

RAVEN

IO-Link Quick Setup



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1. Introduction

This document provides instructions for quick setup of IO-Link Masters. In addition, it includes detailed information about hardware installation and network connection. Currently, 2 models of Pepperl+Fuchs IO-Link Masters are used by Raven:

1. Cabinet Mount (IP20): ICE2-8IOL-K45P-RJ45
2. Machine Mount (IP67): ICE2-8IOL-G65L-VID

1.1. Installation and Configuration Overview

The IO-Link Master installation includes the following procedures:

1. Connect the power.
2. Connect the Ethernet cable.
3. Connect the IO-Link and digital I/O devices.
4. If necessary, configure the IP address using the embedded web interface or PortVision DX.

2. Cabinet Mount: ICE2-8IOL-K45P-RJ45

Note: The ICE2-8IOL-K45P-RJ45 must be installed in a suitable electrical enclosure mounted on a DIN rail. Mount the ICE2-8IOL-K45P-RJ45 and connect the power with it attached to the DIN rail.

2.1 Hardware Installation

2.1.1 Connecting the Power

The ICE2-8IOL-K45P-RJ45 provides a redundant power input with push-terminal connectors on the top of the IO-Link Master. Redundant power does not need to be supplied to the secondary power input.

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Signal	Pins	Description
V-	1 and 2	24VDC Power Supply Return
V+	3	Primary +24VDC Supply
V+	4	Secondary +24VDC Supply



Power Supply	Values
Power Supply In (V+)	3.7A (Maximum) †
IO-Link Connectors Ports 1 - 8 C/Q L+	200 mA (Maximum) 200 mA (Maximum)
IO-Link Master Power	155mA @ 24VDC (V _S)
† The sum of the following must not exceed V+ maximum input current: <ul style="list-style-type: none"> - IO-Link Mode module power - Actual C/Q current for each IO-Link port - Actual U_S current for each IO-Link port 	

You can use this procedure to connect the IO-Link Master to a UL Listed power supply and UL Listed power cord.

Note: Power should be disconnected from the power supply before connecting it to the IO-Link Master.

1. Depress the orange tab until it is flush with the connector to insert positive and negative solid or ferrule wires (12-24AWG) into the V+ and V- contacts.
2. If necessary, re-insert the connector into the power receptacle.
3. Apply the power and verify that the following LEDs are lit indicating that you are ready to program the IP address and then attach your IO-Link devices.
 - a. The **ETH1/ETH2** LED lights on the connected port.
 - b. The **MOD** and **NET** LEDs are lit.

- c. The IO-Link LEDs flash (if no IO-Link device attached) or are lit if an IO-Link device is attached.
- d. The **MOD** LED is solid green, the IO-Link Master is ready for operation.

2.1.2 Connecting to the Network

The IO-Link Master provides two Fast Ethernet (10/100BASE-TX) standard RJ45 connectors.

You can use this procedure to connect the IO-Link Master to the network or IO controller.

1. Securely connect one end of the RJ45 Ethernet cable to either Ethernet port.
2. Connect the other end to the network or an ethernet/wifi adapter.
3. Optionally, use the other Ethernet port to daisy-chain to another Ethernet device.

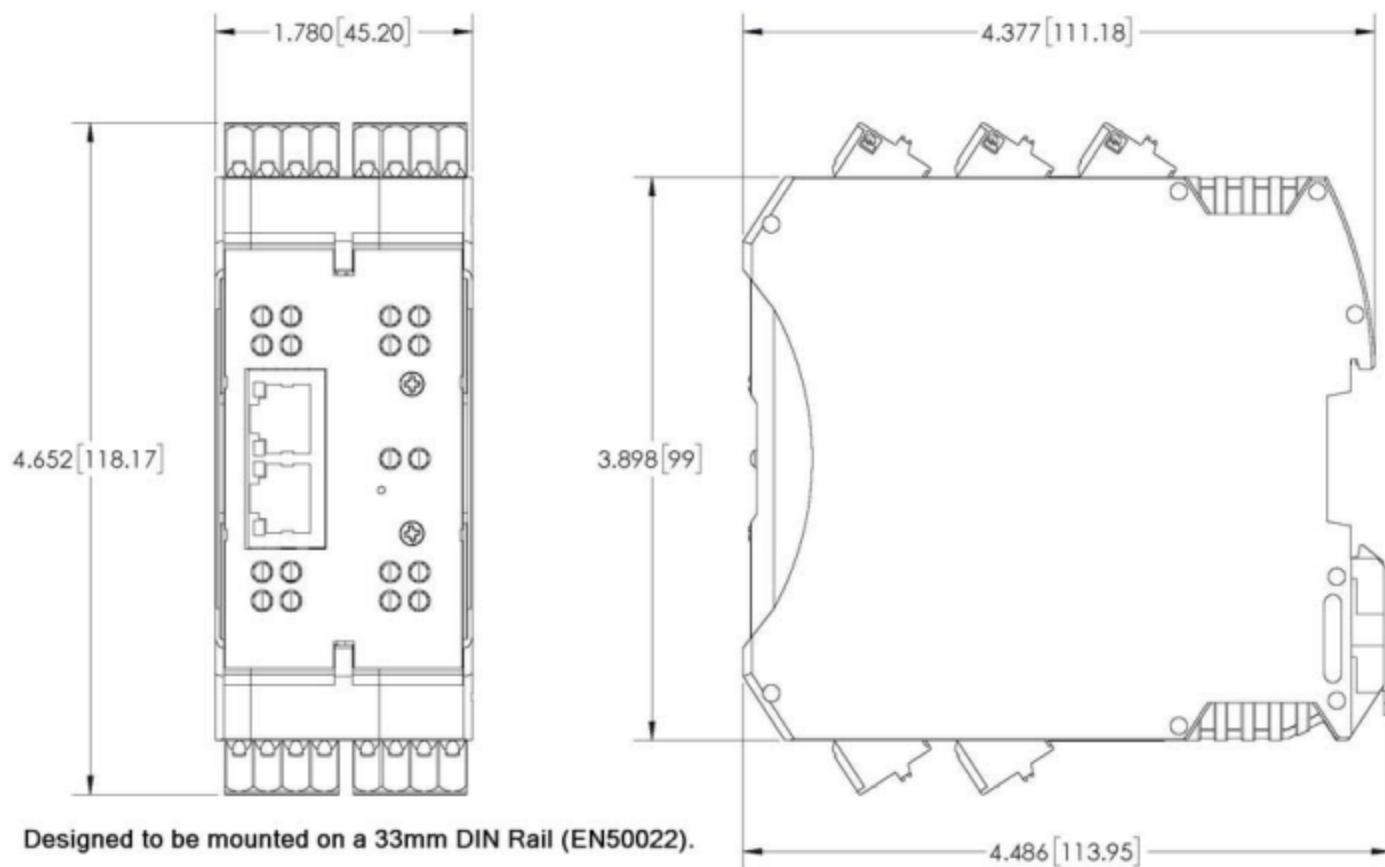
Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

2.1.3 Mounting

You may want to mount the IO-Link Master after programming the IP address and connecting the IO-Link and digital input/output devices.

1. Slide the metal latch down, hook the top of the ICE2-8IOL-K45P-RJ45 to the DIN rail and release the latch.
2. Verify that it is tightly mounted.

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2.2 Connecting Devices

The following provides information about the IO-Link ports

Label	Signal	Description	Value
1	L+	Power Supply Output (+)	200mA @ 24V (Maximum)
2	L-	Power Supply Output (-)	200mA @ 24V (Maximum)
3	DI	Digital Input	Not applicable
4	C/Q	Communication signal, which supports SDCI (IO-Link) or SIO (standard input/output) digital I/O	200mA @ 24V (Maximum)



1. Depress the orange tab until it is flush with the connector to insert the IO-Link device negative wire into the L- contact.
2. Depress the orange tab until it is flush with the connector to insert the IO-Link device positive wire into the L+ contact.
3. If applicable, depress the orange tab until it is flush with the connector to insert the DI wire into the DI contact.
4. Depress the orange tab until it is flush with the connector to insert the IO-Link wire into the C/Q contact.
 - a. If an IO-Link device is attached to the port, the IO-Link LED should now be lit green and the device is receiving power
 - b. If a digital input or output device is attached to the IO-Link port, after the port is configured for digital input or output on the IO-Link Settings page, the IO-Link LED does not light but when an event occurs:
 - i. Digital input causes the DI LED to flash.
 - ii. Digital output causes the IO-Link LED to flash.
 - iii.

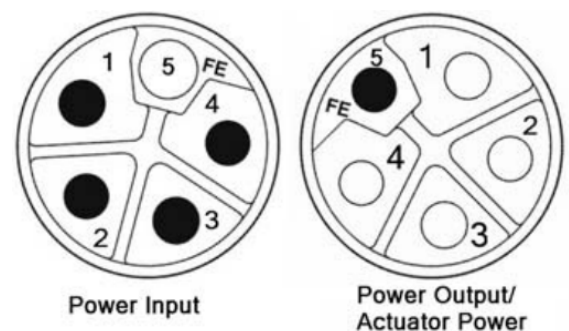
3. Machine Mount: ICE2-8IOL-G65L-V1D

3.1 Hardware Installation

3.1.1 Connecting the Power

The ICE2-8IOL-G65L-V1D provides M12 (5-poles) L-coded input and output power connectors. Use a 24VDC power supply capable of the total output current required.

Note: Power connectors must have an approved cable or protective cover attached to the port guarantee to IP67 compliance.



Pin	Power Input (Male)	Power Output or Actuator Power (Female)	Description
1	US+	US+ or +V	IO-Link Master's system electronics and IO-Link devices
2	UA-	UA- or 0V	Actuator supply
3	US-	US- or 0V	IO-Link Master's system electronics and IO-Link devices
4	UA+	UA+ or +V	Actuator supply
5	FE		

Note: The IO-Link Master requires a UL listed power supply with an output rating of 24VDC.

Power Supply	Values
Power Supply In - Maximum V_S and V_A	16A (Maximum)
IO-Link Connector Port 1 C/Q (Pin 4) configured as digital output L+/L- Sensor Supply (Pins 1 and 3)	200 mA (Maximum) 1.6A (Maximum)
IO-Link Connector Port 3 C/Q (Pin 4) configured as digital output L+/L- Sensor Supply (Pins 1 and 3)	200 mA (Maximum) 1A (Maximum)
IO-Link Connectors Ports 2 and 4 - 8 C/Q (Pin 4) configured as digital output L+/L- Sensor Supply (Pins 1 and 3)	200 mA (Maximum) 500 mA (Maximum) Note: See ICE2-8IOL-G65L-V1D IO-Link Ports on Page 37 for information about how to divide up the power output between ports.
IO-Link Master Power	100mA @ 24VDC (V_S)
Power Supply Out V_S V_A	16A † (Maximum) 16A †† (Maximum)
<p>† V_S output available is determined by subtracting the following from the available input current.</p> <ul style="list-style-type: none"> - IO-Link Master module electronics current. - Total L+/L- current for all IO-Link ports. - Total C/Q current for all IO-Link ports. <p>†† V_A output available is the same as the available V_A input current.</p>	

You can use the following procedure to connect the IO-Link Master to a power supply.

Note: Power should be disconnected from the power supply before connecting it to the IO-Link Master. Otherwise, your screwdriver blade can inadvertently short your power supply terminal connections to the grounded enclosure.

1. Securely attach the power cable between the male power connector (PWR In) and the power supply.
2. Either attach a power cable between the female power connector and another device to which you want to provide power or securely attach a connector cap to prevent dust or liquids from getting into the connector.
3. Apply the power and verify that the following LEDs are lit indicating that you are ready to attach your IO-Link or digital I/O devices.
 - a. The **US** LED light is solid..
 - b. The **ETH1/ETH2** LED lights on the connected port.
 - c. The **MOD** and **NET** LEDs are lit.
 - d. The IO-Link LEDs flash (if no IO-Link device attached) or are lit if an IO-Link device is attached.

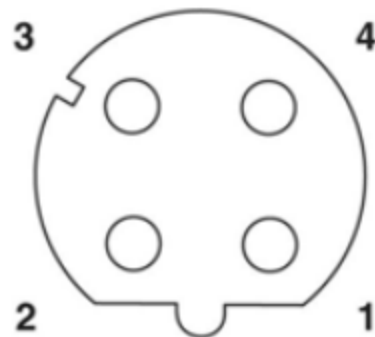
Note: It takes approximately 25 seconds after power up for the IO-Link Master to be ready for operation.

- e. The **MOD** LED is solid green, the IO-Link Master is ready for operation.

3.1.2 Connecting to the Network

The IO-Link Master provides two Fast Ethernet (10/100BASE-TX) M12, 4-pin female D-coded connectors.

Pin	Signal
1	Tx+
2	Rx+
3	Tx-
4	Rx-



You can use this procedure to connect the IO-Link Master to the network.

1. Securely connect one end of a shielded twisted-pair (Cat 5 or higher) M12 Ethernet cable to either Ethernet port.
2. Connect the other end of the cable to the network.
3. Optionally, use the other Ethernet port to daisy-chain to another Ethernet device.
4. If you did not connect both Ethernet ports, make sure that the unused port is covered with a connector cap to keep dust and liquids from getting in the connector.

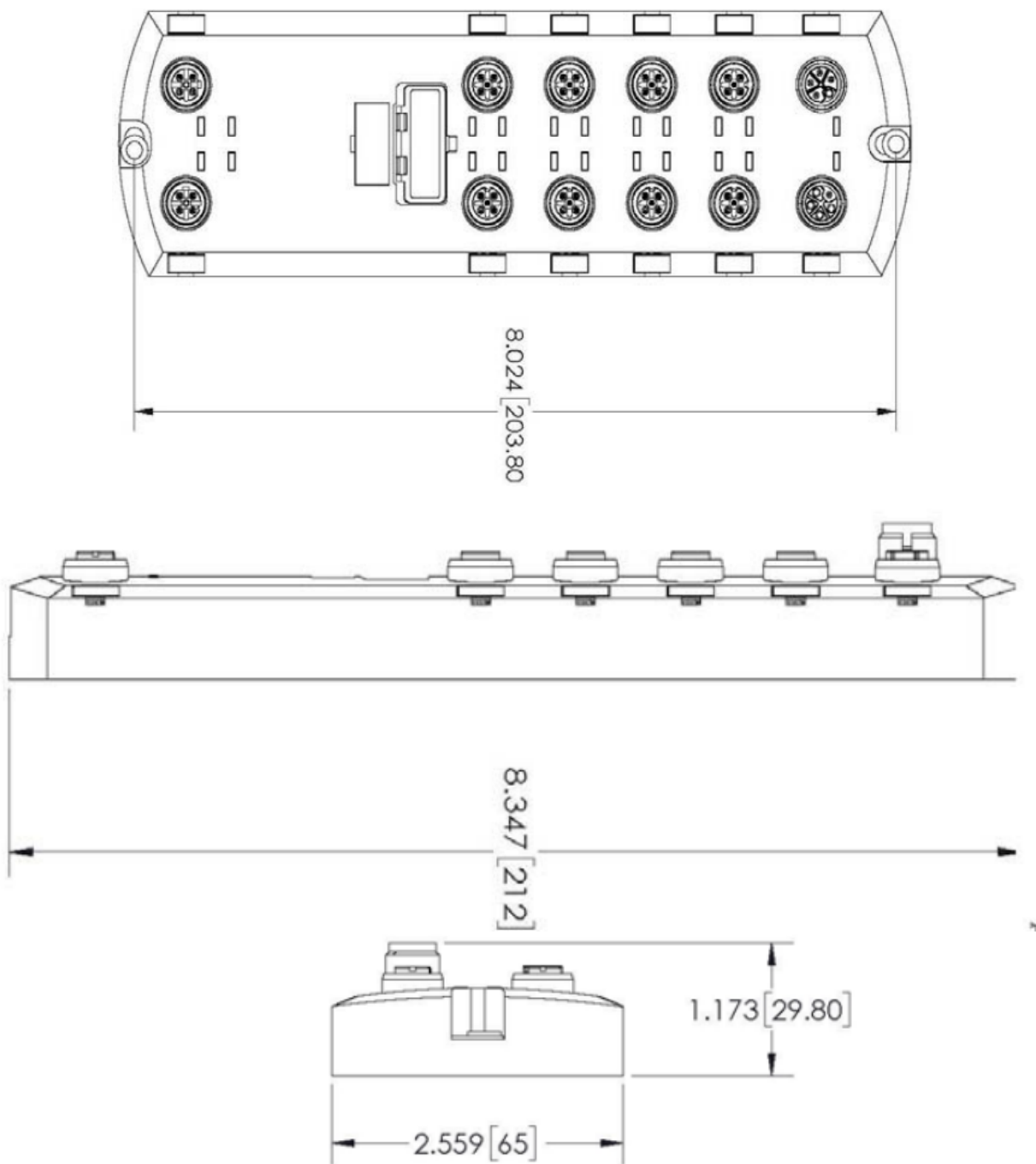
Note: Ethernet ports must have an approved cable or protective cover attached to the connector to guarantee IP67 integrity.

3.1.3 Mounting

Use the following procedure to mount the IO-Link Master. You can mount the IO-Link Master on a mounting panel or a machine.

1. Verify that the mounting surface is level (flat) to prevent mechanical stress to the IO-Link Master.
2. Attach the IO-Link Master to the surface with two 6mm screws and washers, torque down to 8Nm.

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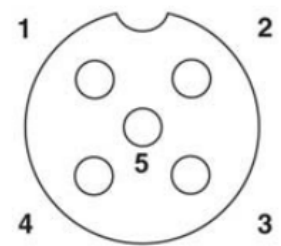


3.2 Connecting Devices

The ICE2-8IOL-G65L-V1D provides eight IO-Link ports with M12, 5-pin female/A coded connectors. Each port has robust over-current protection and short circuit protection on its L+/L- power output and C/Q IO-Link signal. The pin-out for each IO-Link port is per the IO-Link standard and is provided in the following table:

This table provides signal information for the IO-Link connectors.

Pin	Signal	Description
1	L+	IO-Link device power supply (+24V)
2	DI	Digital input
3	L-	IO-Link device power supply (0V)
4	C/Q	Communication signal, which supports SDCI (IO-Link) or SIO (standard input/output) digital I/O
5	FE	Functional Earth (electronics wiring)



Use the following procedure to attach IO-Link or digital input/output devices to the ports.

- Securely attach the IO-link cable between the IO-Link or digital input/output device and the IO-Link port.
Note: Make sure that you tighten the cables properly to maintain IP67 integrity.
- If necessary, securely attach a connector cap to prevent dust or liquids from getting into any unused ports. Connector caps were shipped with the IO-Link Master.
Note: IO-Link ports must have an approved cable or protective cover attached to the port to guarantee IP67 compliance.
- If necessary, configure IO-Link port parameters using the **Configuration | IO-Link Settings** page to configure the port mode.
 - If an IO-Link device is attached to the port, the IO-Link LED should now be lit green and the device is receiving power.

- If a digital input or output device is attached to the IO-Link port, after the port is configured for digital input or output on the **IO-Link Settings** page, the IO-Link LED does not light but when an event occurs:
 - ◆ Digital input causes the DI LED to flash.
 - ◆ Digital output causes the IO-Link LED to flash.

4. Configuring the network

The IP addresses should be set either through the webserver or using PortVision DX. In addition, you may use PortVision DX to access and manage your IO-Link Masters. The default IP address is 192.168.1.250, but typically Raven will ship IO-link Masters pre-configured with either a provided static IP or with the devices in DHCP mode. To find the current IP address of your IO-Link Master you can use PortVision DX. To access the webserver, enter the IP address into a web browser or through the built-in web browser in PortVision DX.

Note: If you do not use PortVision DX to configure the IP address, you will need to change your PC or laptop address to the same subnet as the IO-Link Master.

4.1 Using PortVision DX to Program the Network

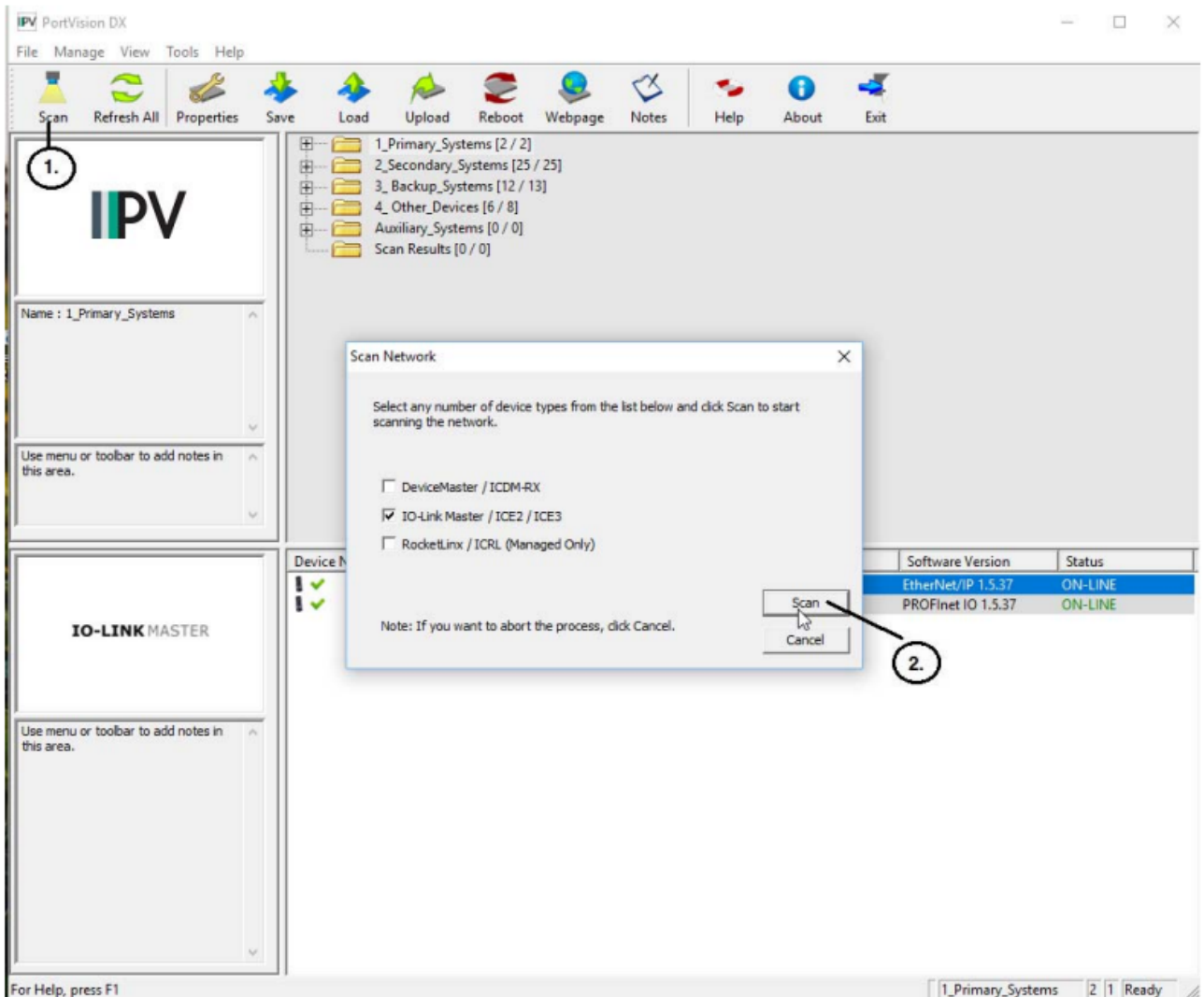
PortVision DX automatically detects Pepperl+Fuchs Ethernet attached products on the local network segment so that you can configure the network address, upload firmware, and manage the device.

The following procedure shows how to configure a single IO-Link Master connected to the same network segment as the Windows system. If the IO-Link Master is not on the same physical segment, you can add it manually. To add a device manually, refer to the help system.

1. If you have not done so, install PortVision DX.
Note: You can download [PortVision DX](#)
2. Start PortVision DX using the PortVision DX desktop shortcut or from the Start button, click Pepperl+Fuchs Control > PortVision DX.
3. Depending on your operating system, you may need to click Yes to the Do you want to allow the following program to make changes to this computer? query.
4. Click the **Scan** button in the Toolbar.

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5. Click **Scan** to locate the Pepperl+Fuchs Control Ethernet attached products including the IO-Link Masters on the network.

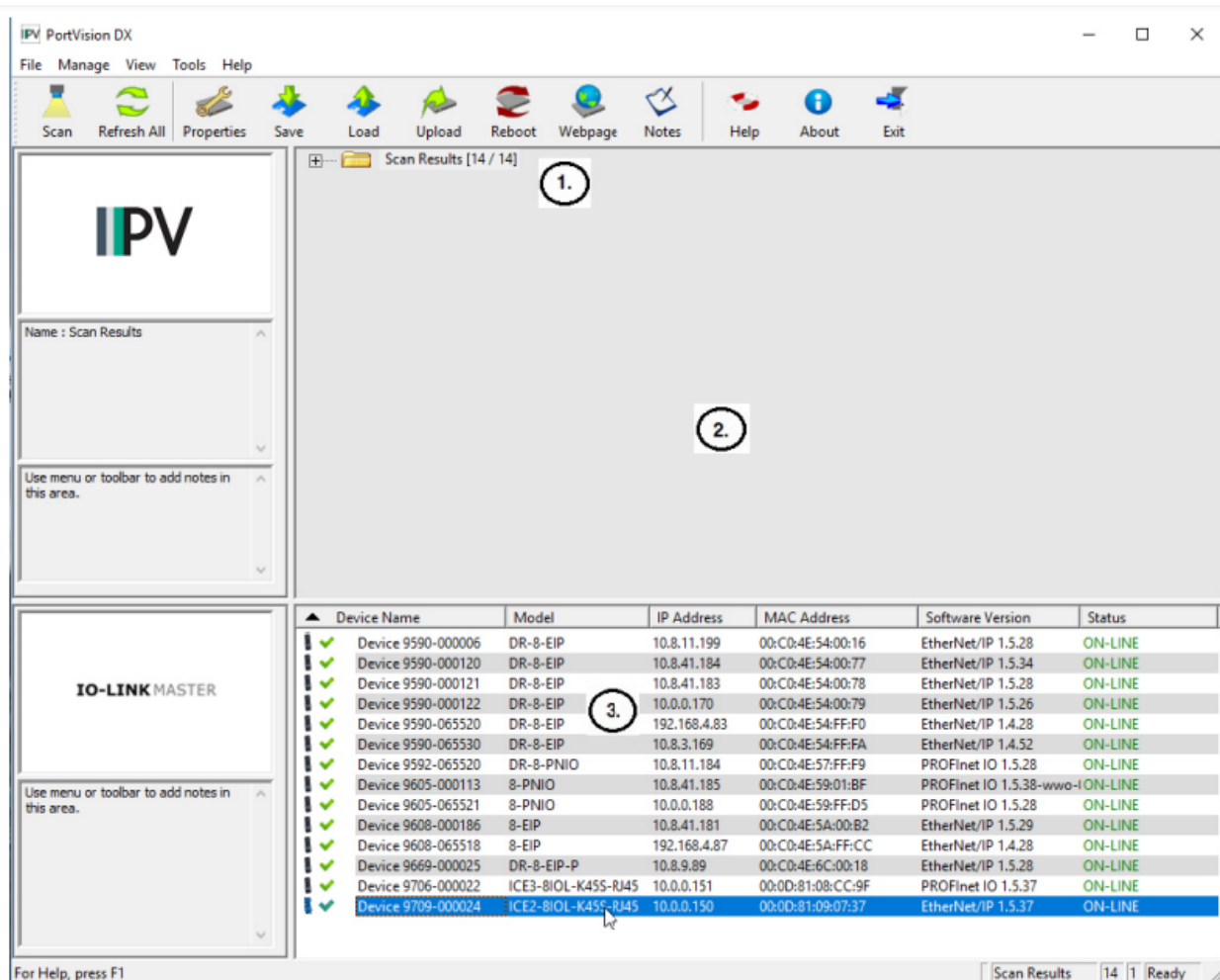


Note: The newly discovered devices appear in the Scan Results folder.

6. Highlight the IO-Link Master for which you want to program network information and open the **Properties** screen using one of these methods.
 - a. Double-click the IO-Link Master in the Device Tree or Device List pane.
 - b. Highlight the IO-Link Master in the Device Tree or Device List pane and click the **Properties** button.

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- c. Right-click the IO-Link Master in the Device Tree or Device List pane and click **Properties** in the popup menu.
- d. Highlight the IO-Link Master, click the **Manage** menu and then **Properties**.

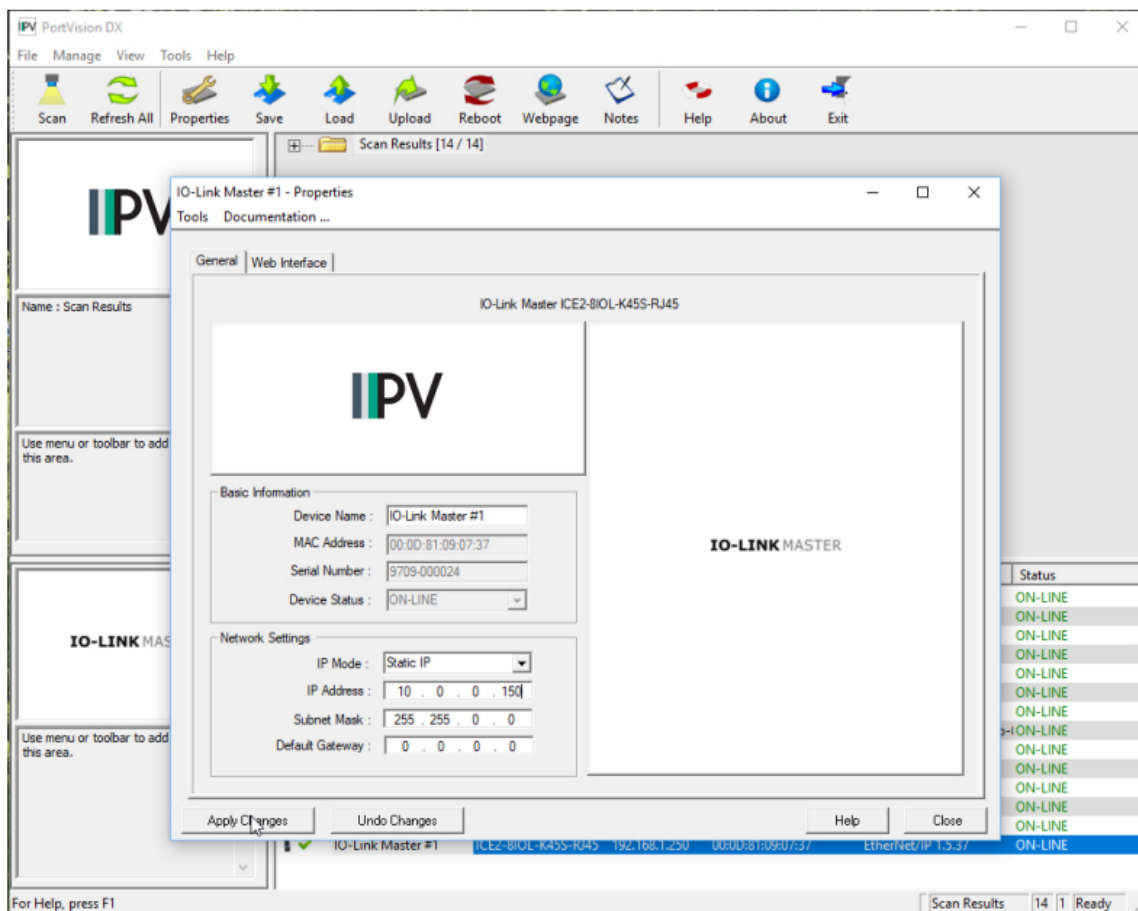


1. You can expand folders and view the devices in the **Device Tree** pane. The contents of the selected folder is displayed in the **Device List** pane.
2. This is the **Device Tree** pane.
3. This is the **Device List** pane.

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7. Optionally, rename the IO-Link Master in the **Device Name** field.
8. Change the IO-Link Master network properties as required for your site.
 - a. To use the IO-Link Master with DHCP, click **DHCP IP**, and make sure that you provide the MAC address of the device to the network administrator. Make sure that the administrator reserves the IP address, subnet mask and gateway address of the IO-Link Master in the DHCP server.
 - b. To program a static IP address, click **Static IP** and enter the appropriate values for your site.
9. Click **Apply Changes** to update the network information on the IO-Link Master.

Note: If you are deploying multiple IO-Link Master that share common values, you can save the configuration file and load that configuration onto another IO-Link Master.



10. Click **Close** to exit the **Properties** window.