POINT I/O 4 Channel IO-Link Master Module

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.

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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.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
⚠	**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 consequence
⚡	**WARNING:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
♨	**WARNING:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

Chapter 5

**Configure the POINT I/O
4 Channel IO-Link Master
Module as Standard Digital
Input or Output Using the Studio
5000 Add-on Profile**

Appendix A

Connected Data Mapping

Appendix B

Supported Events

Appendix C

Troubleshooting

Notes:

Purpose of This Manual

This manual describes how to install, configure, and troubleshoot your POINT I/O™ IO-link Master module.

The POINT I/O 4 Channel IO-Link Master module can only be used in EtherNet/IP systems. Refer to EtherNet/IP publications in addition to this manual.

When using the POINT I/O 4 Channel IO-Link Master module with a communication adapter, use this manual in conjunction with the user manual for the adapter you are using as shown in the following table.

When Using POINT I/O Modules on This Network	Refer to Publication for	Catalog No.	Publication No.
EtherNet/IP network	EtherNet/IP adapter	1734-AENT/B	1734-UM018
EtherNet/IP redundant network	EtherNet/IP dual port adapter	1734-AENTR/B	1734-UM017

Who Should Use This Manual

This manual is intended for qualified personnel. You should be familiar with Studio 5000®, EtherNet/IP Network, and IO-Link terminology. If you do not qualify, refer to your software documentation or online help before attempting to use these modules.

Related Publications

Refer to this table for a list of related POINT I/O products and documentation. The publications are available from http://literature.rockwellautomation.com/. For specification and safety certification information, refer to the installation instructions.

Resource	Description
POINT I/O 4 Channel IO-Link Master	
POINT I/O 4 Channel IO-Link Master Installation Instructions, publication 1734-IN043	Provides installation information and wiring diagrams for the 1734-4IOL module.
POINT I/O 4 Channel IO-Link Master Release Notes, publication 1734-RN024	Release notes for the 1734-4IOL module
Communication Devices	
1734 POINT I/O EtherNet/IP Adapter Installation Instructions, publication 1734-IN042	Provides installation information about 1734-AENT, Series B adapters.
1734 POINT I/O Dual Port EtherNet/IP Adapter, publication 1734-IN041	Provides installation information about 1734-AENTR, Series B adapters.
POINT I/O EtherNet/IP Adapter Module User Manual, publication 1734-UM018	Describes how to use 1734-AENT, Series B adapters.
POINT I/O and ArmorPOINT I/O Dual Port EtherNet/IP Adapters User Manual, publication 1734-UM017	Describes how to use 1734-AENTR, Series B adapters.
Power Supplies, Wiring Base Assemblies, Miscellaneous	
Field Potential Distributor Installation Instructions, publication 1734-IN059	Provides installation information about 1734-FPD distributors.
POINT I/O 24V dc Expansion Power Supply Installation Instructions, publication 1734-IN058	Provides installation information about 1734-EP24DC power supplies.
POINT I/O 120/240V ac Expansion Power Supply Installation Instructions, publication 1734-IN017	Provides installation information about 1734-EPAC power supplies.
POINT I/O Common Terminal Module Installation Instructions, publication 1734-IN024	Provides installation information about 1734-CTM modules.
POINT I/O Voltage Terminal Module Installation Instructions, publication 1734-IN024	Provides installation information about 1734-VTM modules.
POINT I/O Wiring Base Assembly Installation Instructions, publication 1734-IN511	Provides installation information about 1734-TB and 1734-TBS assemblies.
POINT I/O Wiring Base Assembly Installation Instructions, publication 1734-IN013	Provides installation information about 1734-TB3 and 1734-TB3S assemblies.
POINT I/O One-piece Wiring Base Assembly Installation Instructions, publication 1734-IN028	Provides installation information about 1734-TOP, 1734-TOPS, 1734-TOP3 and 1734-TOP3S assemblies.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Detailed information on proper wiring and grounding techniques.

Introduction

About This Chapter

This chapter introduces POINT I/O 4 Channel IO-Link Master module capability.

About the IO-Link Master 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 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 1734-AENT or 1734-AENTR, Series B EtherNet/IP adapters, firmware version 5.012 or later, and Studio 5000[1] software, version 20 or later.

Product Description

The following table explains the product identity.

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.

[1] Studio 5000 Logix Designer is the latest version (starting at v21) of RSLogix 5000 and provides one software package for discrete, process, batch, motion, safety and drive-based applications.

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 4, Configure the POINT I/O 4 Channel IO-Link Master as IO-Link Master Using the Studio 5000 Add-on Profile.

POINT I/O 4 Channel IO-Link Master - Standard Digital Input or Standard Digital Output Mode

The module can be used as a standard digital POINT I/O module.

See Chapter 5, Configure the POINT I/O 4 Channel IO-Link Master Module as Standard Digital Input or Output Using the Studio 5000 Add-on Profile.

Quick Start - Prepare the Module to Work on EtherNet/IP

Mount the Module

See [Chapter 2](#).

↓

Wire the Module

See [Chapter 2](#).

↓

Add the POINT I/O 4 Channel IO-Link Master Module on an Ethernet Network

See [Chapter 3](#).

Configure the POINT I/O 4 Channel IO-Link Master Module as IO-Link Master Using Studio 5000 Add-on Profile

See [Chapter 4](#).

Configure the POINT I/O 4 Channel IO-Link Master Module as Standard Digital Input or Output Using Studio 5000 Add-on Profile

See [Chapter 5](#).

Notes:

Install the POINT I/O 4 Channel IO-Link Master Module

About This Chapter

Read this chapter for installation and wiring information including how to complete the following:

- Install the Mounting Base
- Install the Module
- Install the Removable Terminal Block
- Remove a Mounting Base
- Wire the Modules

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: All connected I/O must be powered from a source compliant with the following:
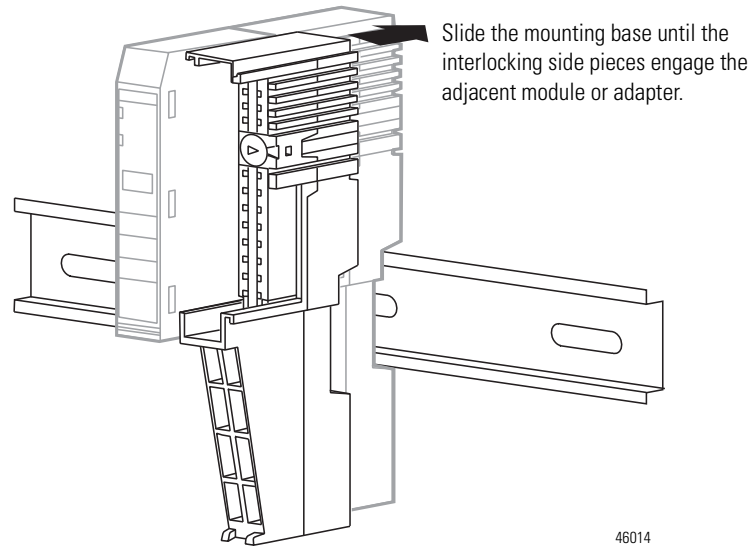Safety Extra Low Voltage (SELV) or Protected Extra Low Voltage (PELV).

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

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.

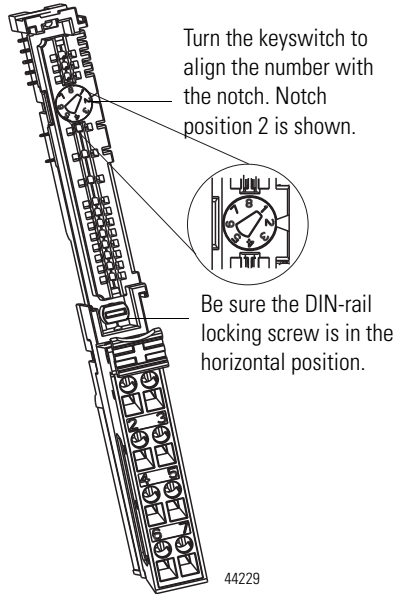> ⚠️ **ATTENTION:** Do not discard the end cap. Use this end cap to cover the exposed interconnections on the last mounting base on the DIN rail. Failure to do so could result in equipment damage or injury from electric shock.

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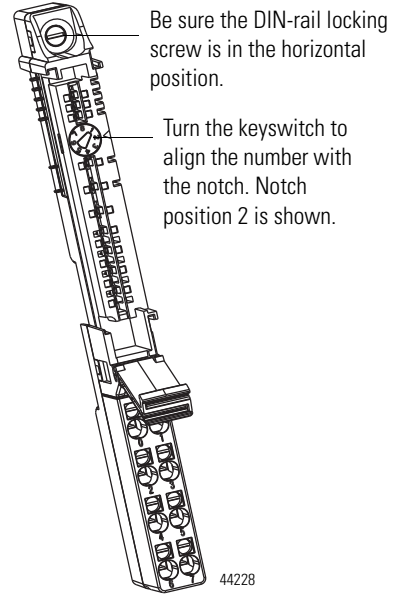
1. Using a bladed screwdriver, rotate the keyswitch on the mounting base clockwise until the number required for the type of module being installed aligns with the notch in the base.

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
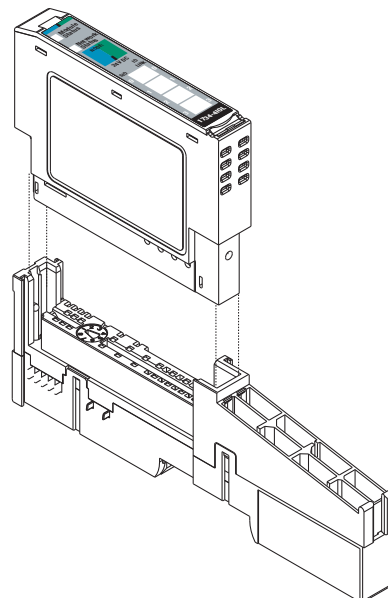
Install the Removable Terminal Block

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
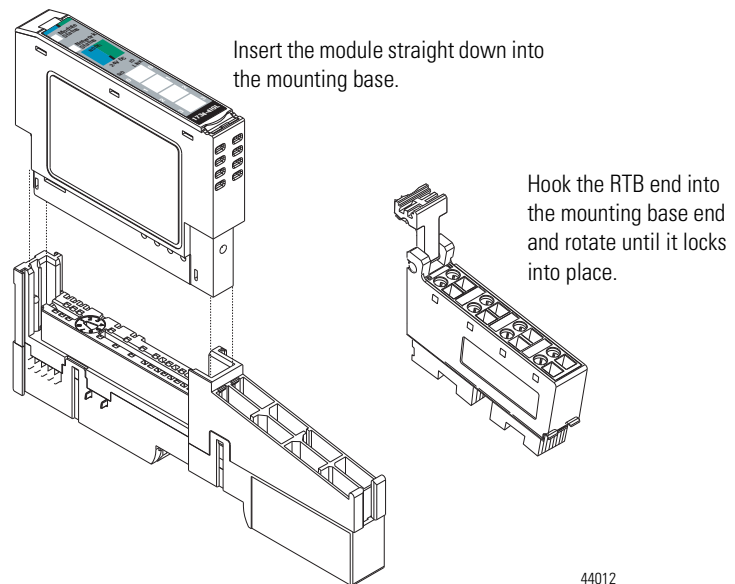
Remove a Mounting Base

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 Modules

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

POINT I/O 4-Channel IO-Link Master Module – 1734-4IOL
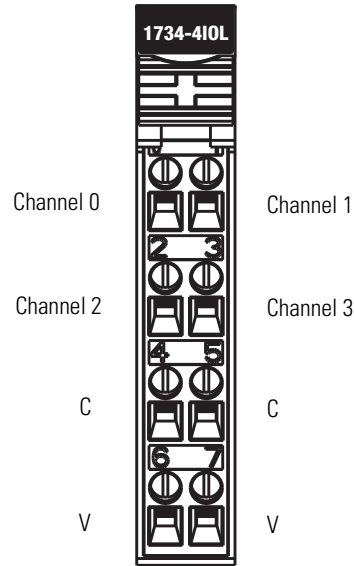
POINT I/O 4-Channel IO-Link Master Module Wiring – IO-Link Mode
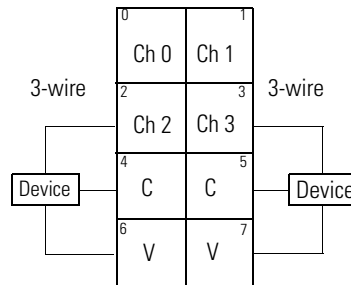
Ch = IO-Link channel
C = Common
V = Voltage
Device = IO-Link device (actuators, sensors)

Channel	Common	Voltage
0	4	6
1	5	7
2	4	6
3	5	7
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 Input Mode

In = Input channel
C = Common
V = Voltage
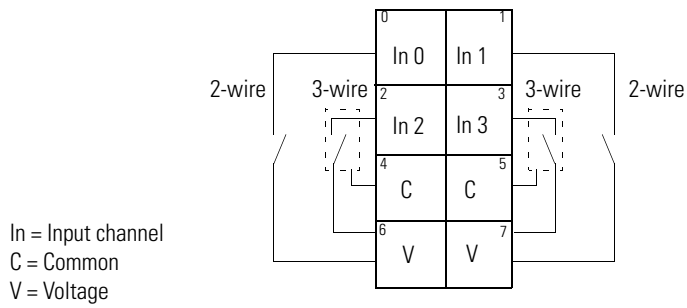
Channel	Input	Common	Voltage
Channel 0	0	4	6
Channel 1	1	5	7
Channel 2	2	4	6
Channel 3	3	5	7
Connect common on 3-wire inputs. Power is supplied through the internal power bus.			

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

Out = Output channel
C = Common
V = Voltage
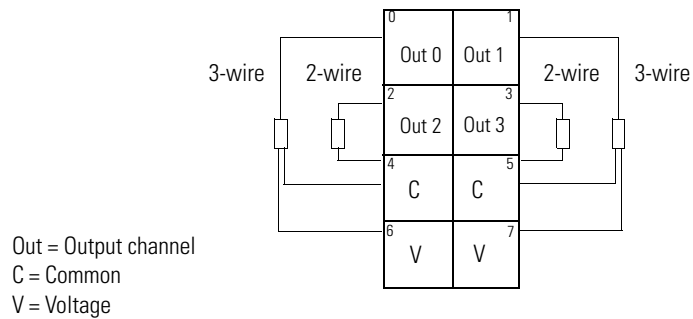
Channel	Output	Common	Voltage
Channel 0	0	4	6
Channel 1	1	5	7
Channel 2	2	4	6
Channel 3	3	5	7
Connect voltage on 3-wire outputs. Power is supplied through the internal power bus.			

Notes:

Add the POINT I/O 4 Channel IO-Link Master Module on an EtherNet/IP Network

About This Chapter

In this chapter, you will learn how to perform the following tasks:

- Install the POINT I/O 4 Channel IO-Link Master module Add-on Profile
- Add a POINT I/O 4 Channel IO-Link Master module in Studio 5000 when using EtherNet/IP adapters
- Understand how object tags are created for your use

Install the POINT I/O 4 Channel IO-Link Master Add-On Profile

Before you can use your POINT I/O 4 Channel IO-Link Master Module in Studio 5000, you must set up the module profile so that it can be recognized.

Follow these steps to set up the profile.

IMPORTANT	The illustrations of the Studio 5000 Module Profile Setup software dialog boxes shown in this manual are samples. Because your system configurations or the firmware kits are different, the dialog boxes you see when running the tool may be different from the ones you see here.

1. In the installation package, double-click MPSetup.exe. The Welcome dialog box appears. Click Next.
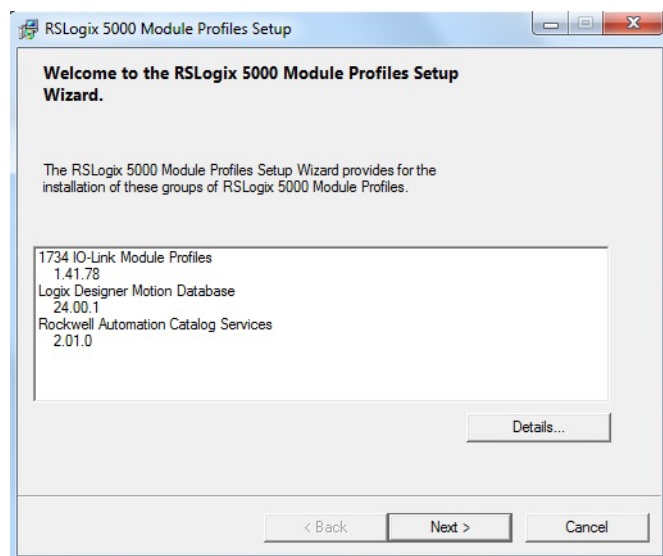
2. Read and agree to the license and click Next.
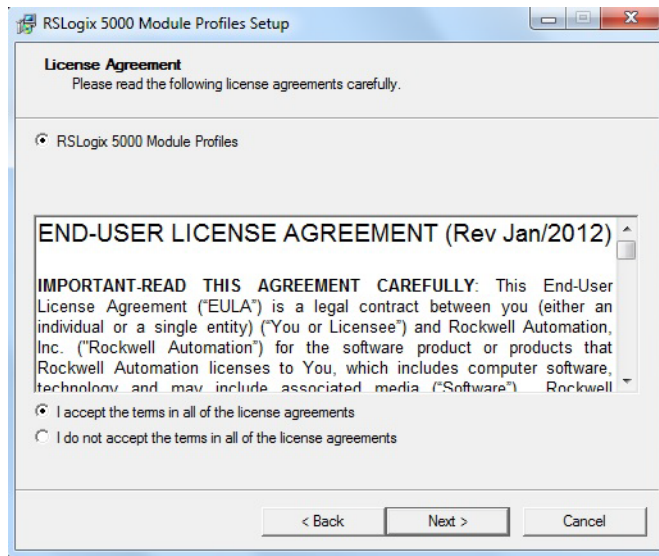
3. Select the option to install Studio 5000 Module Profile and click Next.
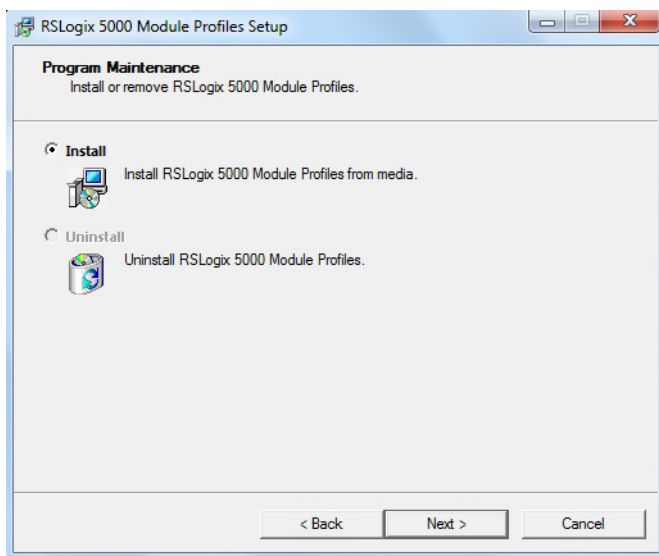
4. The Setup Wizard displays the profiles to be installed. Click Install to start the installation.
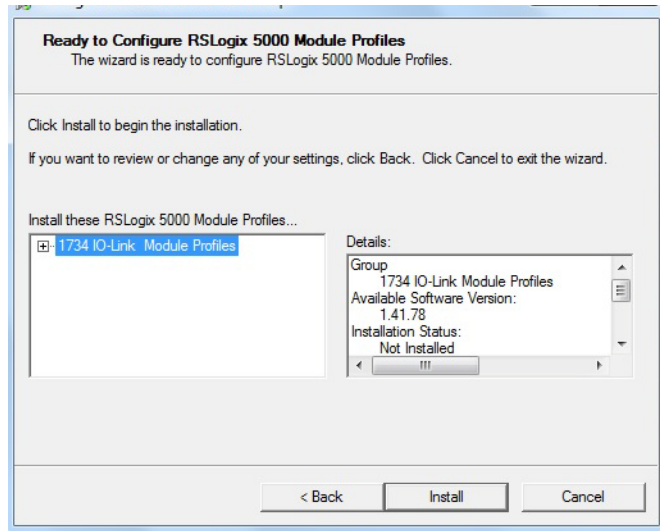
5. The Setup Wizard will begin to install the profiles.
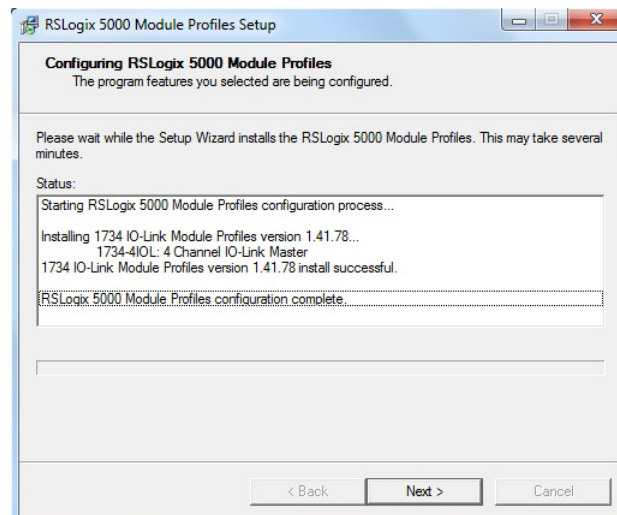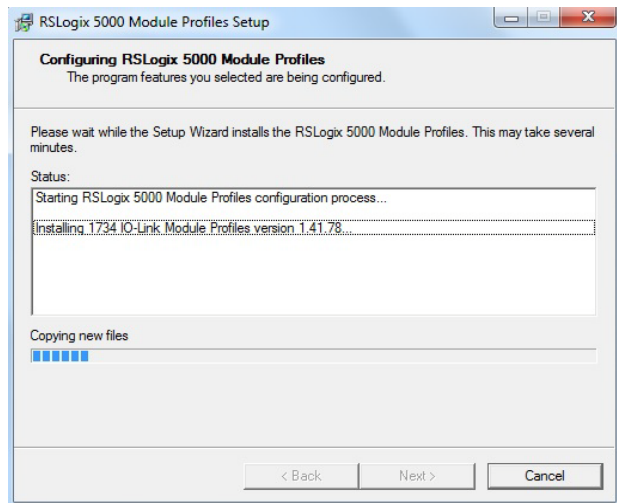
6. Follow the instructions on the next dialog boxes to complete the installation and configuration.
When installation is complete the following dialog box appears. Click Finish.
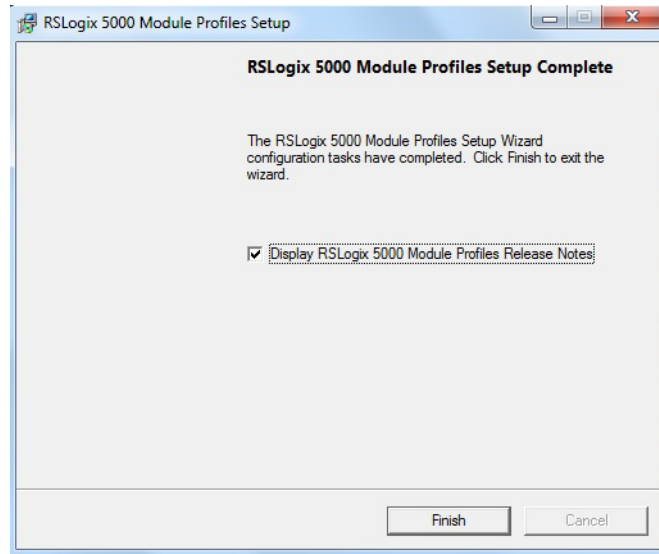
Add a POINT I/O 4 Channel IO-Link Master Module to Studio 5000

To add the POINT I/O 4 Channel IO-Link Master module to Studio 5000, do the following.

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

> ⚠️ **ATTENTION:** The 1734-4IOL module requires a 1734-AENT or 1734-AENTR, Series B adapter.

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

2. Right-click the POINT I/O Chassis and select New Module.
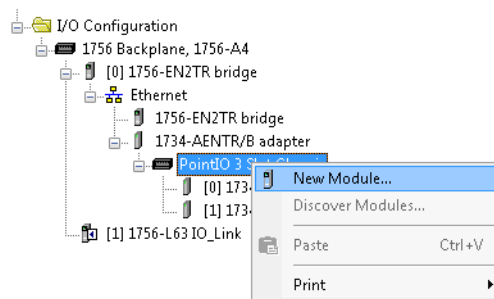
3. Under the Specialty, Digital, or Communications category, double-click
the 1734-4IOL module.
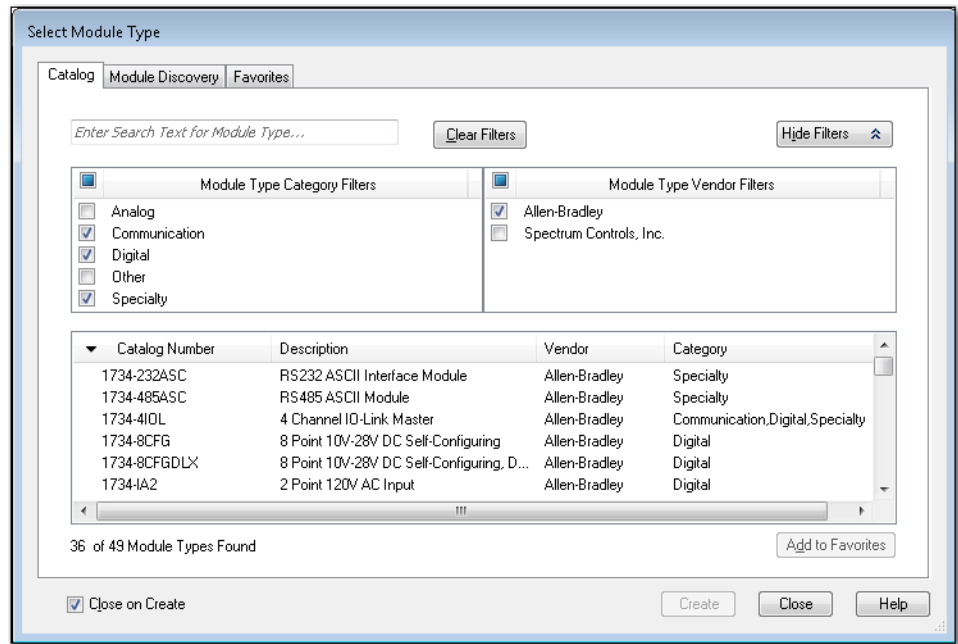
The General tab of the Add-on Profile appears.

4. Select the slot number from the Slot drop-down menu.

On the General tab, you can give the module a Name which is also used in
the name of the Tag elements that get created for the module, change the
Electronic Keying for the module, and configure the module channel
modes using the Change button under Module Definition.
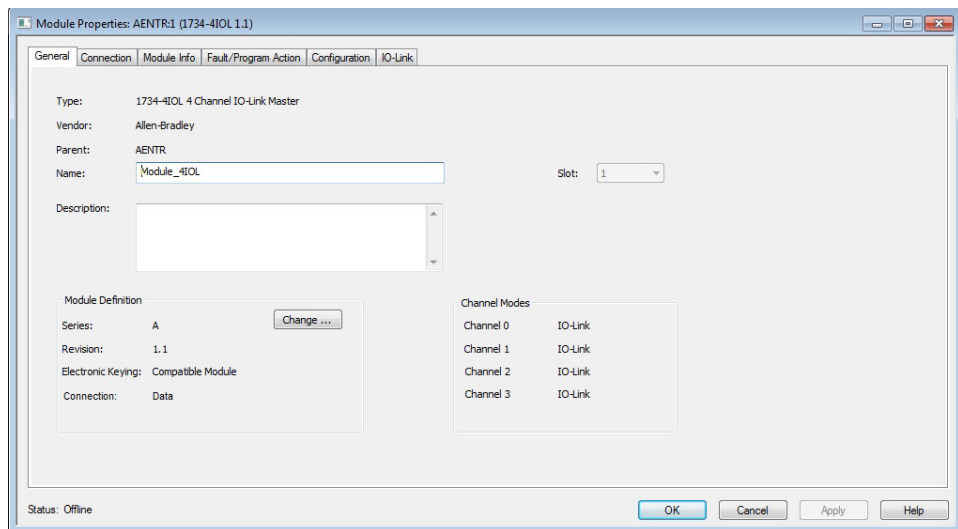
On the Connection tab, you can change the Requested Packet Interval (RPI) (the default is 20 ms.), choose to inhibit the module, configure the controller so that a loss of connection to this module causes a major fault, and view module faults.

For the IO-Link Master module, the lowest allowable RPI is 2ms.
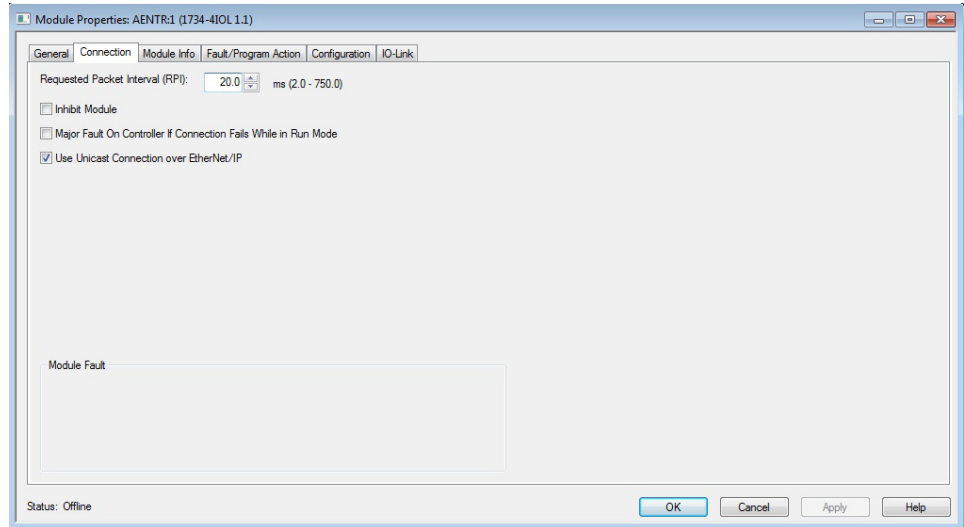
The Module Info tab will display the status and identity information of the IO-Link Master module when the module is online.
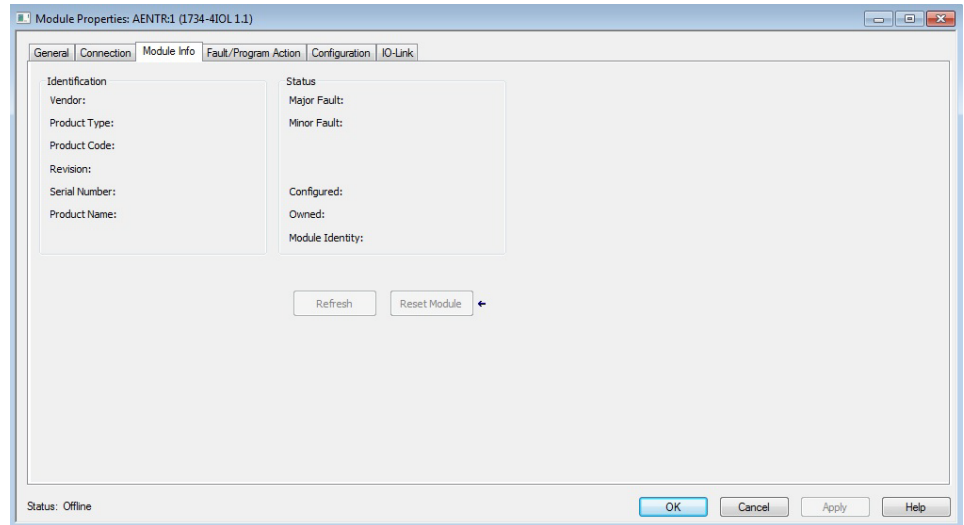
On the Fault/Program tab, you can configure the state of the outputs during Program and Fault modes for channels that are configured as standard digital output or IO-Link.
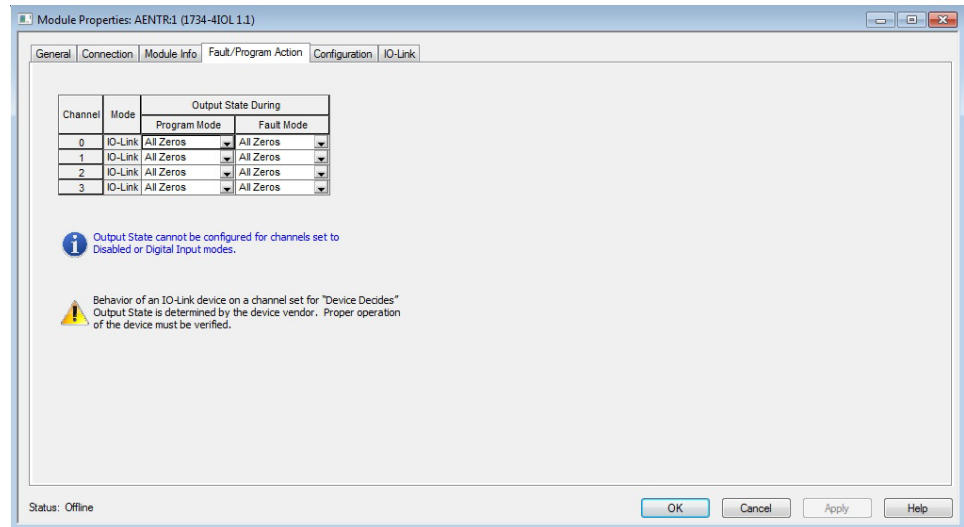
On the Configuration tab, you can change the Input Filter Time for each channel configured as standard digital input.
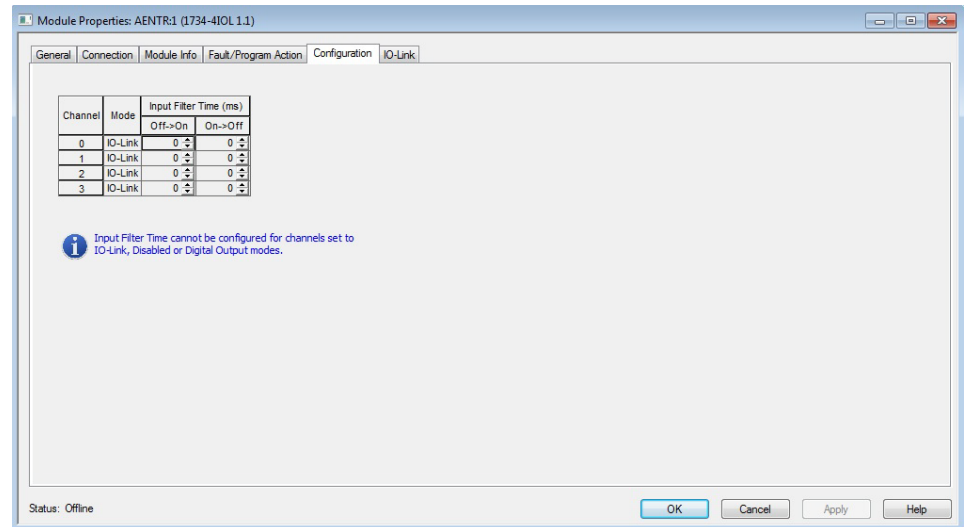
On the IO-Link tab, you can add and delete IO-Link devices to the channels of the Master Module configured as IO-Link, modify information for IO-Link channels, register IO-Link Device Description (IODD) files, and configure parameters for IO-Link devices.
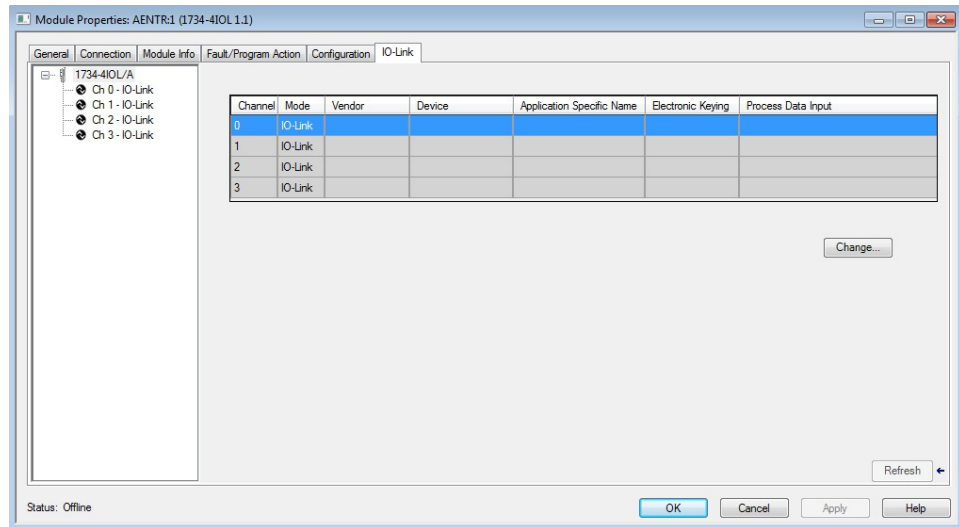
IO-Link Tag Elements

Logix tag elements get created by the Add-on Profile based on the level of integration for each IO-Link device. There are three levels currently offered:

- Generic integration is available for all IO-Link devices and does not require an IODD file.

- IODD Basic integration is available for all IO-Link devices and requires that an IODD file be registered with Studio 5000 software.

- IODD Advanced integration is available for Rockwell Automation and partner IO-Link devices, and is heavily dependent on a well-formed IODD file being registered with Studio 5000 software.

The Generic level of integration allows any IO-Link device to communicate with the Logix controller. SINT arrays are created for the device's Process Data. The size of the arrays default to 32 bytes in/out but can be modified. Device level keying is supported but there is no device parameter management provided. This must be done using message instructions to read/write data from the device. Further, data type conversion and endian swapping may be required in ladder logic.

The IODD Basic level of integration is similar to the Generic integration described above except that the size of the SINT arrays created for the device's Process Data is taken from the device's IODD file.

For the IODD Advanced level of integration, Logix tag elements are determined by the Process Data available for each IO-Link device, with detailed tag member

names being created based on information from the IODD file. The Master Module translates and maps the information from IO-Link data types to Logix data types and also performs big-endian to little-endian (and little-endian to big-endian) swapping as required. Additionally, the device's configuration parameters are stored by the controller and automatically provided to the device and/or IO-Link Master on power loss and/or replacement.

I/O Tags

For channels that are configured for either standard digital input or standard digital output, standard Logix tag elements are created in line with the other POINT I/O catalogs.

Configuration Data

A Configuration tag is created for each Master Module. The Configuration Data Type includes the following:

- Fault/Program mode setting – For channels configured as standard digital output and IO-Link.
  Valid values for channels configured as standard digital output are as follows:
    - Off – value set to 100 (default)
    - On – value set to 101
    - Hold – value set to 102

  Valid values for channels configured as IO-Link are as follows:
    - All Zeros – value set to 103 (default)
    - Hold – value set to 104
    - Device Decides – value set to 105. The IO-Link Master module gives the control to the IO-Link device, and the IO-Link device would follow what the device vendor had specified as a fault or program state for that device.

  For channels configured as disabled or standard digital input, the fault or program mode is -1 (default).
- Digital filter settings – For channels configured as standard digital input. The valid range is from zero to 65 milliseconds with the default setting of zero.

Details on configuring the module can be found in Chapter 4 and Chapter 5.

Notes:

Configure the POINT I/O 4 Channel IO-Link Master as IO-Link Master Using the Studio 5000 Add-on Profile

About This Chapter

In this chapter, you will learn how to configure the module as an IO-Link Master using the Studio 5000 Add-on Profile.

This chapter covers the following topics:

- Typical IO-Link user interface roles, and what is accessible from the Add-on Profile
- Different IO-Link device integration levels
- Configuration of the POINT I/O 4 Channel IO-Link Master module as IO-Link Master in the Studio 5000 Add-on Profile
- Configuration of IO-Link device parameters from the Add-on Profile and by message instructions

User Roles

IO-Link user interfaces are typically divided into three separate role types, which are Observation, Maintenance, and Specialist roles. The device vendor decides how to organize and allow access for the roles in view in the interface.

- Observation Role - This menu type role is designed for users who may not carry out any modification on the device and are often more restricted by read-only access. This assures that while visibility is allowed, critical parameters are not changed.
- Maintenance Role - This menu type role is designed for users who undertake functional editing, but are allowed limited access to more critical parameter types.
- Specialist Role - This menu type role is designed for users to have total access to the device and all associated parameter types. For example, all read-write parameters could be viewed and changed.

The POINT I/O 4 Channel IO-Link Master Module assumes the visibility of the Specialist Role in the IODD file. Anything that is available in Specialist Role view is available in the Add-on Profile. The Observation Role and Maintenance views are not supported in the Add-on Profile.

IO-Link Device Integration Levels

There are three levels of IO-Link device integration. Each level offers a different user experience.

- **IODD Advanced**

  This integration level is available for Rockwell Automation and partner IO-Link devices, and is heavily dependent on a well-formed IODD file being registered with the Studio 5000 software.

  IODD Advanced integration provides the ability to:
  – configure the IO-Link device and its parameters from the Add-on Profile
  – store the device configuration in the controller (and the IO-Link Master module) and have the configuration automatically downloaded by the IO-Link Master module or controller after power cycle or replacement of IO-Link Master or device (also known as Automatic Device Configuration or ADC)
  – perform correlation checks of configuration parameters between connected IO-Link devices and the controller, with the ability to take corrective action from the Add-on Profile. This check is performed to sync up the device parameter between IO Link device and Controller.

- **IODD Basic**

  This integration level is available for all IO-Link devices and requires that an IODD file be registered with the Studio 5000 software.

  IODD Basic integration has the following limitations:
  – Only the Common tab, which provides general IO-Link device information from the IODD file, is displayed.
  – No user interface is provided for device configuration parameters (read-write, write-only, and read-only parameters). Message instructions to the IO-Link Device Parameter Object must be used to read and change device parameters.
  – Correlation function and Automatic Device Configuration are not supported.

- **Generic**

  This level of integration is available for all IO-Link devices and does not require an IODD file.

  Generic integration has the following limitations:
  – In the Add-on Profile, you can configure only the Vendor ID, Device ID, Input and Output lengths, and Electronic keying information.
  – General device information found in the Common tab for IODD Basic and IODD Advanced integrated IO-Link devices are not shown.
  – No user interface is provided for device configuration parameters (read-write, write-only, and read-only parameters). Message instructions to the IO-Link Device Parameter Object must be used to read and change device parameters.

– Correlation function and Automatic Device Configuration are not supported.

Configure Channel Mode

The POINT I/O 4 Channel IO-Link Master Module has four channels that can be individually configured as standard digital input, standard digital output, IO-Link, or disabled.

The channel mode is configured in the General tab of the Add-on Profile.

1. From the General tab, in the Module Definition section, click the Change button. The following dialog box appears.
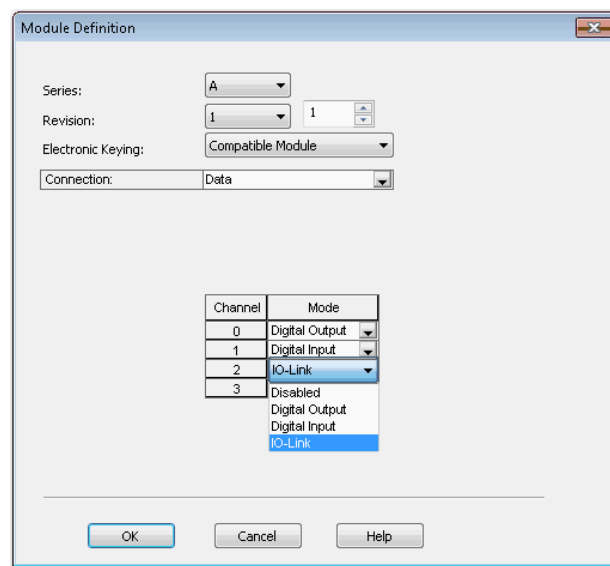
Note that Electronic Keying on this dialog is for the IO-Link Master module and not for the IO-Link devices that are connected to the IO-Link Master module.
The default mode for the Channel is IO-Link.

2. For each channel, select the mode from the drop-down menu.

3. Click OK.
A pop-up dialog box displays.

4. Click Yes.

5. Click Apply to save the changes.

6. Click OK.

For information about configuration of individual output states for IO-Link and standard digital output channels, refer to Parameters on the Fault/Program Action Tab on page 51

Configure IO-Link Devices

IO-Link devices are configured in the IO-Link tab of the Add-on Profile.

The IO-Link tab consists of a Channel tree on the left and a working pane on the right.
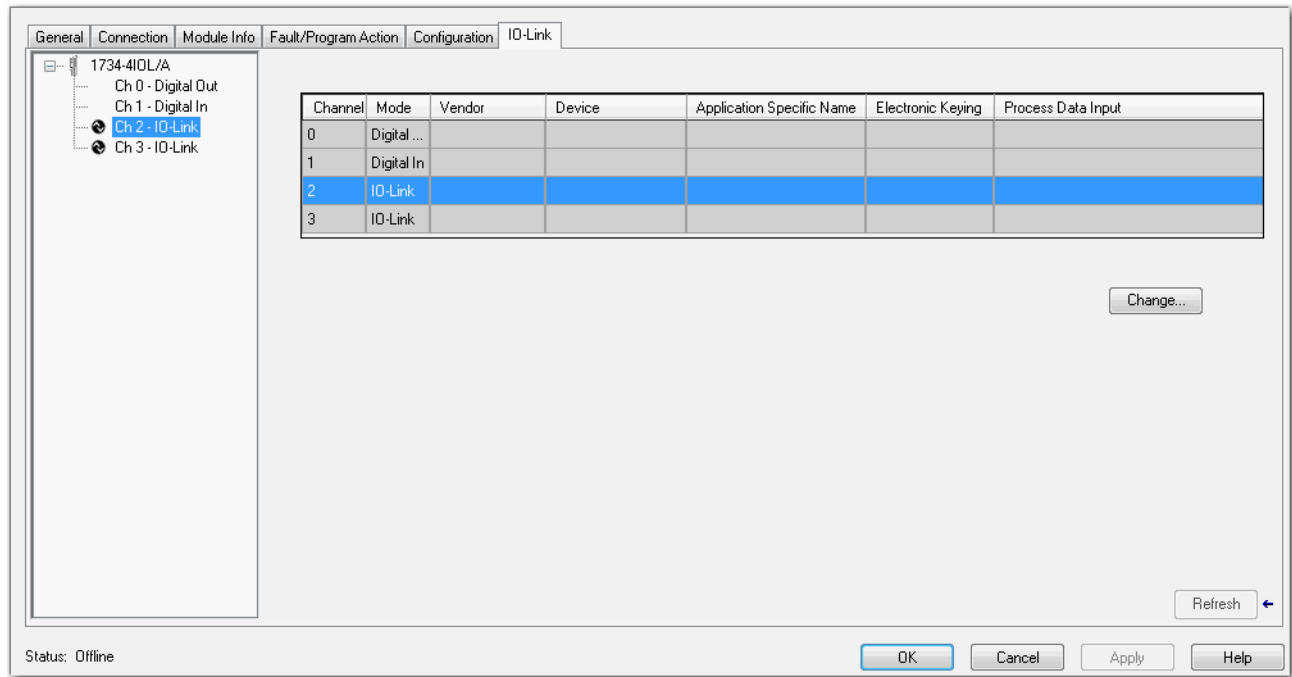
The Channel tree shows the Master Module (the 1734-4IOL module) at the top, followed by the channels below it. Channels show their mode configuration (standard digital input, standard digital output, IO-Link, or Disabled) as assigned in the General tab. For channels configured as IO-Link, you can:

- 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

Register an IODD file

An IO-Link Device Description (IODD) file is a set of multiple files including a file in XML format, which describes all parameters associated with the device. The IODD set also includes graphic image files of the device and vendor logo.

Before you proceed with this task, take note that:

- Only IODD files based on IO-Link specification v1.0.1 or v1.1 can be registered.

- You need administrator rights for the machine where the Add-on Profile is installed to be able to register an IODD file.

To register an IODD file:

1. From the IO-Link tab, in the Channel tree, right-click on the IO-Link channel.

2. Select Register IODD.
   The following dialog box appears.
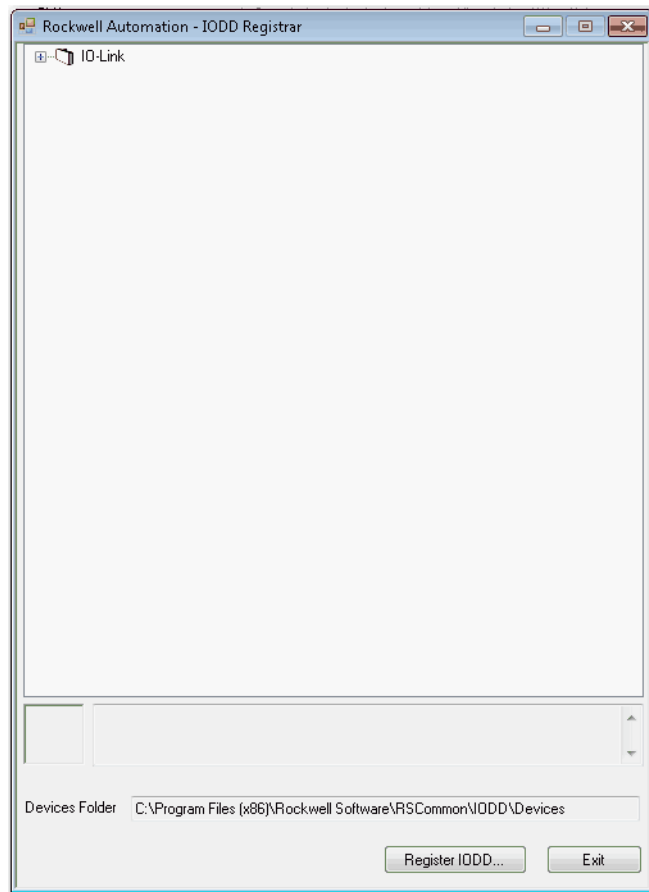
3. Click Register IODD. The following dialog box appears.
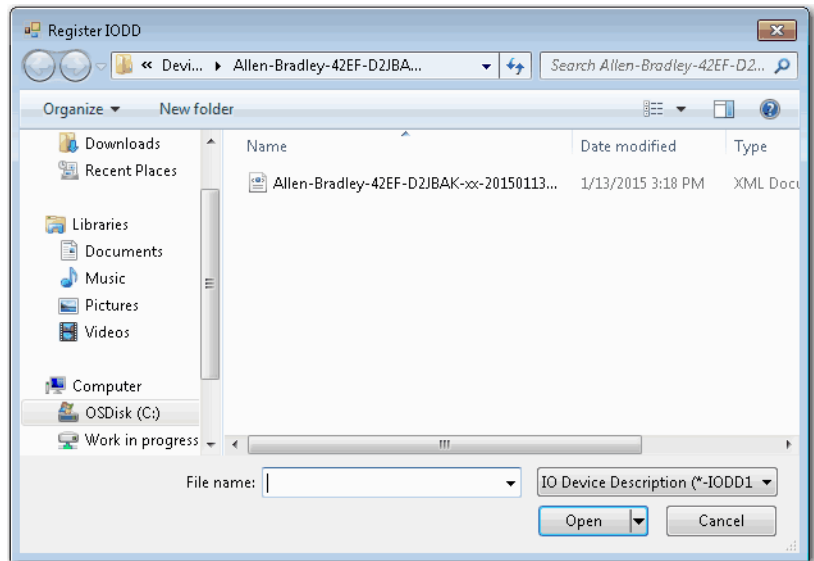
4. Locate the IODD XML file, and then click Open.
   This returns you to the previous dialog box that shows the tree list view of registered IODD files.

5. Click Exit.

Add an IO-Link Device

After you register an IODD file, you can add an IO-Link device to an IO-Link channel. This configuration can only be done while the project is offline.

1. In the channel tree, right-click on the IO-Link channel, and then select Change.
   Alternatively, you can click the Change button on the working pane.
   The following dialog box appears.
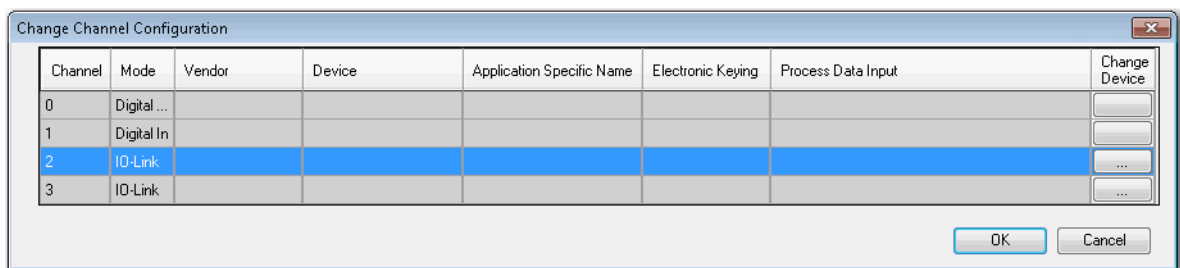
2. Click the button in the Change Device column for the IO-Link channel. The following dialog box appears.
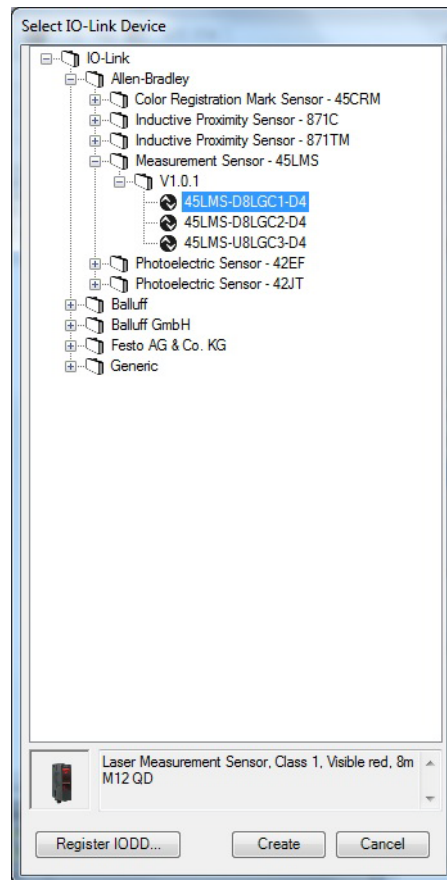
3. Select the IO-Link device from the tree.

4. Click Create.

5. Click the OK button from the Change Channel Configuration dialog box. A pop-up dialog box displays.

6. Click Yes. You will be reverted to the General tab.

7. Click Apply to save the changes, and then click OK.

Note that you can also add a Generic IO-Link device that does not have an IODD file. Refer to Configure IO-Link Device Parameters Using Message Instructions on page 46 for more information.

Change IO-Link Channel Configuration

You can change the Application Specific Name, Electronic Keying, and Process Data Input configuration for an IO-Link channel while the project is in Offline mode.

Before you proceed with this task, take note that:

- The Application Specific Name cannot be changed for a Generic IO-Link device.
- For a Generic IO-Link device, the Vendor ID and Device ID cannot be 0 when Electronic Keying is set to Exact Match.

To change IO-Link Channel configuration:

1. In the IO-Link tab, click Change.
   The following dialog box appears.
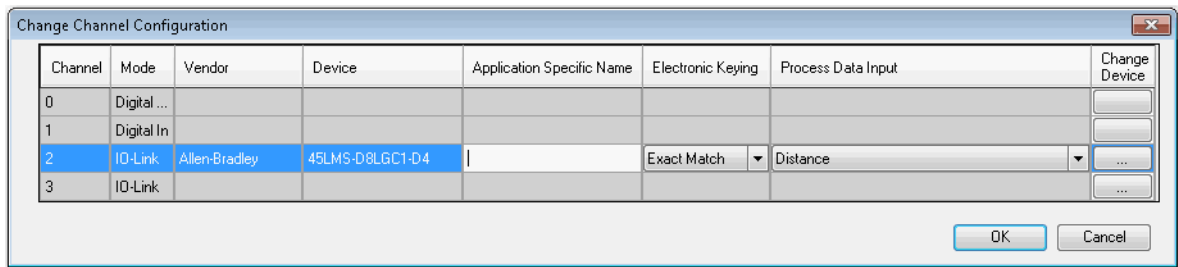
2. Modify the information.
   a. Application Specific Name - Enter an application-specific name.
      The purpose of the Application Specific Name is to add themed naming to distinguish the sensors within the machine and the associated project profile in the Add-on Profile. This allows for easier maintenance and operation since the device is further identified by how it is used on the machine/project.
      The application specific name can also be changed from the IO-Link device's Identification tab if the tab is available.
   b. Electronic Keying Information - Select Exact Match or Disabled from the drop-down menu.
      The Exact Match and Disabled keying options in this dialog correspond to the Compatible and No Check keying options in IO-Link terminology respectively.
      When Exact Match is selected, the connected IO-Link device must have the same Vendor ID and Device ID information that has been configured for that channel. If they do not match, IO-Link communications will not be established and a Keying Fault status bit will be set.
      When Disabled is selected, key check is not performed.
   c. Process Data Input - Select the input data from the drop-down menu (for devices that support multiple layouts of input data).

3. Click OK. A pop-up dialog box displays.

4. Click Yes. You will be reverted to the General tab.

5. Click Apply to save the changes.

6. Click OK.

Configure IO-Link Device Parameters Using the Add-on Profile

After you add an IO-Link device, you can configure device parameters for IO-link devices with IODD Advanced integration level from the Add-on Profile.

Before you proceed with this task, take note that:

- Parameters vary depending on data provided in the IODD file of an IO-Link device.

- You cannot change or read a Generic IO-Link device's parameters from the Add-on Profile. Refer to Configure IO-Link Device Parameters Using Message Instructions on page 46 for more information.

1. In the Channel tree, click the IO-Link device under the IO-Link channel. The Common tab appears on the working pane.
   Depending on the data provided in the IODD file, up to four more tabs may be shown for the selected device: Identification, Observation, Parameter, and Diagnosis.

   The Common tab provides general device information taken from the IODD file including the vendor logo and an image of the device.
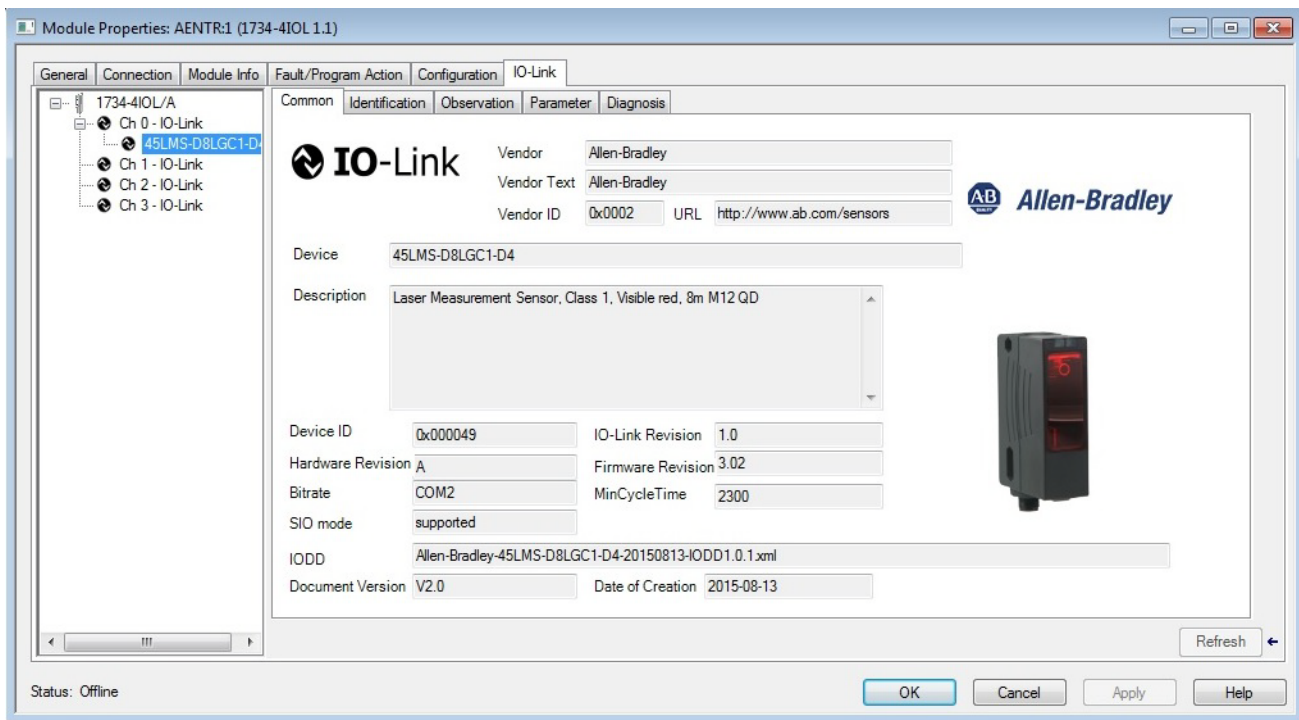
The Identification tab contains parameters with device identity information such as revisions and serial number. The application specific name of the device can also be changed from this tab.
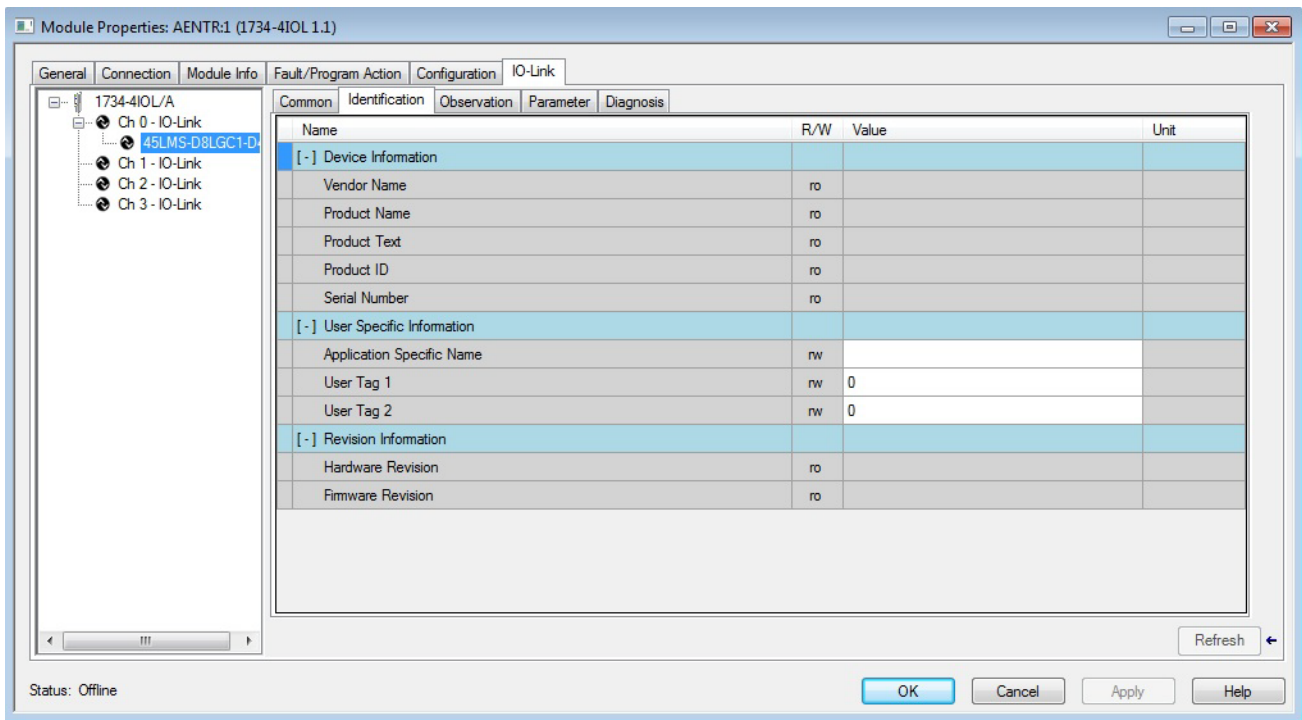
The Observation tab contains only I/O data, which can be used for debugging.
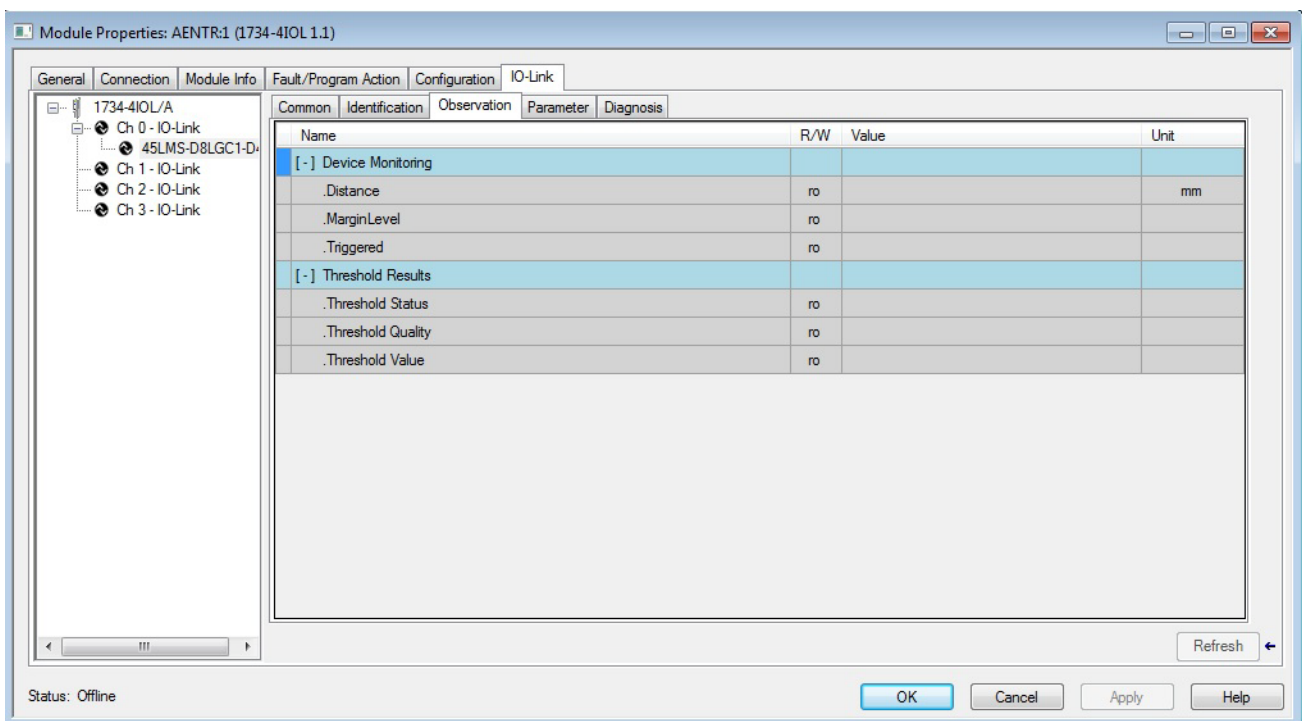
The Parameter tab holds the most commonly used parameters to set up an IO-Link device. Parameters with the highest usage are placed at the top.
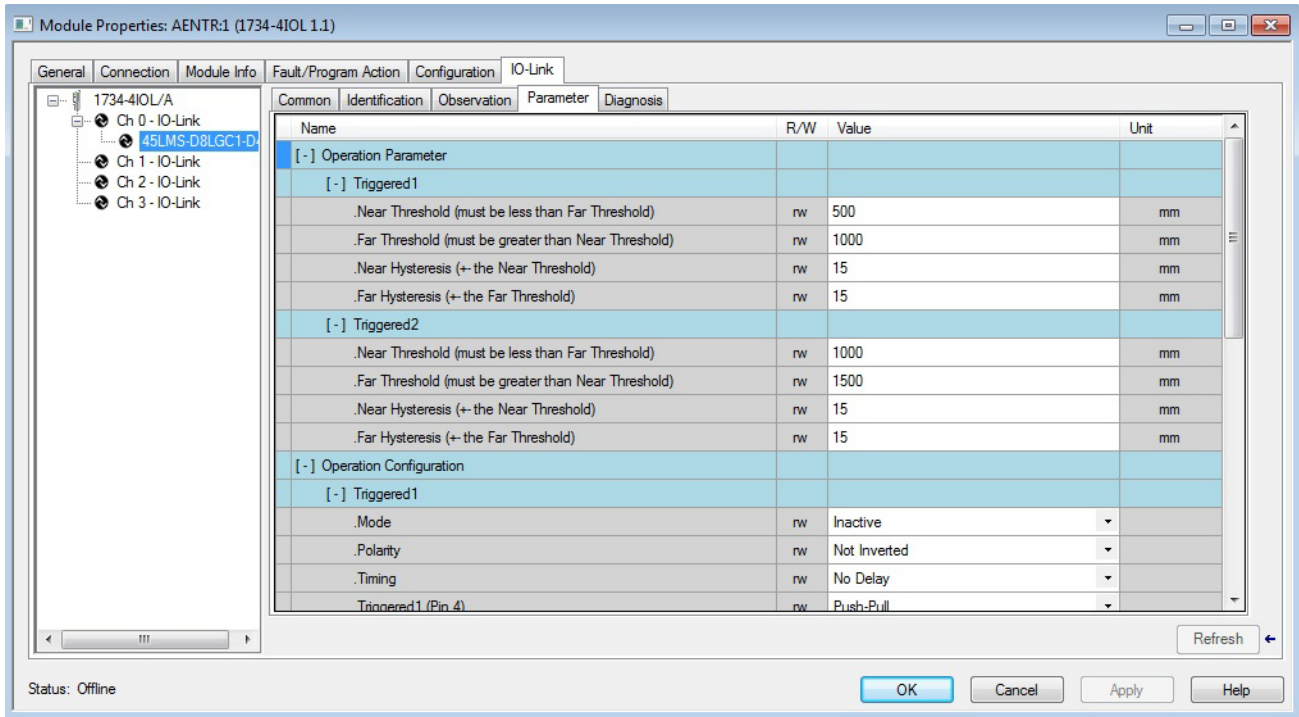
The Diagnosis tab contains parameters for trouble-shooting the IO-Link device such as temperature.
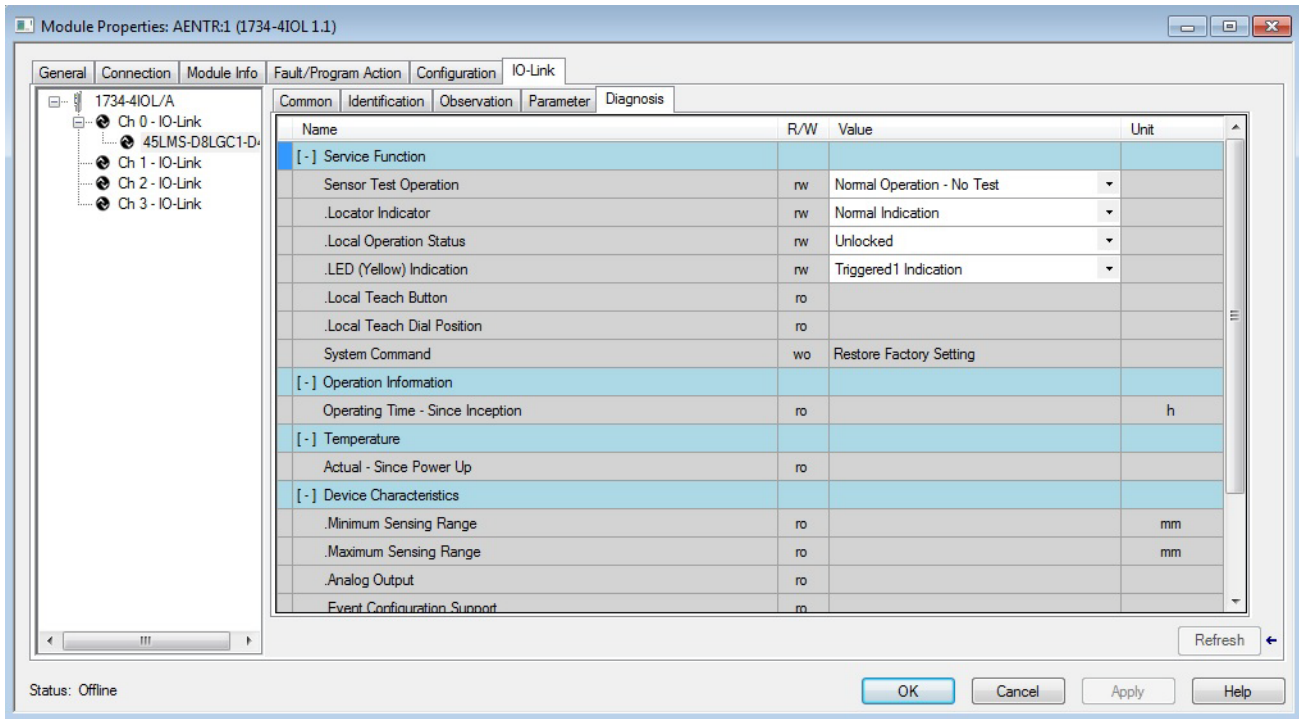
2. Select the tab where the parameter is located.
    Parameters are listed with their name, read-write attribute, value, and units
    (if available in the IODD file).
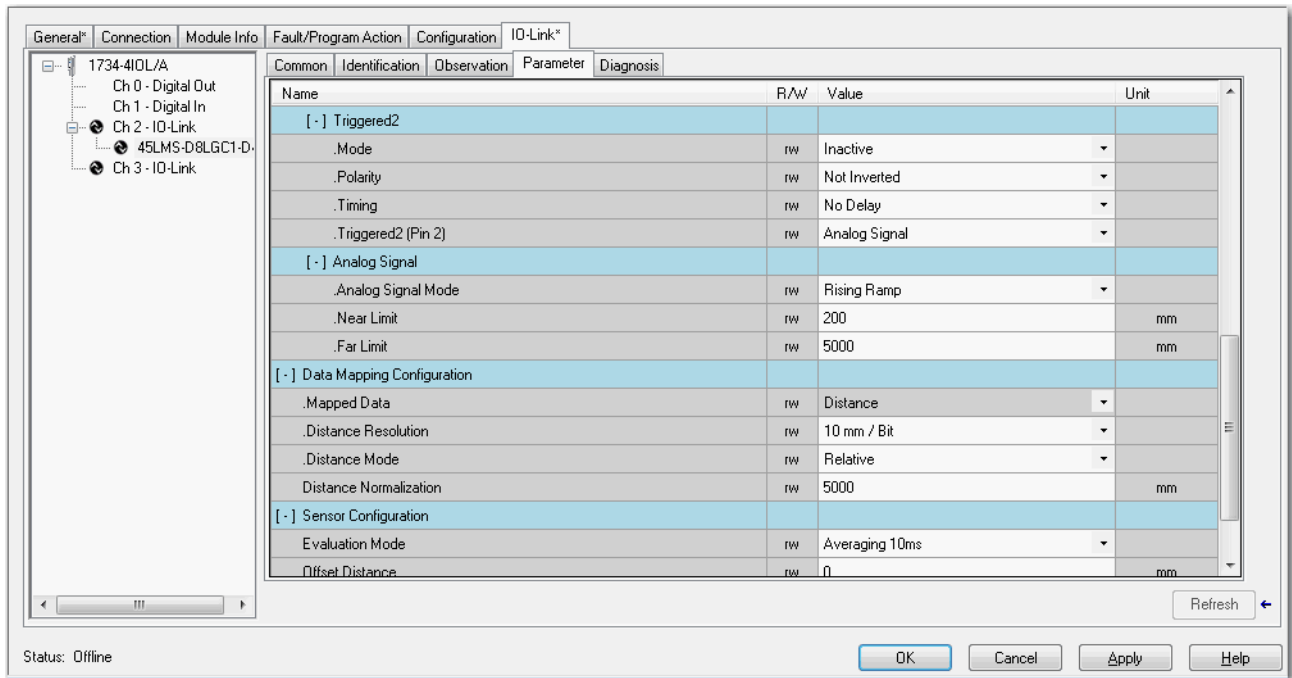
3. Change the value of read-write parameters (through either edit controls or
    drop-down lists) and trigger write-only parameters by pressing the button
    for the parameter.
    Ranges and enumerated choices are derived from the IODD file.

4. Click Apply.

IO-Link Device Parameter Behavior

IO-Link parameters are shown in the Add-on Profile only for IO-Link devices
with IODD Advanced integration. Each parameter can have an attribute of
read-only (ro), read-write (rw), or write-only (wo). The behavior of parameters
and the source for their values differ when offline and when online.

See the following table for more information.

IO-Link Device Parameter Behavior

Attribute	Offline	Online
Read-only "ro"	Parameters are blank.	Parameter values are read from the connected IO-Link device. Parameters show "??" when communication breaks.
Read-write "rw"	Parameter values are read from the IODD file when the IO-Link device is added. Changes made to the parameters are applied when the OK or Apply buttons are clicked.	Parameter values can be edited and changes made to the parameters are applied when the OK or Apply buttons are clicked. Changes are sent to the Master Module, which then writes the changes to the connected IO-Link device.
Write-only "wo"	Parameter buttons are disabled.	Parameter buttons that could potentially impact the Process Data are disabled. Other parameter buttons enabled and result in commands being sent to the connected IO-Link device.

Manage Parameter Differences Between IO-Link Devices and Controller

The Add-on Profile has a Refresh button that updates the read-only parameters for all channels with IO-Link devices. It also performs a Correlation check of the read-write parameters in all connected IO-Link devices and in the controller.

Differences in parameter values can happen when device configuration is changed externally, such as through a device console during operation. If there are differences found after running a Correlation check, you can choose, on a per channel basis, to use the parameters that are currently in the connected IO-Link device or to use the parameters that are stored in the controller.

Before you proceed with this task, take note of the following:

- The Refresh button is only enabled in Online mode.
- Correlation check is performed initially when the Add-on Profile is launched in Online mode.
- Correlation check is only performed on IO-Link devices with IODD Advanced integration.

1. From the IO-Link tab, on the working pane, click the Refresh button.
   If differences are detected, a dialog box appears and displays mismatch information per channel, including the parameters and the values present in the device and in the controller.
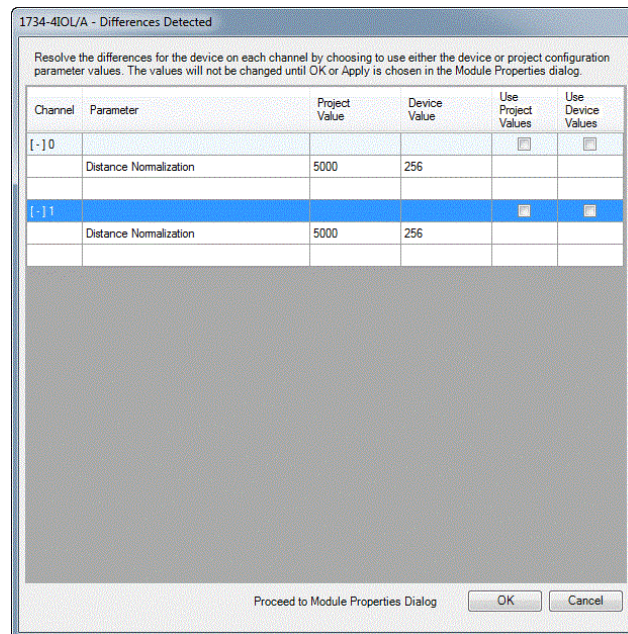
2. For each channel, select the checkbox for the corrective action:
   - Use Project Values - downloads the parameters values from the project to the connected IO-Link device.
   - Use Device Values - uploads the parameters values read from the connected IO-Link device to the project.

3. Click OK.
   If you click the Cancel button without choosing a corrective action, the read-write parameters of the affected channels will display "??".

4. Click Apply to save the changes.

Add a Generic IO-Link Device

You can add a Generic IO-Link device, which does not have an IODD file, to an IO-Link channel and edit its properties using the Add-on Profile.

When adding a Generic IO-Link device, take note of the following:
- Automatic Device Configuration and the Correlation function are not supported for Generic IO-Link devices.
- You cannot change or read the Generic IO-Link device's parameter values through the Add-on Profile. Instead, message instructions to the IO-Link Device Parameter Object must be used.

1. In the channel tree, right-click on the IO-Link channel, and then select Change.
   Alternatively, you can click the Change button on the working pane.
   The following dialog box appears.
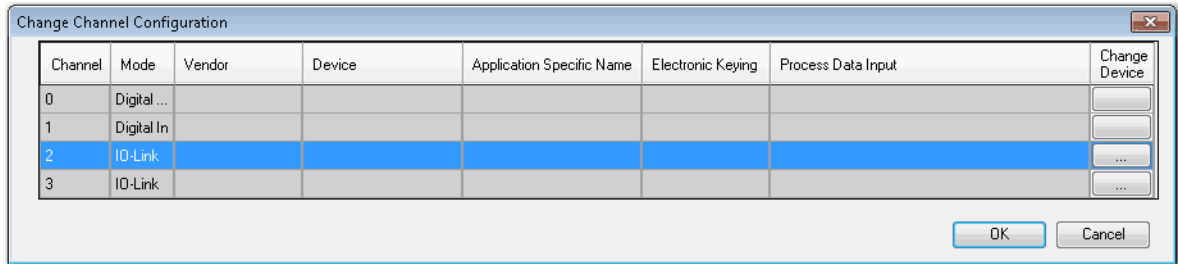
2. Click the button in the Change Device column for the IO-Link channel.
   The following dialog box appears.
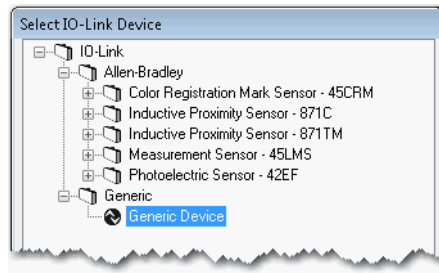
3. Expand the tree selection, and then select Generic Device (last item on the list).

4. Click Create.
   The following dialog appears.
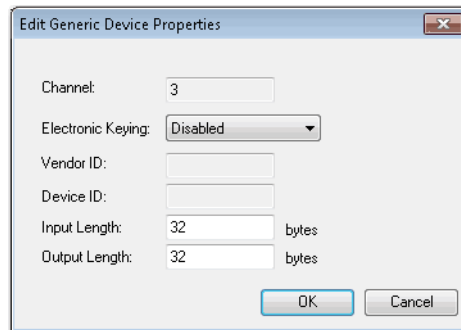
5. Edit generic IO-Link device properties.

   a. Electronic Keying - Select Disabled (default) or Exact Match.
      The Vendor ID and Device ID cannot be 0 if the Electronic Keying is set to Exact Match.

   b. Vendor ID - Enter the vendor ID of the IO-Link device.
      This field is disabled if Electronic Keying is Disabled.

   c. Device ID - Enter the device ID of the IO-Link device.
      This field is disabled if Electronic Keying is Disabled

      d. Input length - Enter the input length in bytes of the IO-Link device. Valid range is 0…32. The value is obtained from the device vendor.

      e. Output length - Enter the output length in bytes of the IO-Link device. Valid range is 0…32. The value is obtained from the device vendor.

6. Click OK. A pop-up dialog box displays.

7. Click Yes.

8. Click Apply to save the changes.

9. Click OK.

Configure IO-Link Device Parameters Using Message Instructions

Use message instructions to the IO-Link Device Parameter Object to read or change configuration parameters for IO-Link devices with IODD Basic or Generic integration.

About the IO-Link Device Parameter Object

IO-Link device configuration parameters include multiple sets of index/subindex pairs, a length, and a data value that is sent to the Master Module through instances of the IO-Link Device Parameter Object.

The IO-Link Device Parameter Object provides a mechanism for a CIP client to access parameters within an IO-Link device. Within this class, the instance number maps to an IO-Link index value.

The details of each index and subindex depend entirely on the IO-Link device and are described in the IO-Link Data Description (IODD) XML file for that device or data sheet provided by the device vendor.

Create a Message Instruction for the IO-Link Device

Before you proceed, take note of the following:
- For IODD Advanced integration, when you change IO-Link device parameters by message instruction, a correlation check is performed when the Add-on Profile is launched. You can then select to use either the device or controller parameter values.
- Messages to/from IO-Link parameters are raw IO-Link data format. As such, unsigned, packed bits and endian/byte swapping issue need to be handled accordingly. Ladders have to be created to enable byte swapping of values from the MSG instruction.
- Refer to the Studio 5000 help for more information on how to create message instructions.

To configure IO-Link device parameters using message instructions:

1. In Studio 5000, go to Input/Output Instruction set and create a MSG instruction.

   2. Create a controller tag for this instance of message instruction.

   3. Configure the message instruction as follows.

Message Configuration

In this tab	For this item	Type or choose		
Communication	Path	the IO-Link Master module.		
Configuration	Message Type	CIP Generic		
	Service Type	Custom		
	Service Code (Hex)	the applicable service code		
		Service Code	**Service Name**	**Description**
		4B	Read_Subindex	Reads a parameter value from the IO-Link device.
		4C	Write_Subindex	Writes a parameter value to the IO-Link device.
		4D	Read_Index	Reads an entire index (all parameters within an index) from the IO-Link device (uses subindex 0)
		4E	Write_Index	Writes an entire index (all parameters within an index) to the IO-Link device (uses subindex 0).
	Class	3A3		
	Instance	the device-specific parameter index value as specified by the device vendor. Refer to Locate the Parameter Index or Subindex Value in the IODD File on page 48 for more information.		
	Attribute	0		
	Source Element	one of the following according to the service code.		
		4B (read subindex)	*source_array* where source element data type is SINT[2]. In this case SINT[0] is subindex as provided by the Device vendor, SINT[1] is the channel number from where the data has to be read. The channel value ranges from 0 to 3. The value must be in hex. Refer to Read Subindex Request Parameters on page 48 for more information.	
		4C (write subindex)	a local source tag that contains data that is to be sent with the service. The source element will have a byte for the subindex number, a byte for the channel number, followed by the bytes of data that need to be written. Refer to Write Subindex Request Parameters on page 48 for more information.	
		4D (read index)	*source_array* where source element data type is SINT. In this case the SINT is the channel number from where the data has to be read. The channel value ranges from 0 to 3. The value must be in hex. Refer to Read Index Request Parameters on page 48 for more information.	
		4E (write index)	a local source tag that contains data that is to be sent with the service. The source element will have a byte for the index number, a byte for the channel number, followed by the bytes of data that need to be written. Refer to Write Index Request Parameters on page 48 for more information.	
		Refer to Locate the Parameter Index or Subindex Value in the IODD File on page 48 for more information.		
	Source Length (bytes)	one of the following according to the service code.		
		4B (read subindex)	the length of the source element.	
		4C (write subindex)	the length of the source element.	
		4D (read index)	the length of the source element.	
		4E (write index)	the length of the source element.	
	Destination Element	*destination_array* tag that will contain data received from the service. The controller tag specified in destination element must be SINT[X] or DINT[X] data type, where X refers to number of bytes of data. This size is to be provided by the device vendor. This size is the size of parameter that is being read or written to the IO Link device.		

Read Subindex Request Parameters

Name	Data Type	Description of Parameter
Subindex	USINT	Subindex value of parameter to retrieve.
Port	USINT	IO-Link channel for the IO-Link device which the request is destined for. The maximum port number supported is indicated in class attribute 8, Number of ports.

Write Subindex Request Parameters

Name	Data Type	Description of Parameter
Subindex	USINT	Subindex value of parameter to retrieve.
Port	USINT	IO-Link channel for the IO-Link device which the request is destined for. The maximum port number supported is indicated in class attribute 8, Number of ports.
Parameter value	Array of octet	Data value to be written to the IO-Link device parameter, in IO-Link format (i.e. big endian not translated to CIP data type)

Read Index Request Parameters

Name	Data Type	Description of Parameter
Port	USINT	IO-Link channel for the IO-Link device which the request is destined for. The maximum port number supported is indicated in class attribute 8, Number of ports.

Write Index Request Parameters

Name	Data Type	Description of Parameter
Port	USINT	IO-Link channel for the IO-Link device which the request is destined for. The maximum port number supported is indicated in class attribute 8, Number of ports.
Parameter values	Array of octet	Value of IO-Link parameters

Locate the Parameter Index or Subindex Value in the IODD File

The details of each index and subindex depend entirely on the IO-Link device and are described in the IO-Link Data Description (IODD) XML file for that device or data sheet provided by the device vendor.

Using the Distance Normalization parameter for an Allen-Bradley sensor (model 45LMS-U8LGC3) as an example, refer to the following diagram to see where a specific parameter can be found on the device's IODD file.

Configure the POINT I/O 4 Channel IO-Link Master Module as Standard Digital Input or Output Using the Studio 5000 Add-on Profile

About This Chapter

In this chapter, you will learn how to do the following:

- Configure the Module as Standard Digital Input Using the Configuration Tab
- Configure the Module as Standard Digital Output Using the Fault/Program Action Tab

Configure the Module as Standard Digital Input Using the Configuration Tab

The following diagram shows the Configuration tab of a POINT I/O 4 Channel IO-Link Master module in Studio 5000 using the Add-on Profile.
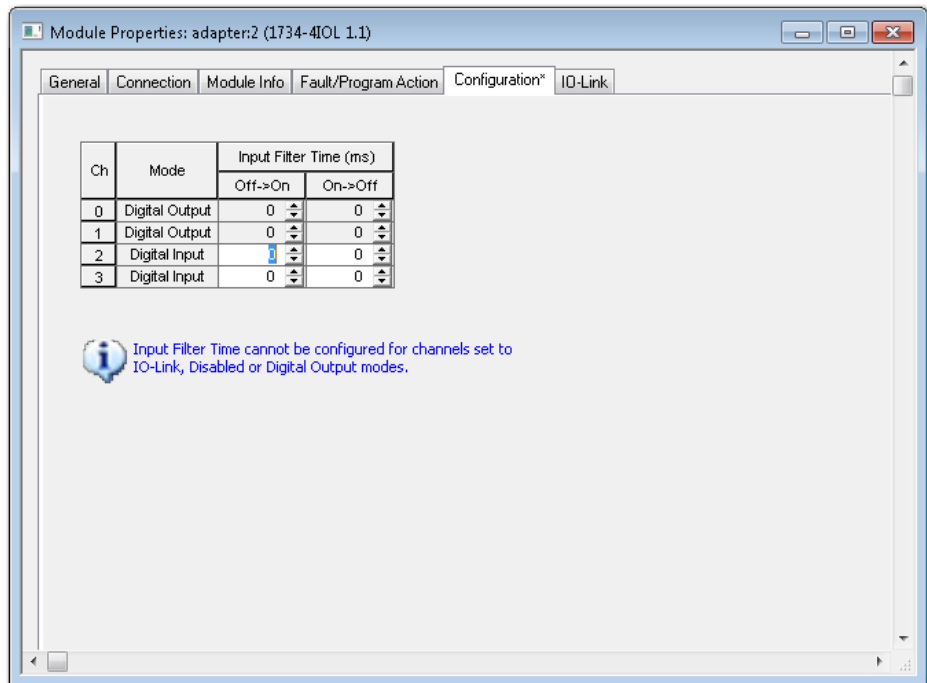
Each channel of your POINT I/O 4 Channel IO-Link Master module that is set to standard digital input mode can be configured with individual input filter times. The following table describes each parameter on the Configuration tab.

Parameters on the Configuration Tab

Parameter	Description
Channel	Displays channels that are used to set the channel's configuration parameters.
Mode	Displays channel mode for each channel.
Input Filter Time (ms)	
Off->On	This is the OFF to ON filter constant for all inputs on the module. A high signal must be present for this amount of time before the module will report an ON. The value must be entered in milliseconds (ms). The default value is 0 ms. The minimum value is 0 and the maximum is 65 ms.
On->Off	This is the ON to OFF filter constant for all inputs on the module. A low signal must be present for this amount of time before the module will report an OFF. The value must be entered in milliseconds (ms). The default value is 0 ms. The minimum value is 0 and the maximum is 65 ms.

Configure the Module as Standard Digital Output Using the Fault/Program Action Tab

The following diagram shows the Fault/Program tab of a POINT I/O 4 Channel IO-Link Master module in Studio 5000 using the Add-on Profile.
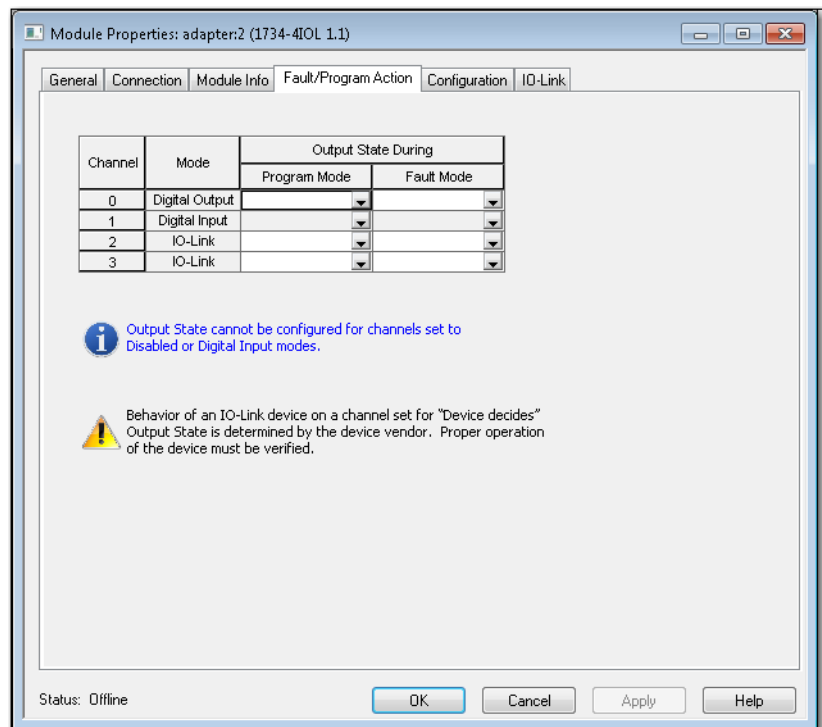

Each channel of your POINT I/O 4 Channel IO-Link Master module that is set to standard digital output or IO-Link mode can be configured with individual output states.

The following table describes each parameter on the Fault/Program tab.

Parameters on the Fault/Program Action Tab

Parameter	Description
Channel	Displays the channels that are used to set the channel's configuration parameters
Mode	Displays the mode that has been configured for each channel.
Output State During	
Program Mode	For each channel that has been configured as standard digital output or IO-Link, select the behavior of each output when the controller transitions to Program Mode. The available selections for each standard digital output channel are Off (default), On, or Hold. The available selections for each IO-Link channel are All Zeros, Hold, or Device Decides. • When All Zeros is selected, any IO-Link output values for that channel will be set to zero. • When Hold is selected, any IO-Link output values will be held at the current value. • When Device Decides is selected, the Device Operate command will be sent to the IO-Link device. What the outputs of the IO-Link device do during Device Operate is determined by the device vendor. If communication with the controller fails while in Program Mode, the output values will use the Fault Mode selection.
Fault Mode	For each channel that has been configured as standard digital output or IO-Link, select the behavior of each output when communication with the controller fails. The available selections for each standard digital output channel are Off (default), On, or Hold. The available selections for each IO-Link channel are All Zeros, Hold, or Device Decides. • When All Zeros is selected, any IO-Link output values for that channel will be set to zero. • When Hold is selected, any IO-Link output values will be held at the current value. • When Device Decides is selected, the Device Operate command will be sent to the IO-Link device. What the outputs of the IO-Link device do during Device Operate is determined by the device vendor.

Notes:

Connected Data Mapping

About This Appendix

This appendix contains information to help you properly route the data to and from the 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.

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 standard digital output.

[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]							
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.

Supported Events

About This Appendix

This appendix provides information about events that are defined in the IO Link master stack. This appendix also shows where the most recent events are viewable in the Controller Tags view of the Studio 5000 program.

IO-Link Master Module Events

IO-Link events can be accessed through Explicit Messaging by querying the Events attribute of an IO-Link Module object. This attribute contains a list of events logged from the IO-Link channel. The 25 most recent events can be viewed by querying that attribute. Refer to the following guide for more information.

Querying the Events from the master to view 25 most recent events

Class: 0x3A2 hex
Service: 0E hex
Instance: refers to channel number and can be from 0 to 3
Attribute: 15 decimal or 0F hex

Structure of the Returned Data

Name	Data Type	Description of Attribute
IO-Link Events	Array of Struct	Events from IO-Link Device (Remote) or Master (Local)
Sequence Count	USINT	Count value assigned to each event (refer to sequence count section)
Event Qualifier	BYTE	Type, mode and source of the Event (refer to event qualifier table)
Event Code	UINT	The identifier of an actual Event (refer to event code table)

IO-Link Master Event Codes

The IO-Link Interface and System Specification document provides an enumeration and definition of IO-Link defined events. Unique event conditions can also be defined by the IO-Link device or the IO-Link master stack. Events defined by the stack are shown in the table below.

IO-Link Master Module Events

Event Code	Description
0x0002	The Sensor had sent a wrong PDU. After three retries the connection will be aborted and the a device lost event DEVICE_LOST. The stack will automatically reconnect the sensor.
0x000C	This event is used if only a change in the data valid bit has been detected.
0x0010	This event will be generated if a connection could not be established due to a absent sensor or if a running connection has been aborted (e.g. by pulling a sensor). The stack will automatically attempt to reconnect the sensor.
0x001B	This event will be generated if a retry occurs.
0x001E	A short circuit was detected.
0x001F	An undervoltage of the system sensor power supply has been detected.
0x0020	An undervoltage of the system actor power supply has been detected.
0x0021	An undervoltage of the power supply of a single port has been detected.
0x0022	Reset of a channel has been done.
0x0024	This event will be generated when the connection to a sensor has been established, but the connection is not in operate state.
0x0040	Process data input length does not match
0x0041	Process data output length does not match
0x0043	Vendor id is wrong V1.1 sensor
0x0044	Device id is wrong V1.1 sensor
0x0045	Vendor id is wrong V1.0 sensor
0x0046	Device id is wrong V1.0 sensor

Event Count

The Event Sequence Count is a count value assigned to each event. The value increments for each received event. Range of values is -127...127; a value of zero is not valid and can indicate that no event is present in a fixed field within I/O produced input data.

Event Qualifier

The Event Qualifier provides details about the type event, as shown in the table below.

Event Qualifier

Bit(s)	Name	Definition
0 - 2	Source	These bits indicate the source of an Event: 0: Unknown 1: Physical Layer 2: Data Layer 3: Application Layer 4: Application 5-7: Reserved
3	Location	This bit indicates the location of the Event. 0: Device application (remote) 1: Master application (local)
4 - 5	Type	These bits indicate the Event category 0: Reserved 1: Notification 2: Warning 3: Error
6 - 7	Mode	These bits indicate the Event mode 0: Reserved 1: Event single shot 2: Event disappears 3: Event appears

Recent Events Controller Tag View

The following graphic shows where the most recent events are viewable in the Studio 5000 program for the 1734-4IOL IO-Link Master Module and/or any Rockwell Automation IO-Link-supported device.

Notes:

Troubleshooting

About This Appendix

This appendix provides information about module diagnostics, and about troubleshooting with the following indicators:

- Module status
- Network status
- Standard digital I/O status (ON/OFF/fault or diagnostic)
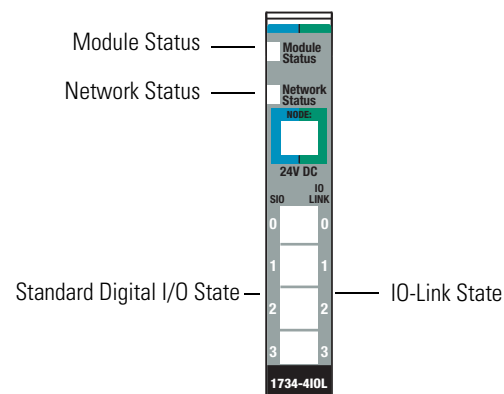- IO-Link status

In addition, the following troubleshooting scenarios are provided:

- Second Data I/O connection rejected
- Controller goes to fault when enabling/disabling Unicast
- Generic device with zero length input and output is accepted by the Add-on Profile
- The ChxMostRecentEvent.EventSequenceCount is an unsigned value

About Module Diagnostics

All status and diagnostic information is reported back over the network communication adapter.
A single point of failure is detected and reported at the module and to the control system.
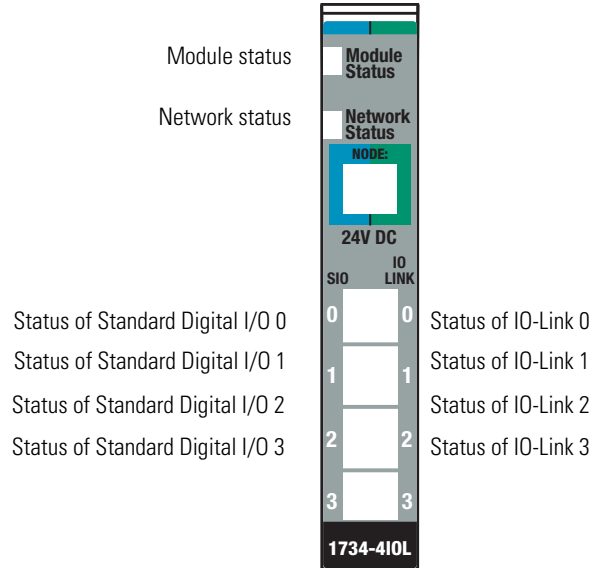

Node-level diagnostics:

- Module Status indicator indicates the health of the module.
- Network Status indicator indicates the status of the communication link.
- SIO point indicator indicates I/O (ON/OFF or fault/diagnostic) status.
- IO-Link indicator indicates the status of each IO-Link.

Interpret LED 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

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

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 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 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	Standard digital input or output is in Off state, configured in IO-Link mode, or no power applied to device.
	Yellow	Standard digital input or 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 active. IO-Link is enabled.

Troubleshooting Scenarios

The following are scenarios you may encounter while using the modules.

Second Data I/O connection rejected

The 1734-4IOL module does not support a Listen-Only or Input-Only connection. A connection attempt from a second Logix controller will be rejected.

Controller goes to fault when enabling/disabling Unicast

If the you check the "Major Fault on Controller if Connection Faults While in Run Mode" check box and uncheck the "Use Unicast Connection over EtherNet/IP" check box while online and apply the changes, the Logix controller will fault.

The work-around is to first inhibit the connection, make the changes to the two check boxes, then un-inhibit the connection.
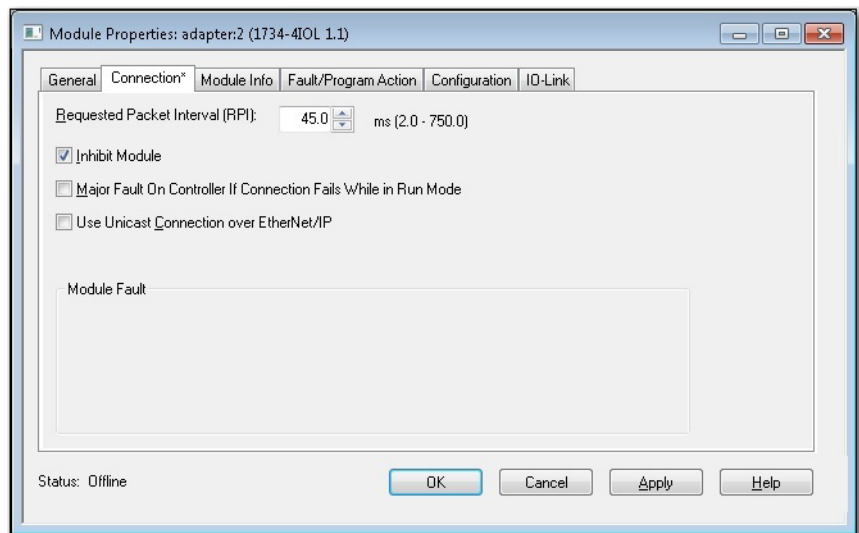
Generic device with zero length input and output is accepted by the Add-on Profile

The input and output length for a generic device can both be set to zero. These settings will cause the communication fault bit to be set for the channel.

The ChxMostRecentEvent.EventSequenceCount is an unsigned value

The ChxMostRecentEvent.EventSequenceCount is a count value assigned to each event. The value increments for each received event. Range of values is 1 to 255; a value of zero is not valid and can indicate that no event is present.

Because this is an unsigned number the count values from 128 through 255 will appear as negative numbers in the Logix Designer software.

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, review the information that is contained in this manual. You can contact Customer Support 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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