:
	24V DC
	SIO IO LINK
Status of Standard Digital I/O 0	Status of IO-Link 0
Status of Standard Digital I/O 1	Status of IO-Link 1
Status of Standard Digital I/O 2	Status of IO-Link 2
Status of Standard Digital I/O 3	Status of IO-Link 3
	1734-4IOL
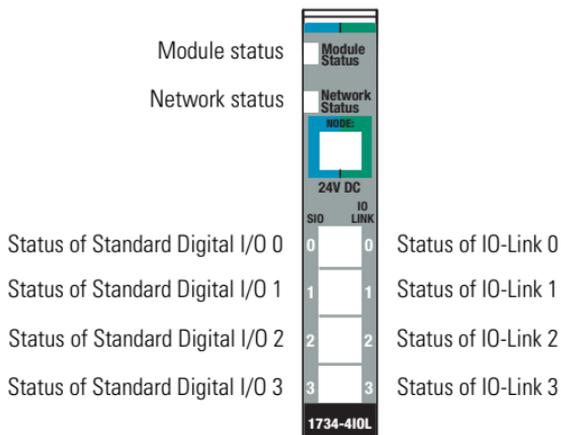
Indicator Status for Modules

	Status	Description
Module status	Off	No power applied to device.
	Green	Device operating normally.
	Flashing green	The device has not been configured.
	Flashing red	Recoverable fault.
	Red	One or more non-recoverable major faults detected.
	Flashing red/green	Device is self-testing.
Network status	Off	Device is not online: - Device has not completed dup_MAC-id test. - Device not powered – check module status indicator. - No network power present
	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.
Standard Digital Input/Output status	Off	Standard Digital Input/Output is offline, configured in IO-Link mode, or no power applied to device.
	Yellow	Standard Digital Input/Output is in ON state.
IO-Link status	Off	IO-Link is disabled, channel configured as standard digital I/O, or no power applied to device.
	Flashing green	Port starting-up or no IO-Link device detected.
	Green	IO-Link operating normally.

Specifications

General Specifications

Attribute	Value
Number of inputs	4 single-ended, non-mutual isolated, configurable
Number of outputs	
Communication rate, IO-Link	4.8 kB; 38.4 kB; 230.4 kB
Device cable length, IO-Link, max	20 m
Terminal base screw torque	0.8 Nm (7 lb-in.)
Module location	1734-TB, 1734-TBS, 1734-TB3, 1734-TB3S, 1734-TOP, 1734-TOPS, 1734-TOP3, or 1734-TOP3S wiring base assembly
POINTBus current, max	100 mA @ 5V DC
Power dissipation, max	1.5 W @ 28.8V DC
Thermal dissipation, max	5.12 BTU/hr @ 28.8V DC
Isolation voltage	50V (continuous), Basic Insulation Type Tested at 2121V DC for 60 s, field-side to system. No isolation between individual channels.
Field power bus supply, nom	24V DC
Field power bus supply, min	19.2V DC
Field power bus supply, max	28.8V DC
Indicators	1 green/red – module status indicator 1 green/red – network status indicator 4 yellow – channel status indicators 4 green – IO-Link status indicators
Wiring category[1]	2 – on signal ports
Wire size	0.25...2.5 mm^2 (22...14 AWG) solid or stranded copper wire rated at 75 °C (167 °F), or greater. 1.2 mm (3/64 in.) insulation max
Wire type	Copper
Dimensions, approx., HxWxD	56 x 12 x 75.5 mm (2.21 x 0.47 x 2.97 in.)
Weight, approx.	36 g (1.27 oz)
Enclosure type rating	None (open-style)
Keyswitch position	2

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

POINT I/O 4 Channel IO-Link Master Module 1734-4IOL – Standard Digital Input

Attribute	Value
On-state voltage, min	11V DC
On-state current, min	2.0 mA
On-state current, max	7.0 mA
Off-state voltage, max	5V DC
Off-state current, min	1.5 mA
Input filter ON to OFF OFF to ON	Each input independently settable in 1 ms intervals. Default value is 1 ms. 0...65 ms 0...65 ms

POINT I/O 4 Channel IO-Link Master Module 1734-4IOL – Standard Digital Output

Attribute	Value
On-state voltage, min	19.2V DC
On-state voltage, max	28.8V DC
On-state voltage, nom	24V DC
On-state voltage drop, max	0.9V DC
On-state current, max	150 mA
Off-state current leakage, max	0.5 mA
Module current (all outputs), max	600 mA
Surge current, max	0.3 A for 10 ms, repeatable every 3 s

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 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 (IEC 61000-6-4): 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...2700 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: ±3 kV at 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±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 E322657.
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 & B)
RCM	Australian Radiocommunications Act, compliant with: AS/NZS CISPR11; Industrial Emissions.
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.

Notes:

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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/.

www.rockwellautomation.com

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