MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ALLEN-BRADLEY

1734-4IOL

FOUR PORT IO-LINK MASTER

Used with the applicable POINT I/O IO-Link configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Rockwell Automation 1734-IN043E, September 2024

Installation Instructions

Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

POINT I/O 4 Channel IO-Link Master Module

Catalog Numbers 1734-4IOL, 1734-4IOLK, Series B

Catalog numbers with the suffix 'K' are conformal coated and their specifications are the same as non-conformal coated catalogs.

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

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Added inclusive language acknowledgment	1
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Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

Rockwell Automation

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 EN/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 for indoor use. 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 more information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see the following:

- Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for additional installation requirements.
- NEMA Standard 250 and EN/IEC 60529, as applicable, for explanations of the degrees of protection provided by enclosures.

ATTENTION: Read this document and the documents listed in the Additional Resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to the requirements of all applicable codes, laws, and standards.
Installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice. In case of malfunction or damage, no attempts at repair should be made. The module should be returned to the manufacturer for repair. Do not dismantle the module.

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.
WARNING: **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.	**AVERTISSEMENT:** **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.

UK and European Hazardous Location Approval

The following applies to products marked CE Ex II 3 G:

- Are intended for use in potentially explosive atmospheres as defined by European Union Directive 2014/34/EU and 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 IEC 60079-0:2018 and EN IEC 60079-7:2015/A1:2018.
- Are Equipment Group II, Equipment Category 3, and comply with the Essential Health and Safety Requirements relating to the design and construction of such equipment given in Annex II to EU Directive 2014/34/EU. See the EU Declaration of Conformity rok.auto/certifications for details.
- The type of protection is Ex ec IIC T4 Gc according to EN IEC 60079-0:2018, EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS, Issue Date 07/2018 and EN IEC 60079-7:2015+A1:2018, Explosive atmospheres. Equipment protection by increased safety "e".
- Comply with Standard EN IEC 60079-0:2018, EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS, Issue Date 07/2018, EN IEC 60079- 7:2015+A1:2018 Explosive atmospheres. Equipment protection by increased safety "e", reference certificate number DEMKO 04 ATEX 0330347X and UL22UKEX2478X.
- Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are unlikely to occur, or are likely to occur only infrequently and for short periods. Such locations correspond to Zone 2 classification according to UKEX regulation 2016 No. 1107 and ATEX directive 2014/34/EU.
- May have catalog numbers followed by a "K" to indicate a conformal coating option.

Communicate with Your Module

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

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 1 ms increments, the valid range is 0...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)							
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)							

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

Message size: 0...132 Bytes

Consumed Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
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)							

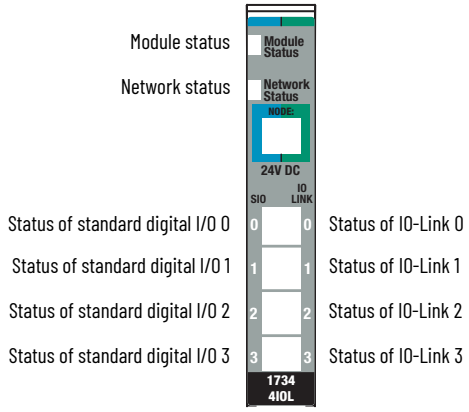
(1) Channel status:
Bit 0: 0 = Roll-up status, an OR of bits 1...7
Bit 1: 0 = Connection to device, 1 = No connection to device
Bit 2: 1 = Configuration to device in progress
Bit 3: 1 = Device configuration failed
Bit 4: 1 = IO-Link key failure
Bit 5: 1 = DO short circuit
Bit 6: 1 = Process data invalid
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

See 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



Indicator Status for Modules

Indicator	Status	Description
Module status	Off	No power is applied to the device.
	Green	The device is operating normally.
	Flashing green	The device needs commissioning due to missing, incomplete, or incorrect configuration.
	Flashing red	A recoverable fault has occurred.
	Red	An unrecoverable fault has occurred – May require device replacement.
	Flashing red/green	The device is in self-test mode.
Network status	Off	The device is not online: – The device has not completed the dup_MAC-id test. – The device is not powered – Check the module status indicator. - No network power is present.
	Flashing green	The device is online, but it has no connections in the established state.
	Green	The device is online and it has connections in the established state.
	Flashing red	One or more I/O connections are in a timed-out state.
	Red	Critical link failure – Failed communication device. The device has detected an 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 a communication faulted state. The 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 is applied to the device.
	Yellow	Standard digital input/output is in ON state.
IO-Link status	Off	IO-Link is disabled - A channel is configured as standard digital I/O or no power is applied to the device.
	Flashing green	Port starting up or no IO-Link device is detected.
	Green	IO-Link is 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 (65.6 ft)
Terminal base screw torque	0.8 N•m (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
Backplane power	5V DC, 100 mA
Input ratings	24V DC, 12 mA
Output ratings, per channel	24V DC, 0.15 A
Output ratings, per module, max	24V DC, 0.6 A
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 that is 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)
UKEX/ATEX/IECEx temp code	T4
Keyswitch position	2

(1) Use this Conductor Category information for planning conductor routing as described in the appropriate System Level Installation Manual. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1 for more information.

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

Attribute	Value
Backplane power	5V DC, 100 mA
Input ratings	24V DC, 12 mA
On-state voltage, min	13V DC
On-state voltage, max	30V DC
On-state current, min	5.0 mA
On-state current, nom	5.8 mA
On-state current, max	6.6 mA
Off-state voltage, max	5V DC
Off-state current, max	6.6 mA
Input filter ON to OFF OFF to ON	Each input is independently settable in 1 ms intervals. The default value is 1 ms. 0…65 ms 0…65 ms

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

Attribute	Value
Backplane power	5V DC, 100 mA
Output ratings, per channel	24V DC, 0.15 A
Output ratings, per module, max	24V DC, 0.6 A
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	0.25 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, 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)
Temperature, surrounding air, max	55 °C (131 °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	IEC 61000-6-4
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…6000 MHz
EFT/B immunity	IEC 61000-4-4: ± 2 kV at 5 kHz on power ports ± 2 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