

IO-Link Configuration Software Instruction Manual



Original Instructions
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April 15, 2024

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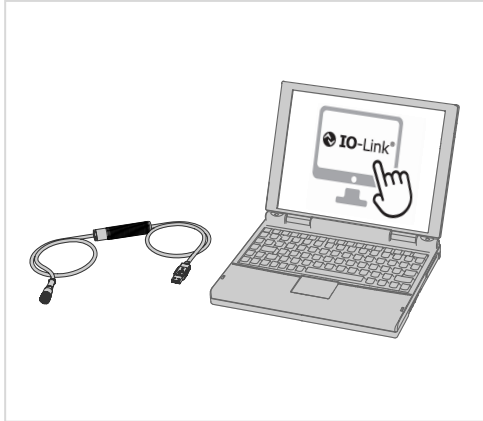
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Overview 3

Chapter 1 Software Description

Software that Enables the Field Configuration of Banner IO-Link Masters and Banner IO-Link Devices



- Allows the configuration of Banner IO-Link devices
- Free to download and available on the product pages for the DXMR110-8K, DXMR90-4K, R90C-4K-MQ, and R45C-2K-MQ IO-Link masters
- Works on Microsoft® Windows® 7 and 10⁽¹⁾
- BWA-UCT-900 or Ethernet cable required to connect PC-based IO-Link Configuration Software to Banner IO-Link masters and Banner IO-Link devices, depending on which Banner IO-Link master you are using

NOTE: Administrative rights are required to install the IO-Link Configuration Software.

Overview

Banner's IO-Link Configuration Software offers an easy way to configure Banner IO-Link masters and Banner IO-Link devices, offering users full control of master and device configuration. The easy-to-use software provides a variety of tools and works with the DXMR110-8K, DXMR90-4K, R90C-4K-MQ, and R45C-2K-MQ IO-Link masters.

Configure Banner IO-Link masters and Banner IO-Link devices using the free IO-Link Configuration Software, available for download at <https://www.bannerengineering.com/us/en/products/software/io-link-software.html>.

⁽¹⁾ Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries.

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Chapter 2 Specifications and Requirements

IO-Link Configuration Software PC Requirements

Operating System

Microsoft® Windows® operating system versions 7 or 10⁽¹⁾

Hard Drive Space

120 MB

⁽¹⁾ Microsoft® and Windows® are registered trademarks of Microsoft® Corporation in the United States and/or other countries.

USB

Available USB port

Screen Resolution

1366 × 768 full-color minimum


Third-Party Software

.NET version 4.6.2 or higher

IMPORTANT: Administrative rights are required to install the IO-Link Configuration Software.

Adapter Cable – Required for use with Serial IO-Link Masters

An adapter cable, model BWA-UCT-900, is required for use with the IO-Link Configuration Software, Banner R90C-4K-MQ, and Banner R45C-2K-MQ serial IO-Link masters. Use the adapter cable to connect Banner serial IO-Link devices to read, write, and preview device configurations.

	<ul style="list-style-type: none"> Connects Banner serial IO-Link masters to the PC-based IO-Link Configuration Software
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Model

Model	Adapter	Length	Connections
BWA-UCT-900	RS-485 to USB	1 m (3.28 ft)	USB and 5-pin M12 quick-disconnect connector

BWA-UCT-900 Adapter Cable Specifications

Input Voltage

5 V DC from USB Type A connector

Output Voltage

24 V DC power output for a single device transmitting at 1 Watt

Certifications



Operating Conditions

–40 °C to +80 °C (–40 °F to +176 °F)
 95% maximum relative humidity (non-condensing)

Ethernet Cordset – Required for use with Ethernet IO-Link Masters

An Ethernet cordset is required for use with the IO-Link Configuration Software, Banner DXMR110-8K, and Banner DXMR90-4K IO-Link masters with an Ethernet IP interface. Use an M12 to RJ45 Ethernet cordset to connect to Banner Ethernet IO-Link masters to read, write, and preview device configurations.

	<ul style="list-style-type: none"> • Connects Banner Ethernet IO-Link masters to the PC-based IO-Link Configuration Software
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Models

Model	Adapter	Lengths	Connections
STP-M12D-4xx	M12 D-code to RJ45 Shielded Ethernet	1.83 m (6 ft) 4.57 m (15 ft) 9.14 m (30 ft)	Ethernet and 4-pin M12 quick-disconnect connector

FCC Part 15 Class B for Unintentional Radiators

(Part 15.105(b)) This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment.

Industry Canada ICES-003(B)

This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

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Chapter 3 Installation Instructions

Install the Software

IMPORTANT: Administrative rights are required to install the IO-Link Configuration Software.

1. Download the latest version of the software from <https://www.bannerengineering.com/us/en/products/software/io-link-software.html>.
2. Navigate to the downloaded file **IOLConfigInstaller.exe**.
3. Double-click the installer to open **Banner IO-Link Configuration Software Setup**.
4. Accept the terms in the License Agreement by selecting the checkbox.
5. Click **Install** to install the software.
6. Depending on the system settings, a pop-up window may appear prompting to allow the IO-Link Configuration Software to make changes to the computer. Click **Yes**.
7. Click **Close** to exit the installer after installation is complete.

Connect the Cables

For serial IO-Link masters:

1. With the BWA-UCT-900 adapter cable, plug the M12 connector into male connector of the IO-Link master.
2. Plug the USB connector of the BWA-UCT-900 into the PC.
3. Plug the power cable of the BWA-UCT-900 into a wall outlet.

For Ethernet IO-Link masters:

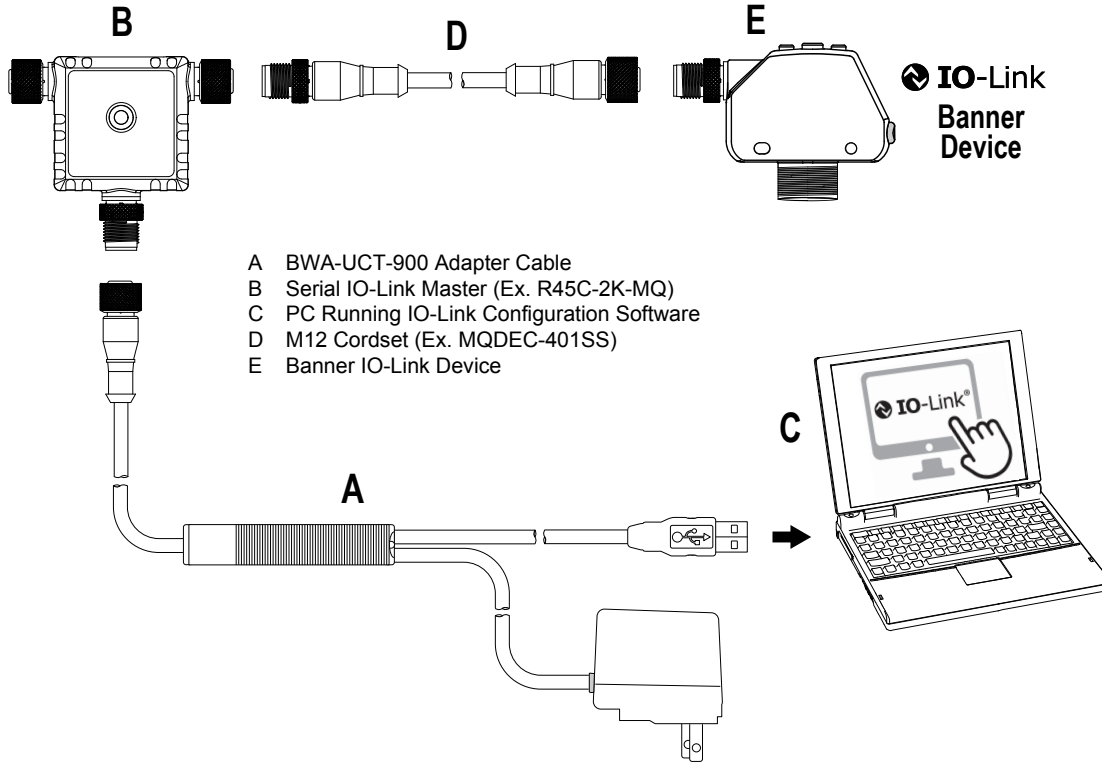
1. With an Ethernet cordset, plug the M12 connector into the male connector of the IO-Link Master.
2. Plug the RJ45 connector of the Ethernet cordset into the PC.

Connect an IO-Link Device with a Cable

To connect Banner IO-Link devices:

1. Connect the Banner IO-Link device or devices to the ports on the IO-Link masters using an M12 cordset.
2. Plug the applicable accessory into the IO-Link master:
 - a. For serial IO-Link masters: Use the BWA-UCT-900 adapter cable, and plug the female M12 connector into the male M12 communication port on the serial IO-Link master.
 - b. For Ethernet IO-Link masters: Use an Ethernet cordset, and plug the male M12 connector into the female M12 D-code Ethernet port on the Ethernet IO-Link master.
3. Plug the USB or RJ45 connector into the PC.

Example - Serial IO-Link Master Device Connection



Load an IO-Link Device IODD

After connecting a Banner IO-Link master to a PC, use one of these methods to connect IO-Link devices to the IO-Link Configuration Software.

Use the IODD Finder

Use the software to scan the connected device to download and install the IODD files automatically.

Use this method if there is not an IODD file already downloaded onto the PC. See ["Add the IODD File Manually"](#) on page 8.

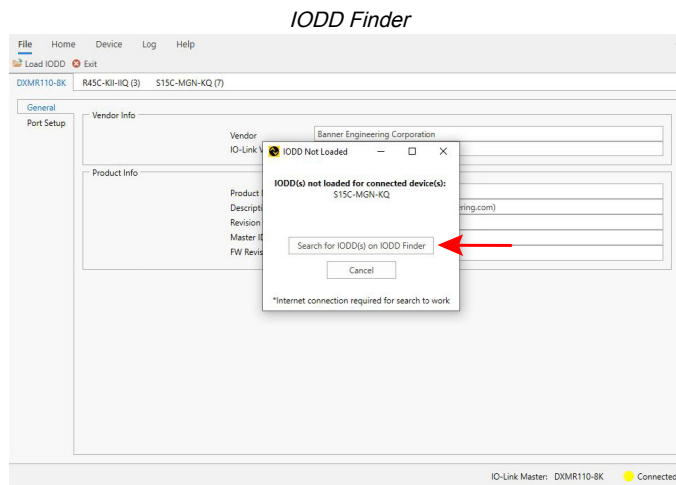
1. Click **Connect** on the IO-Link Configuration Software start page.



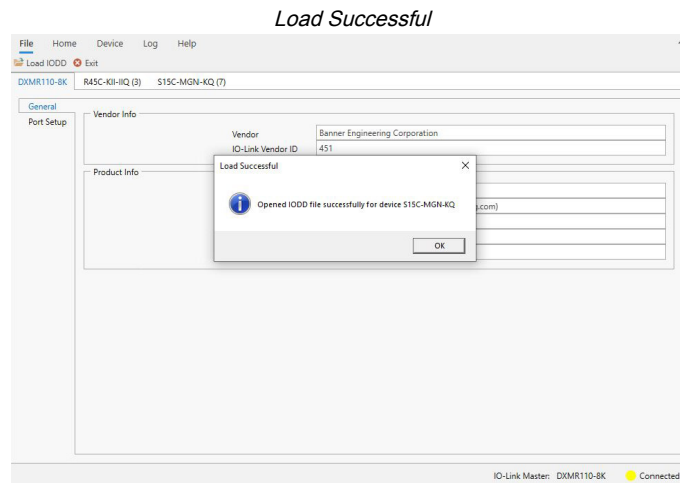
An **IODD Not Loaded** pop-up window appears when the IO-Link device is connected successfully.

2. Select **Search for IODD(s) on IODD Finder**.

IMPORTANT: An internet connection on the PC is required for this functionality.

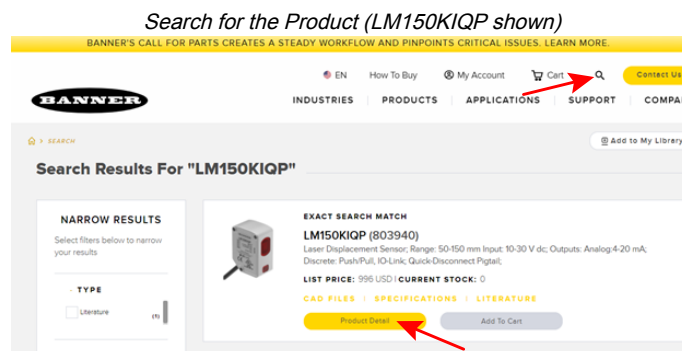


A **Load Successful** pop-up window appears when the IODD file is installed successfully. Click **OK** to close.



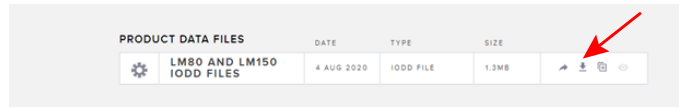
Add the IODD File Manually

1. Download the Banner IO-Link device IODDs manually.
 - a. Go to www.bannerengineering.com.
You can also go to <https://ioddfinder.io-link.com/> to search and download device IODDs.
 - b. Search for the desired Banner IO-Link devices.
 - c. Click **Product Detail**.



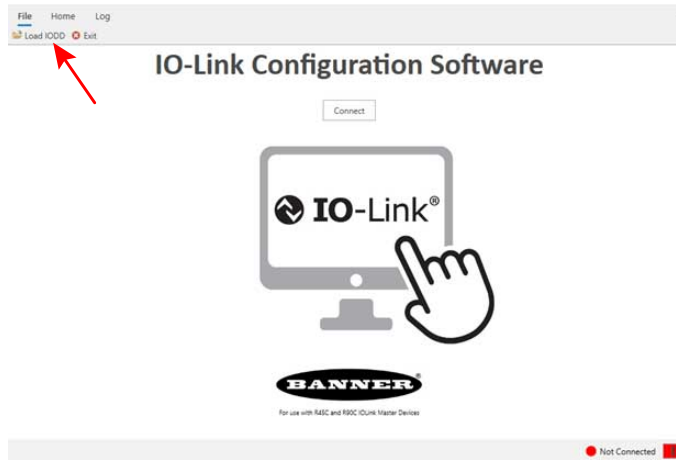
- d. On the product page, under **Downloads**, navigate to the IODD file and click the download button.

Download the IODD Files



2. Extract the downloaded IODD zip file and save it to a desired location.
Repeat this process for every Banner IO-Link device that is connected to the IO-Link master.
3. Open the IO-Link Configuration Software and click **File > Load IODD** in the upper left corner of the window.

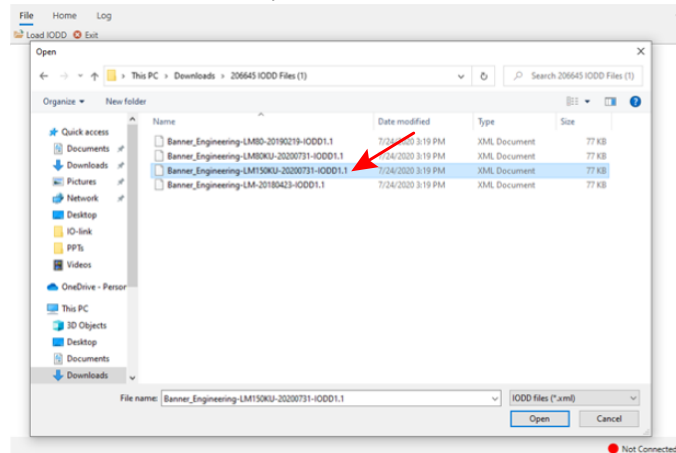
Load IODD



A File Explorer window opens.

4. Navigate to where the IODD file was extracted to in File Explorer and click on it.
5. Click **Open** in File Explorer.

Open the IODD File

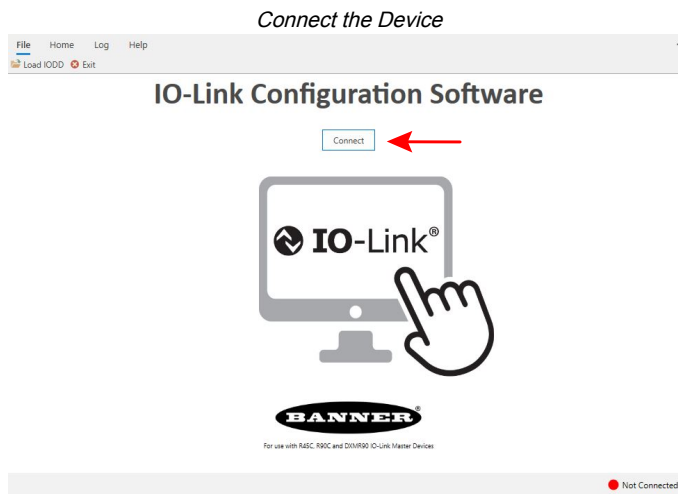


The file explorer window closes, and the IODD file loads into the IO-Link Configuration Software.

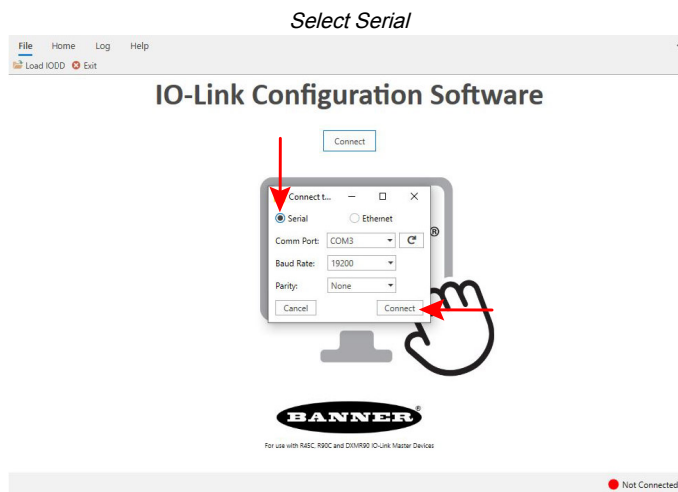
Connect to the Software

Connect a Serial IO-Link Master

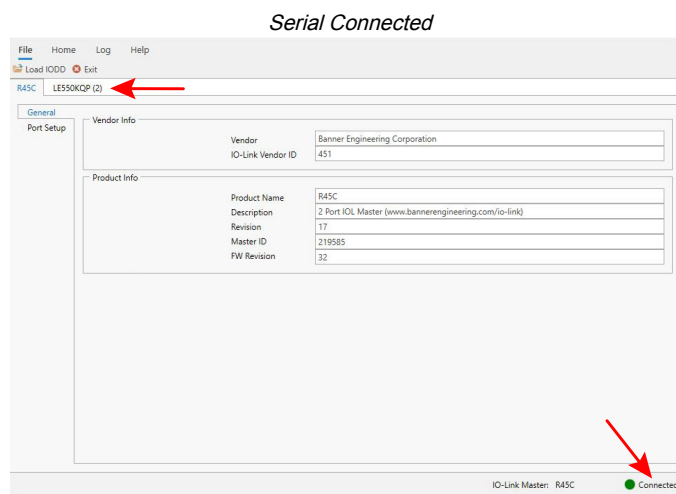
1. Click **Connect** on the IO-Link Configuration Software start page.



2. In the pop-up window, select **Serial**, and then click **Connect**.



The Banner IO-Link master and devices are now connected to the IO-Link Configuration Software. The connected IO-Link devices appear in new tabs within the software window, and the status in the bottom right corner now reads as **Connected**.



Connect an Ethernet IO-Link Master

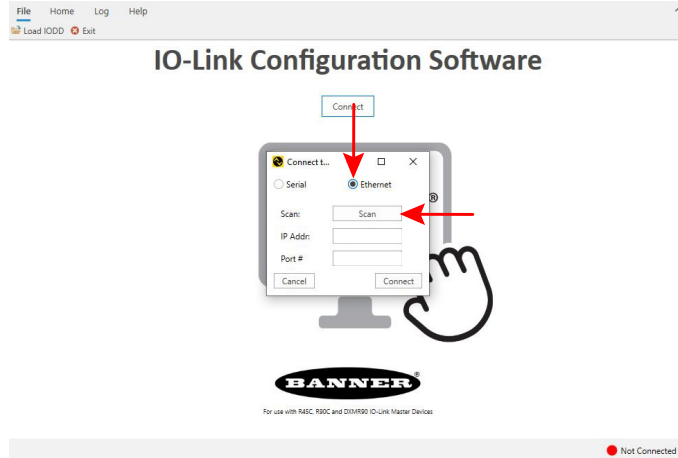
1. Click **Connect** on the IO-Link Configuration Software start page.

Connect the Device



2. In the Connect window, select **Ethernet**, and click **Scan**.

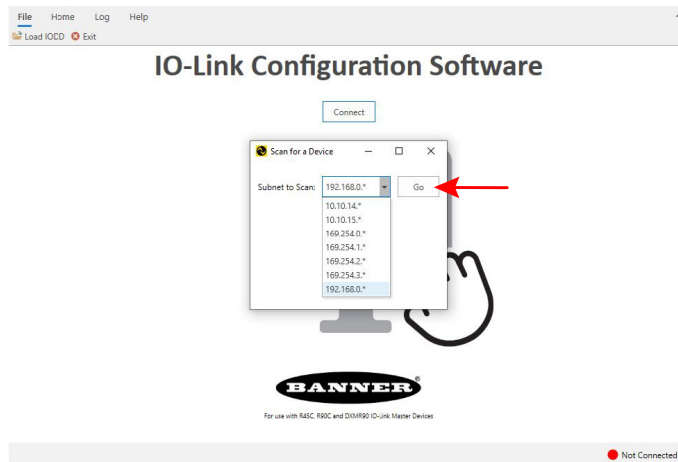
Select Ethernet



When the scan is complete, a new pop-up window appears.

3. In the new pop-up window, select the subnet the IO-Link master is connected to from the drop-down menu, and click **Go**.

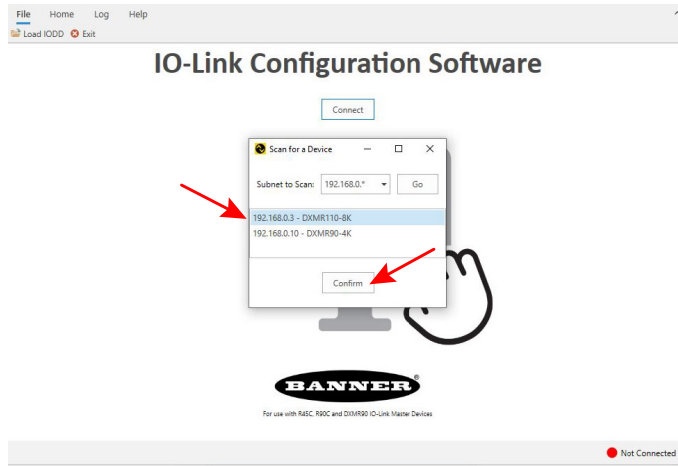
Select Subnet



The model number and the IP addresses of the connected Ethernet IO-Link masters are displayed.

4. Select the IP address of the IO-Link master to connect to, and click **Confirm**.

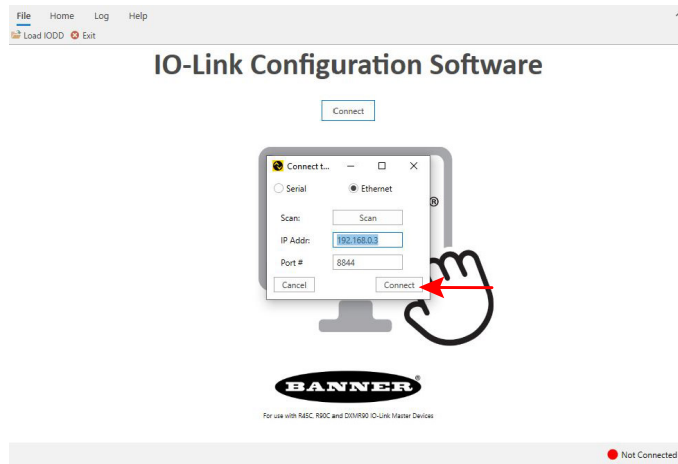
Select IP Address and Model Number



The pop-up window closes, and the IP address of the connected IO-Link master auto-fills in the Connect window.

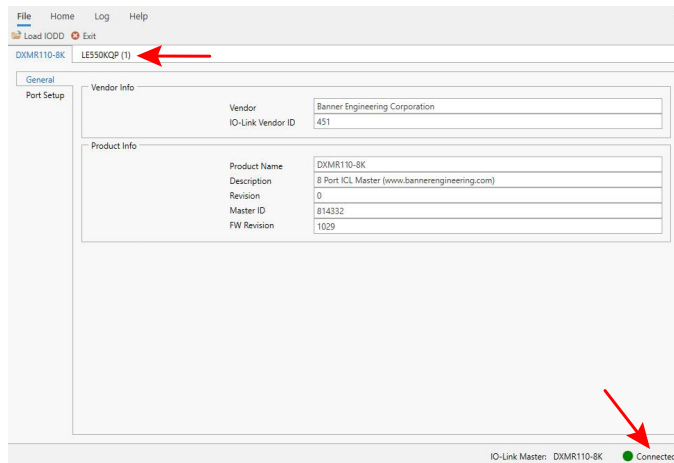
5. Click **Connect** to connect to the IO-Link master.

Connect Ethernet



The Banner IO-Link master and devices are now connected to the IO-Link Configuration Software. The connected IO-Link devices appear in new tabs within the software window, and the status in the bottom right corner now reads as **Connected**.

Ethernet Connected



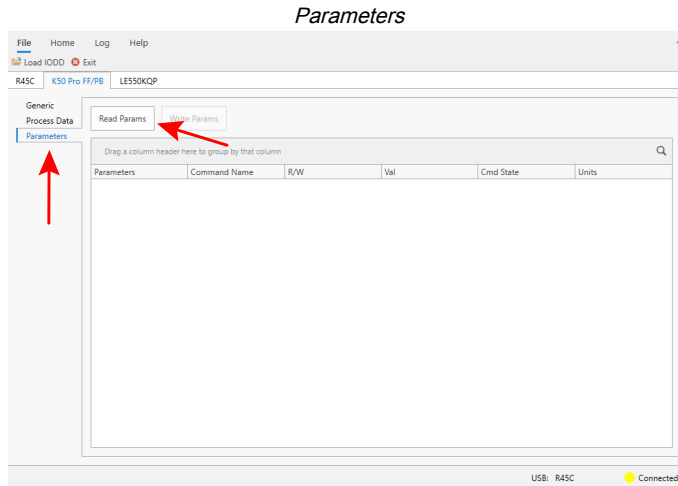
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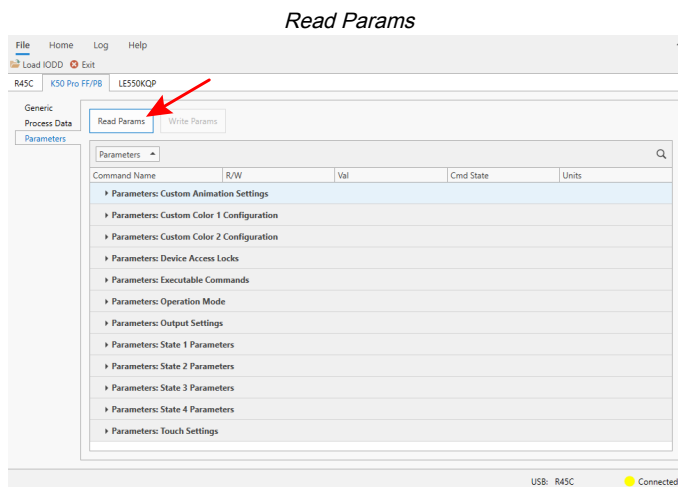
Chapter 4 Configuration Instructions

Read and Change the Banner IO-Link Device Configuration

1. Select the device tab in the software window, and click **Parameters** in the left menu. **Parameters** is used to read and change the Banner IO-Link device configuration. After clicking on **Parameters**, the Parameters pane opens within the device tab.



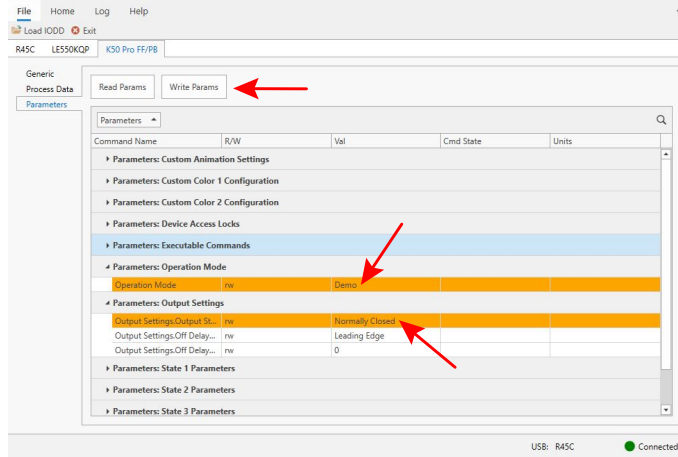
2. Click **Read Params** to read the current configuration of the connected Banner IO-Link device.



This displays the current IO-Link configuration information in the Parameters pane, along with all of the device's available settings.

3. If desired, make any changes to the Banner IO-Link device's configuration in this pane using the available settings.
4. If changes were made to the settings, write the changes to the device by clicking **Write Params**.

Write Params



Process Data

Process data refers to the information that the device reads and transmits to the master, such as the distance reading on a laser measurement sensor.

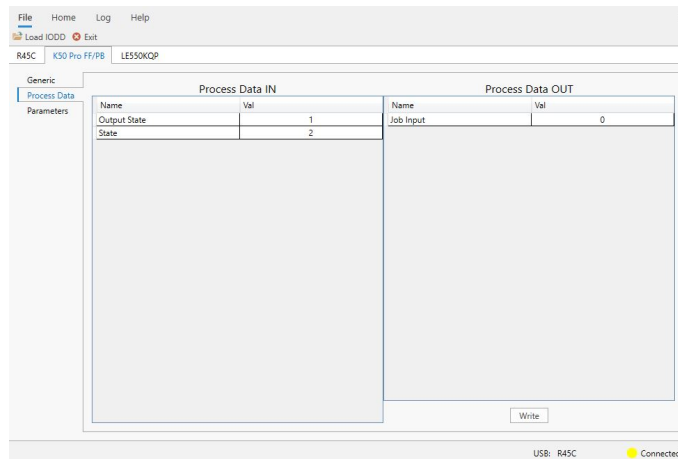
Process data can also refer to information that is transmitted to the device from the master, such as messages sent to a tower light indicating which color segments should be illuminated.

Cyclic and acyclic process data can be transferred between an IO-Link master and an IO-Link device. By clicking **Process Data** in the left menu, the user is able to view the live process data of the Banner IO-Link device connected to the IO-Link master.

Process Data IN is data that is sent from the IO-Link device to the IO-Link master.

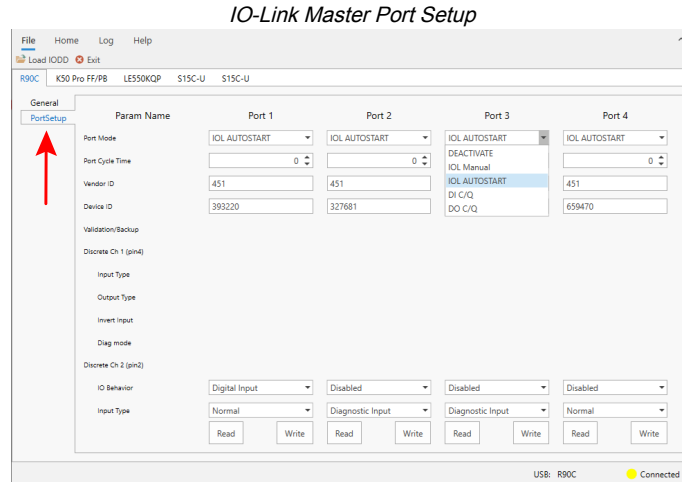
Process Data OUT is data that is sent from the IO-Link master to the IO-Link device.

Process Data



Read and Change the Banner IO-Link Master Port Configuration

The IO-Link Configuration Software has a special tab for configuring the port settings on the IO-Link master. To access, click on the IO-Link master tab and select **PortSetup**.



The operating mode can be configured for any port on the IO-Link master. The following modes can be used:

Deactivated

Use deactivated mode for any unused IO-link master ports if a device is not connected.

IO-Link Manual

The IO-Link master only connects IO-Link devices that have a certain vendor ID and device ID (1: IOL_MANUAL).

IO-Link Autostart

The IO-Link master connects to every connected IO-Link device (2: IOL_AUTOSTART).

Digital Input

The IO-Link port functions as a standard digital input (3: DI_C/Q).

Digital Output

The IO-Link port functions as a standard digital output (4: DO_C/Q).

When the backup function of the IO-Link master is used, the IO-Link master automatically provides the saved parameters to the new device after replacement. This makes IO-Link device replacement seamless in IO-Link applications. Another common industry term for this function is *data storage mode*.

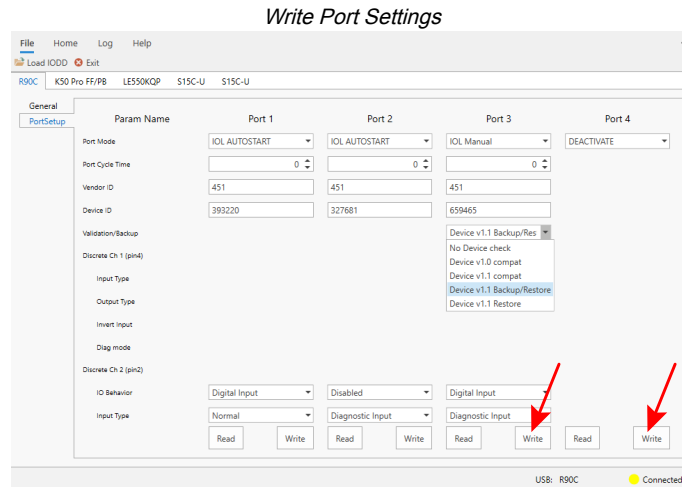
. Backup+Restore Mode

If a port on the IO-Link master is set to Backup+Restore, then the new device added to the IO-Link port takes in the same device configuration as the device that was just replaced, as the IO-Link master had stored the last configuration change by a backup (3: Type compatible Device V1.1, Backup + Restore).

. Restore

If the port on the IO-Link master port is set to Restore, then the new device takes in the configuration according to the settings saved in the master at the time of the last backup. Because possible configuration changes were not saved in the master, a different behavior from the previous one before the replacement may occur (4: Type compatible Device V1.1, Restore).

Make changes to the ports' settings by selecting the drop-down menus for each port. To read the current configuration of each port, select the applicable **Read** button. After making the desired changes to the port settings, select the applicable **Write** button.



Save and Load IO-Link Master Port Setup and IO-Link Device Parameters

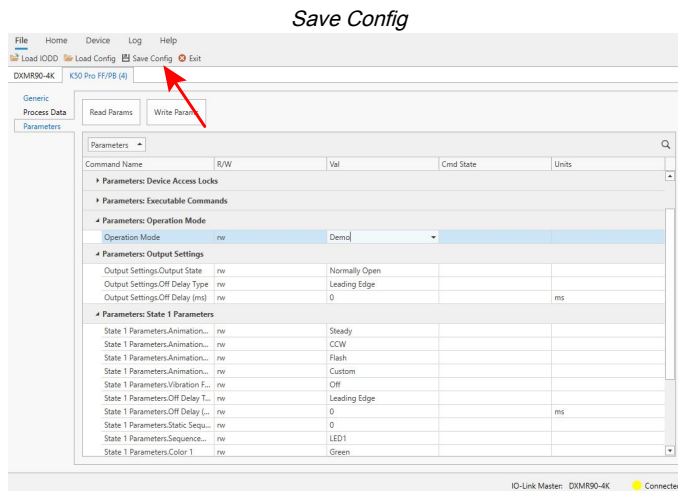
Users can save and load IO-Link master port setup and IO-Link device parameters.

These configurations can be saved to a PLC for later use, or can be emailed to others in different locations for rapid configuration of IO-Link masters and IO-Link devices. To save IO-Link master port configurations, IO-Link device configurations, or both, users can configure the IO-Link master port set up and IO-link devices as required.

Save Port Setup and Parameters

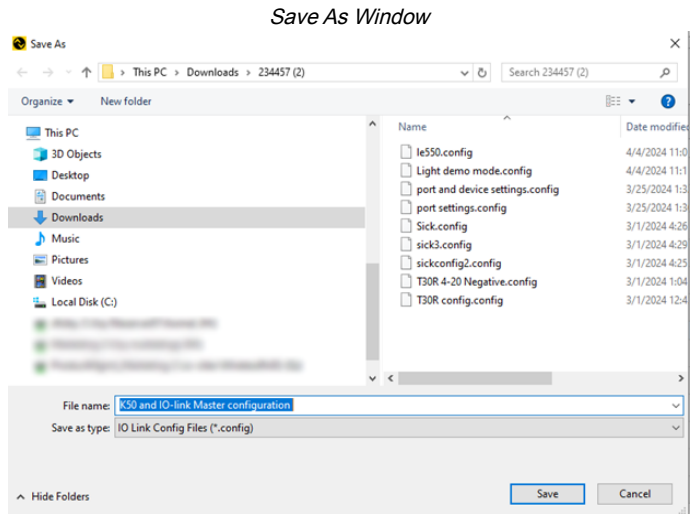
To save a configuration:

1. Ensure that the configurations are written to the IO-Link master and IO-Link devices:
 - a. Click **Write** on all of the ports in the port setup tab.
 - b. Click **Write Params** on the IO-Link device configurations tabs.
2. Click **Save Config**.



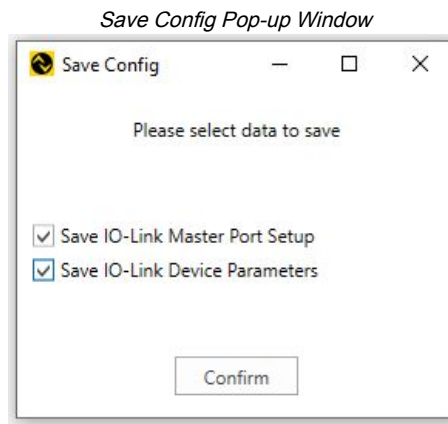
A **Save As** pop-up window appears.

3. Name and save the configuration file to the PC.



After clicking **Save**, a **Save Config** pop-up window appears.

4. Select one or more of the following options:
 - Save IO-Link Master Port Setup
 - Save IO-Link Device Parameters



5. After selections are made, click **Confirm**.

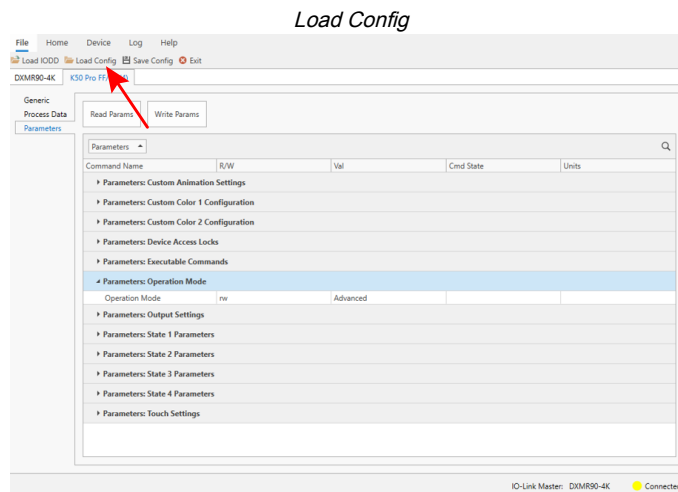
The configuration file is saved, and can now be loaded into other IO-Link masters and devices.

NOTE: The same IO-Link masters and devices that were previously configured and saved must be used.

Load Port Setup and Parameters

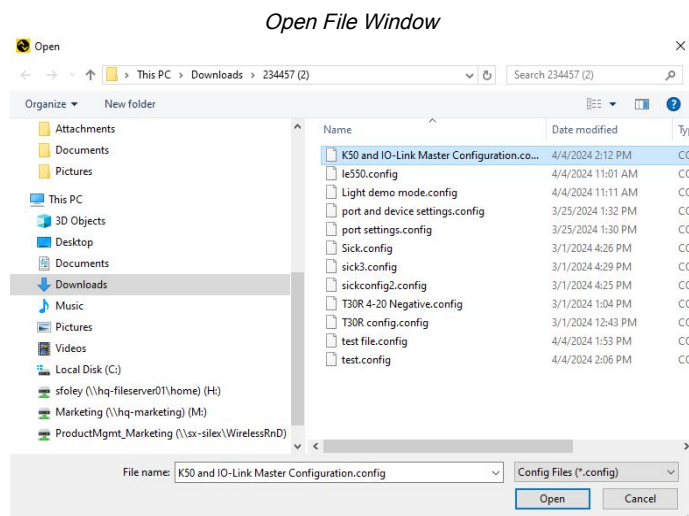
To load a saved configuration:

1. Open a new instance of the Banner IO-Link Configuration Software.
2. Read the current IO-Link master and IO-Link device configurations:
 - a. Click **Read** on each port in the port setup tab.
 - b. Click **Read Params** in each of the IO-Link device tabs.
3. Click **Load Config**.



An **Open** pop-up window appears.

4. Navigate to where the configuration file is saved on the PC and open the file.



After clicking **Open**, a **Load Config** pop-up window appears.

5. Select one or more of the following options:
 - Save IO-Link Master Port Setup
 - Save IO-Link Device Parameters

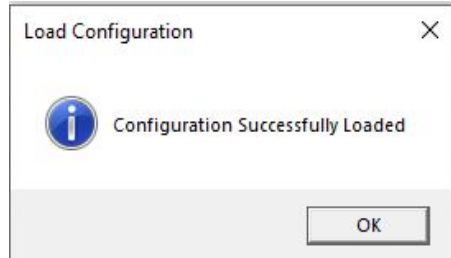


6. After selections are made, click **Confirm**.

A **Configuration Successfully Loaded** pop-up window appears.

7. Click **OK** to close.

Configuration Successfully Loaded Pop-Up Window



8. Ensure the newly loaded configuration is written to the IO-Link master and IO-Link devices:
 - a. Click **Write** on all of the ports in the port setup tab.
 - b. Click **Write Params** on the IO-Link device configurations tabs.

The saved configuration is now successfully loaded onto the IO-Link master and IO-Link devices.

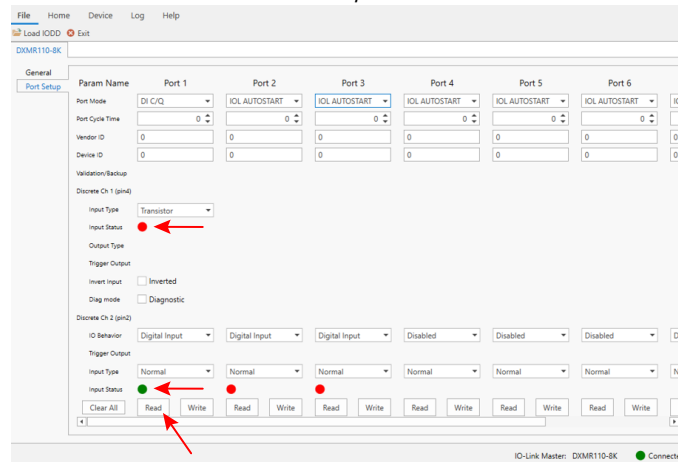
Discrete Channel Visualization and Control

Setting Discrete Ch 1 (pin2), Discrete Ch 2 (pin4), or both to discrete inputs in Port Setup causes an LED status icon to display on the corresponding Input Status:

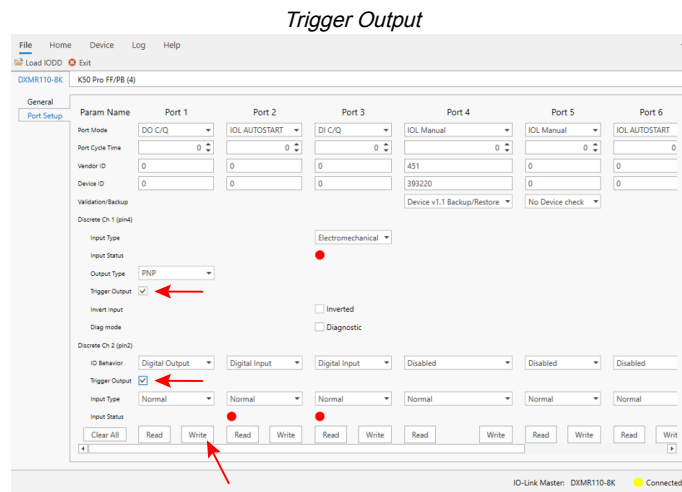
- On is signified by a green icon
- Off is signified by a red icon

Click **Read** to see the current discrete Input Status.

Discrete Input Status

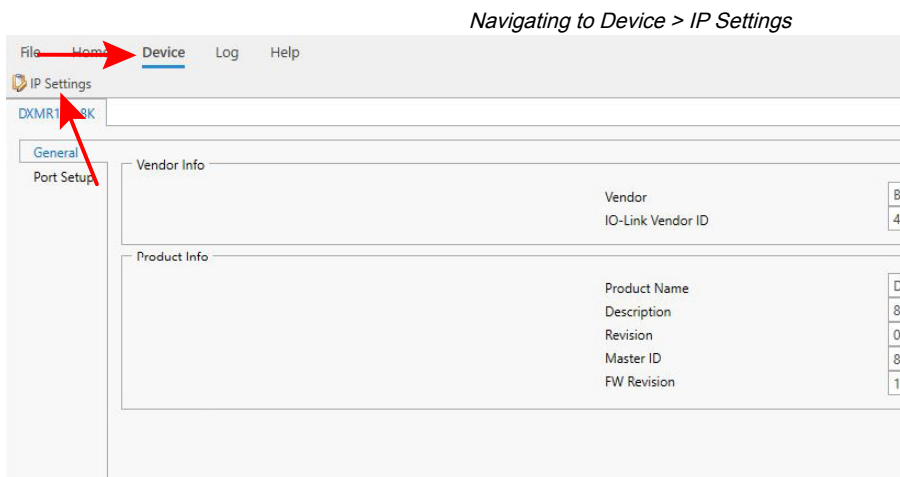


Setting Discrete Ch 1 (pin2), Discrete Ch 2 (pin4), or both to discrete outputs in the Port Setup allows for the manual configuration of those discrete outputs. To turn them on, select **Trigger Output**, and then click **Write**.

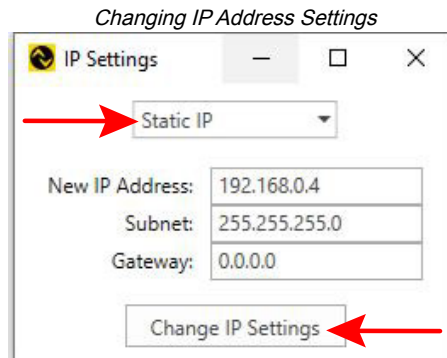


Change the IP Address on the DXMR90-4K and DXMR110-8K IO-Link Masters

1. Click **Device > IP Settings**.



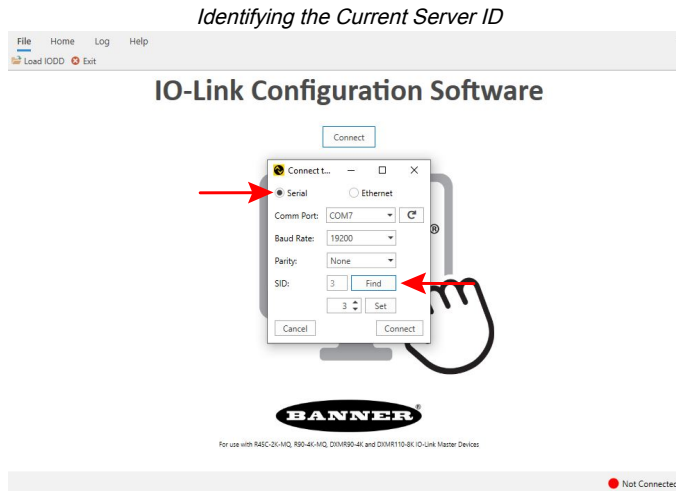
2. In the pop-up window, select **Static IP**, **DHCP**, or **Follow DXM XML Settings** from the drop-down menu.
3. Enter the desired IP address settings, and click **Change IP Settings**.



Change the Server ID on the R90C-4K-MQ and R45C-2K-MQ IO-Link Masters

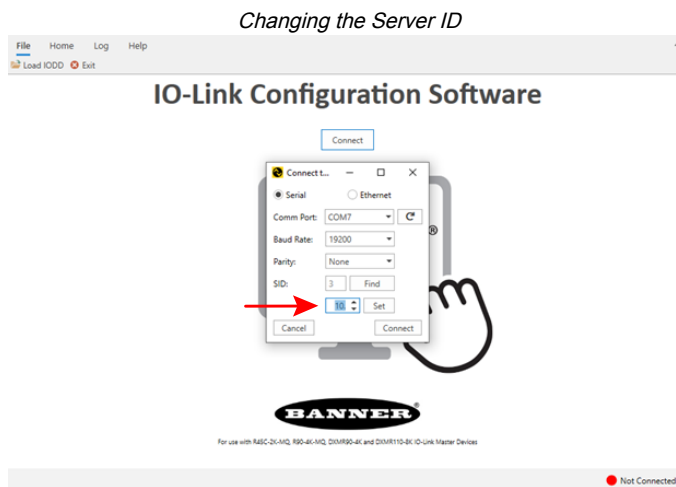
Connect the R45C-2K-MQ or R90C-4K-MQ to the PC, and then to the IO-Link Configuration Software (see "[Connect the Cables](#)" on page 6 and "[Connect to the Software](#)" on page 9). A pop-up window appears after clicking "Connect."

1. Select **Serial**.
2. Click **Find**.

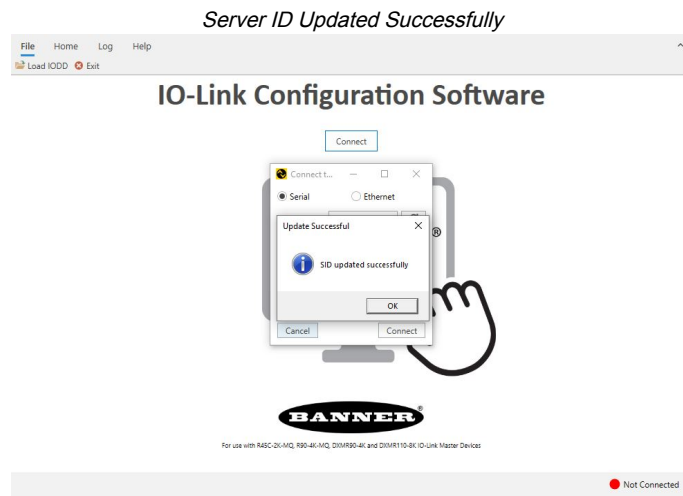


The software displays the current server ID of the connected IO-Link master.

3. Change the server ID of the IO-Link master by using the up and down arrows.
4. Click **Set** to apply the new server ID to the IO-Link master.


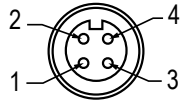


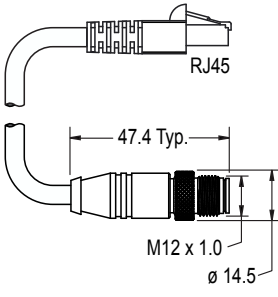

A pop-up window displays that the server ID change was implemented successfully. Click **OK** to close.



Chapter 5 Accessories

IO-Link Hardware

4-Pin Threaded M12 RS-485 to USB Adapter Cordset, with Wall Plug				
Model	Length	Style	Dimensions	Pinout (Female)
BWA-UCT-900	1 m (3.28 ft)	Straight		 <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>

4-pin M12 D-code to RJ45 Shielded Ethernet				
Model	Length	Style	Dimensions	Pinout (Male)
STP-M12D-406	1.83 m (6 ft)	Straight		 <p>1 = White/Orange 2 = Orange 3 = White/Blue 6 = Blue</p>
STP-M12D-415	4.57 m (15 ft)			
STP-M12D-430	9.14 m (30 ft)			

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Chapter 6 Product Support and Maintenance

Maintenance

Maintenance tasks include updating the IO-Link Configuration Software as new versions become available.

Update the Software

The current version of the IO-Link Configuration Software is available for download from <https://www.bannerengineering.com/us/en/products/part.811445.html>.

When connected to a network, if a IO-Link Configuration Software update is available, a red icon  displays in the bottom right corner of the IO-Link Configuration Software. Click this icon to update the software to the latest version.

IO-Link Configuration Software Release Notes

Version	Devices	General
2.1.7	Added support for saving, loading, and sending IO-Link master port settings and IO-Link device configurations.	Users can now save IO-Link master and IO-Link device configurations to their PC, and load these configurations to new devices. Users can also send these configurations to others.
2.1.0	Added functionality for discrete channel status and control in Port Setup tab.	Users can now visualize discrete inputs and trigger discrete outputs in the port setup tab.
2.0.37	Added support for setting the server ID on serial IO-Link masters R90-4K-MQ and R45C-2K-MQ.	IODD Finder API support for automatic searching and downloading of IODDs.
2.0.29	Added support for DXMR110-8K IO-Link Master, Ethernet connectivity, and IP addressing functionality.	DXMR90-4K and DXMR110-8K can connect via Ethernet, and IP addressing functionality added.
2.0.7	Added support for DXMR90-4K IO-Link Master.	Can now connect multiple devices and configure multiple ports.
1.0.16	Supports R45C and R90C IO-Link Master devices.	Initial release.

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