POINT I/O 4 Channel IO-Link Master Module

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

Allen-Bradley
by ROCKWELL AUTOMATION

User Manual

Original Instructions

Introduction

Overview

The POINT I/O 4 channel IO-Link master module provides four channels that can be individually configured as an IO-Link master or as a standard digital I/O module. The IO-Link 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 standard digital input or standard digital 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 following:

- 1734-AENT or 1734-AENTR, Series B EtherNet/IP adapters with firmware revision 5.012 or later
- 1734-AENT or 1734-AENTR, Series C EtherNet/IP adapters with firmware revision 6.011 or later
- Studio 5000 Logix Designer application, version 20 or later

The POINT I/O 4 channel IO-Link master module operates in IO-Link revision 1.1 and is compatible with both V1.0 and V1.1 IO-Link devices. You cannot configure the IO-Link master to operate in IO-Link revision 1.0.

Product Description

The following table explains the product identity.

Table 1 - Product Identity

Catalog Number	Product Type	Product Code	Product Name String
1734-4IOL	155	1	4 Channel IO-Link Master

Modes of Usage

The module can be used in one of the following modes:

- As IO-Link master
- As standard digital input or standard digital output modules
- As mixed IO-Link master and standard digital input or standard digital output modules
- Individual channels can also be disabled if not in use
- Fallback mode

POINT I/O 4 Channel IO-Link Master – IO-Link Mode

The POINT I/O 4 channel IO-Link master module can support IO-Link communications to IO-Link enabled devices in IO-Link master mode.

See Chapter 3, Configure the POINT I/O 4 Channel IO-Link Master as IO-Link Master In Studio 5000 Logix Designer Application on page 19.

Add a POINT I/O 4 Channel IO-Link Master Module to Studio 5000 Logix Designer Application Project

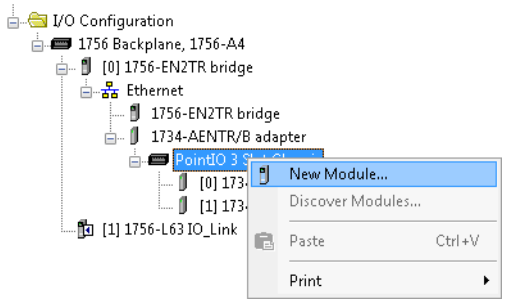
To add the POINT I/O 4 channel IO-Link master module to your Studio 5000 Logix Designer application project, do the following.

1. In the I/O Configuration tree, find the adapter.

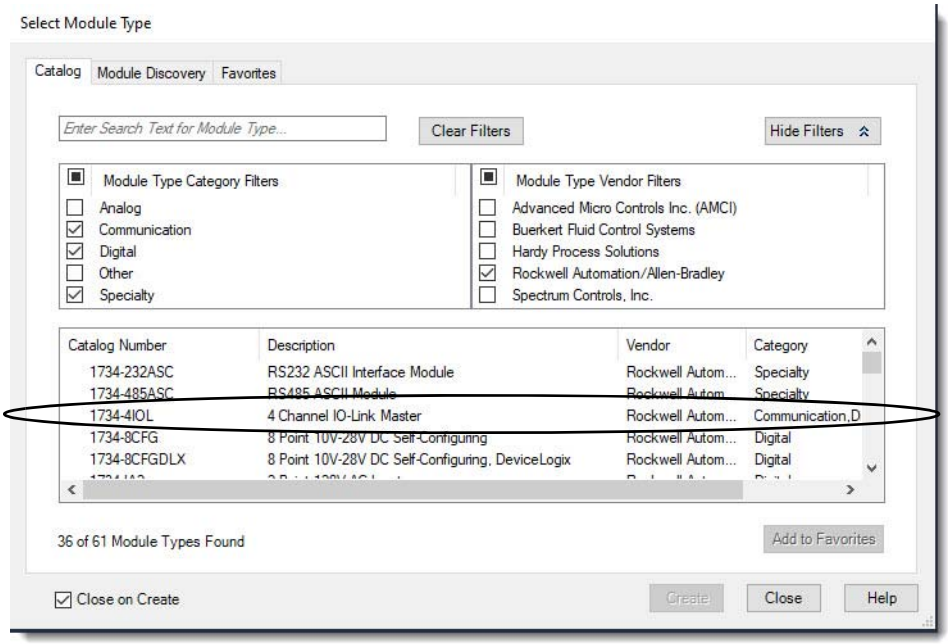
> **ATTENTION:** The 1734-4IOL module requires one of the following:
> - 1734-AENT or 1734-AENTR, Series B EtherNet/IP adapters with firmware revision 5.012 or later
> - 1734-AENT or 1734-AENTR, Series C EtherNet/IP adapters with firmware revision 6.011 or later

In this example, we use the 1734-AENTR adapter with the 1734-4IOL module.

2. Right-click the POINT I/O Chassis and select New Module.



3. In the Select Module Type dialog, under the Communications, Digital, or Specialty category, double-click the 1734-4IOL module.



The General tab of the Module Properties window appears.

Electronic Keying on this dialog is for the IO-Link Master module and not for the IO-Link devices that are connected to the IO-Link Master module. The default mode for the Channel is IO-Link.

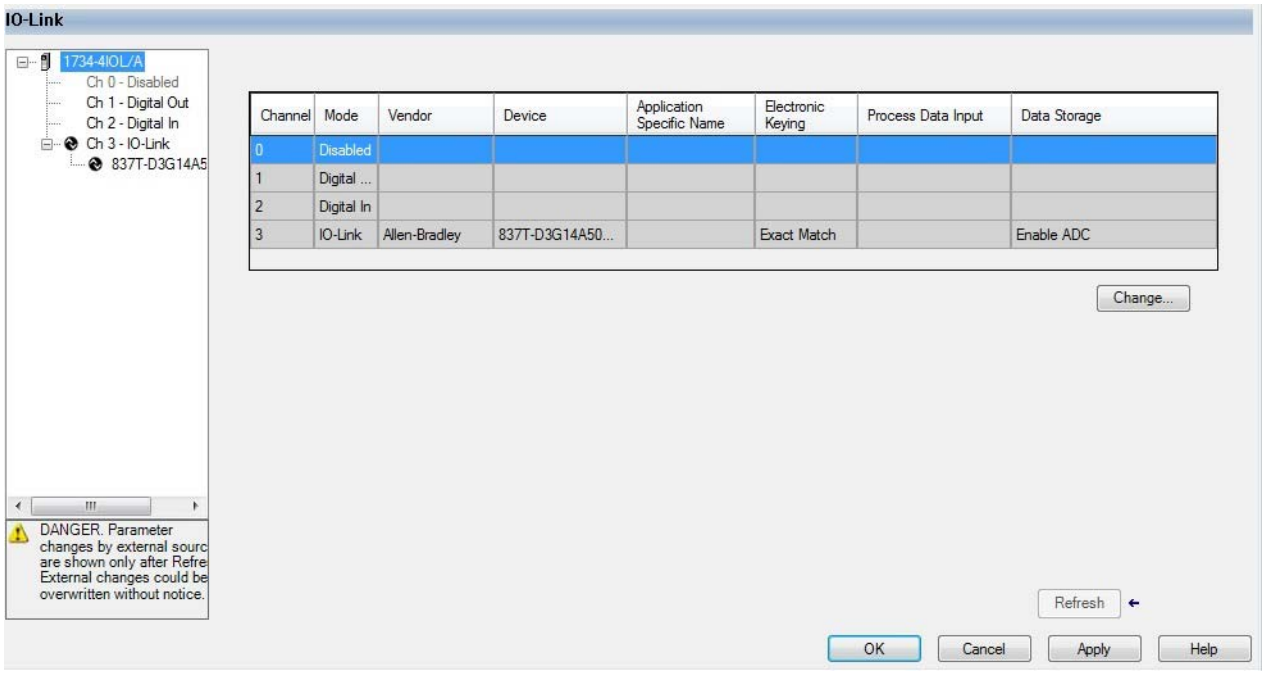
2. For each channel, select the mode from the dropdown menu.
3. Select OK.
   A pop-up dialog box displays.
4. Select Yes.
5. Select Apply to save the changes.
6. Select OK.

For information about the configuration of individual output states for IO-Link and standard digital output channels, see Parameters on the Fault/Program Action Tab on page 38.

Configure IO-Link Devices

Configure IO-Link devices in the IO-Link tab of the Module Properties window.

The IO-Link tab consists of a Channel tree on the left and a working pane on the right.



The Channel tree shows the 1734-4IOL master module at the top, followed by the channels below it. Channels show their mode configuration (standard digital input, standard digital output, IO-Link, Fallback, or Disabled) as assigned in the General tab. For channels configured as IO-Link, you can:

- Register IO-Link Device Description (IODD) files
- Add, change, or delete an IO-Link device

The working pane on the right shows information about the selected channel or device from the Channel tree. From this pane, you can:

- Change channel configuration
  - Add, change, or delete an IO-Link device
  - Configure IO-Link device parameters
- Refresh IO-Link device parameters

Connected Data Mapping

This appendix contains information to help you properly route the data to and from the POINT I/O 4 channel IO-Link master module.

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.

Table 12 - 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
0	Channel 0 Mode[1]							
1	Channel 1 Mode							
2	Channel 2 Mode							
3	Channel 3 Mode							
4...5	IO-Link Channel 0 Vendor ID							
6...8	IO-Link Channel 0 Device ID							
9	Reserved					Ch0 Data Storage Backup Levels		Ch0 Send Config[2]
10...11	IO-Link Channel 1 Vendor ID							
12...14	IO-Link Channel 1 Device ID							
15	Reserved					Ch1 Data Storage Backup Levels		Ch1 Send Config
16...17	IO-Link Channel 2 Vendor ID							
18...20	IO-Link Channel 2 Device ID							
21	Reserved					Ch2 Data Storage Backup Levels		Ch2 Send Config
22...23	IO-Link Channel 3 Vendor ID							
24...26	IO-Link Channel 3 Device ID							
27	Reserved					Ch3 Data Storage Backup Levels		Ch3 Send Config
28	IO-Link Channel 0 Process Output Size[3]							
29	IO-Link Channel 0 Process Input Size							
30	IO-Link Channel 1 Process Output Size							
31	IO-Link Channel 1 Process Input Size							
32	IO-Link Channel 2 Process Output Size							
33	IO-Link Channel 2 Process Input Size							
34	IO-Link Channel 3 Process Output Size							
35	IO-Link Channel 3 Process Input Size							
36	Channel 0 Fault Mode [4]							
37	Channel 0 Idle Mode [1]							
38	Channel 1 Fault Mode [1]							
39	Channel 1 Idle Mode [1]							

Table 12 - Default Data Map for 1734-4IOL – Configuration Assembly Instance 100 (Continued)

Message size: 46 Bytes

Consumed Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
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 (5)							
45	Channel 0 Input On to Off Time Delay (3)							
46	Channel 1 Input Off to On Time Delay (3)							
47	Channel 1 Input On to Off Time Delay (3)							
48	Channel 2 Input Off to On Time Delay (3)							
49	Channel 2 Input On to Off Time Delay (3)							
50	Channel 3 Input Off to On Time Delay (3)							
51	Channel 3 Input On to Off Time Delay (3)							

(1) The channel mode selects the type of I/O for the channel. Valid values are:
0: Disabled
1: Standard Output (DO)
2: Standard Input (DI)
3: IO-Link
4: Fallback

(2) This bit is examined only when the configuration assembly is received while a connection is established (a connection reconfiguration). If this bit is set the IO-Link device configuration (stored in the associated file instance) is downloaded to the device on this channel, otherwise it is not.

(3) Process Output and Process Input sizes can be in the range of 0...32. This value is only valid when the channel is configured for IO-Link. In standard digital input and Fallback modes, 1 byte is produced and 0 bytes are consumed. In standard digital output mode, 0 bytes are produced and 1 byte is consumed. When the channel is disabled, no data is produced or consumed.

(4) Fault and Idle conditions are only valid when the channel is configured for IO-Link or standard digital output.

(5) Time delays are specified in 1 ms increments, valid range is 0...65 (a value of 0 disables the input filter).

Table 13 - 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.

Table 14 - 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)							

Table 14 - 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: 1 = No IO-Link size configured
Bit 10: 0 = Channel configured as Fallback is in the IO-Link operating state, or channel not configured for Fallback;
1 = Channel configured as Fallback is in the DI operating state (This bit is not included in the Roll Up Status).
Bits 11...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 LED 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

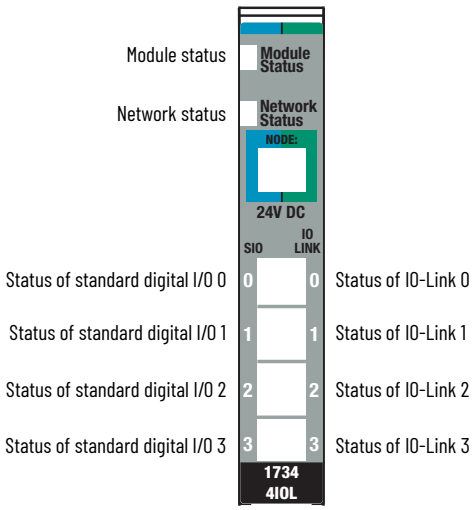


Table 19 - Indicator Status for Modules

Indicator	Status	Description
Module status	Off	No power is applied to the device.
	Green	Device is operating normally.
	Flashing green	Device needs commissioning due to missing, incomplete, or incorrect configuration.
	Flashing red	One of the following conditions exists: - A recoverable fault occurred. - A module firmware update is in progress. - A module firmware update attempt failed.
	Red	An unrecoverable fault occurred. Self-test failure present (checksum failure, or ramtest failure at cycle power). Firmware fatal error present.
	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.
	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 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 the communication faulted state. Device has received and accepted an Identity Communication Faulted Request – long protocol message.
Channel status	Off	Standard digital input or output is in Off state, configured in IO-Link mode, or no power is applied to the device.
	Yellow	Standard digital input or output is in On state.
IO-Link status	Off	IO-Link is disabled, the 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 active. IO-Link is enabled.