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Introduction

This guide is intended to help first-time users set up communication between Rockwell PLCs and Cognex DataMan DM290/390.

NOTE: Follow these instructions for DataMan 390 setup. However, the screenshots are from the DataMan 290 setup.

Software Tools Needed.

- Web browser to connect to DataMan WebUI
- Rockwell Studio 5000

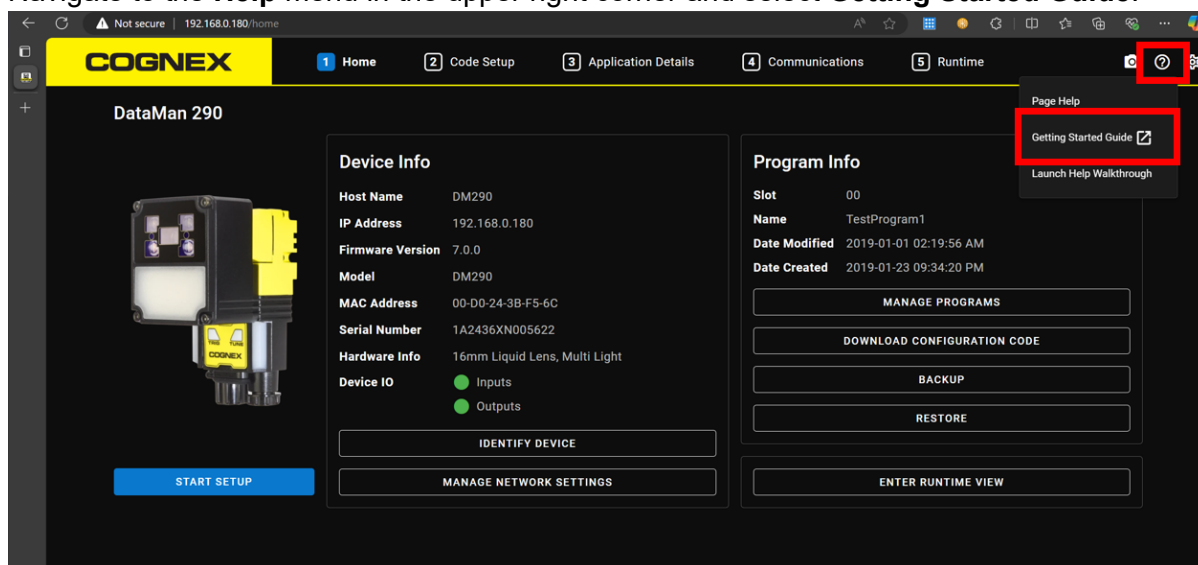
Download Needed Files

EDS Files

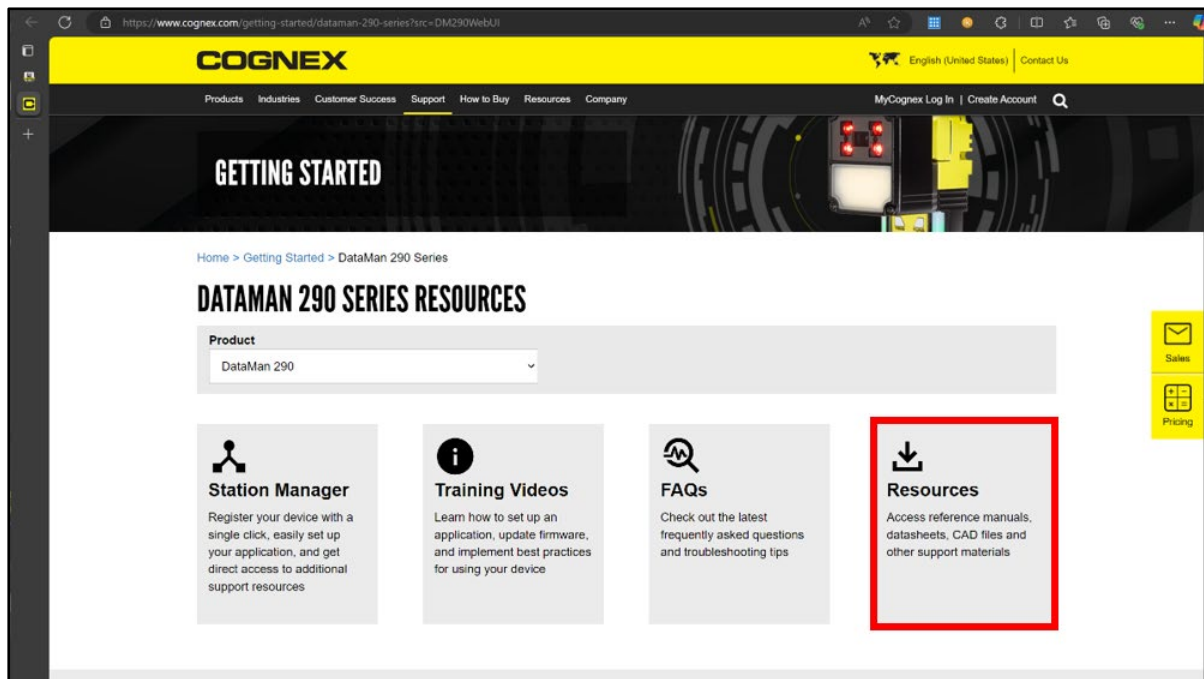
An **EDS file** (Electronic Data Sheet) is a standardized text file used in industrial automation to describe the communication properties and features of a device on a particular industrial network or protocol. It serves as a "data sheet" for configuring and integrating a device within a networked system.

EDS files can be downloaded from Cognex.com. The recommended way to obtain resources for your device is to use the DataMan WebUI. Open your web browser and navigate to the assigned IP address of your device. The DataMan WebUI should appear as shown below.

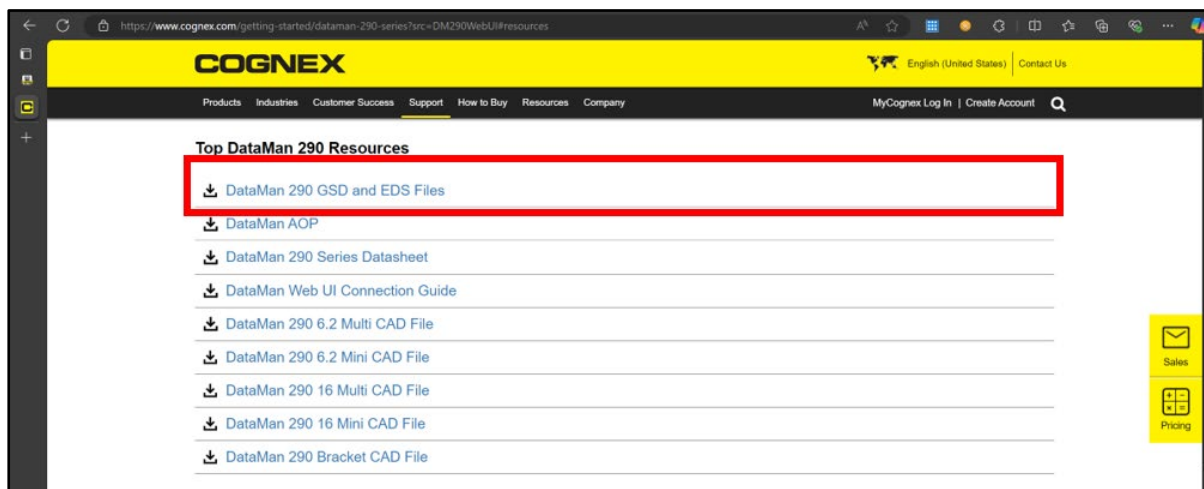
1. Navigate to the **Help** menu in the upper right corner and select **Getting Started Guide**.



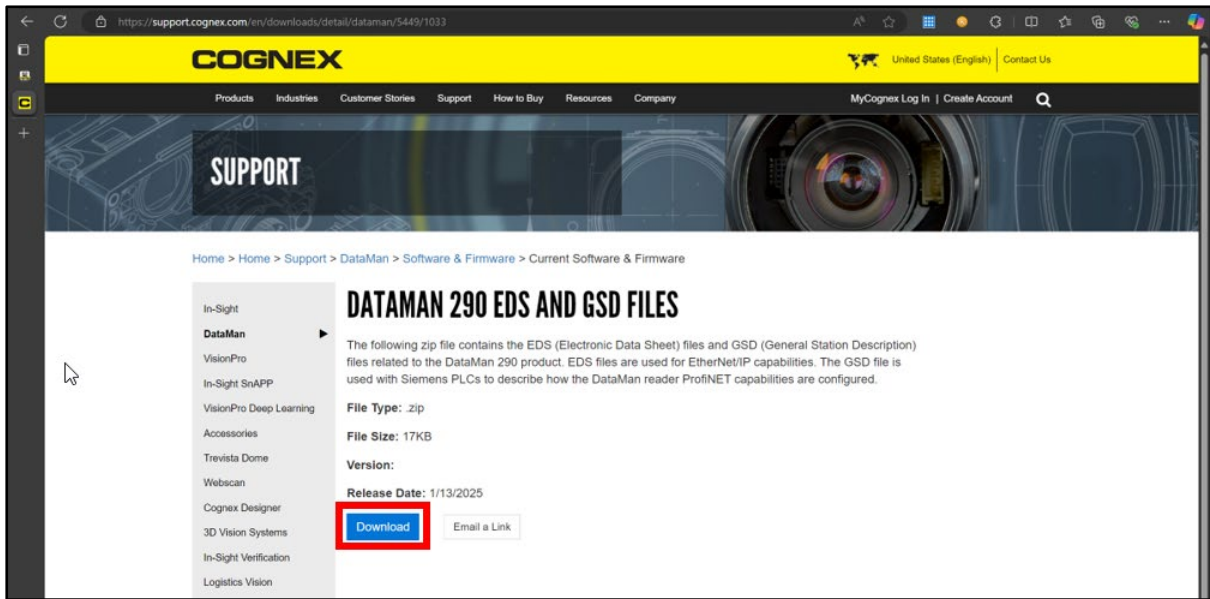
2. Select Resources.



3. Select DataMan 290 GSD and EDS Files from the Resources list.



- Click the **Download** button.



- Unzip and copy the downloaded folder to your PLC programming PC.

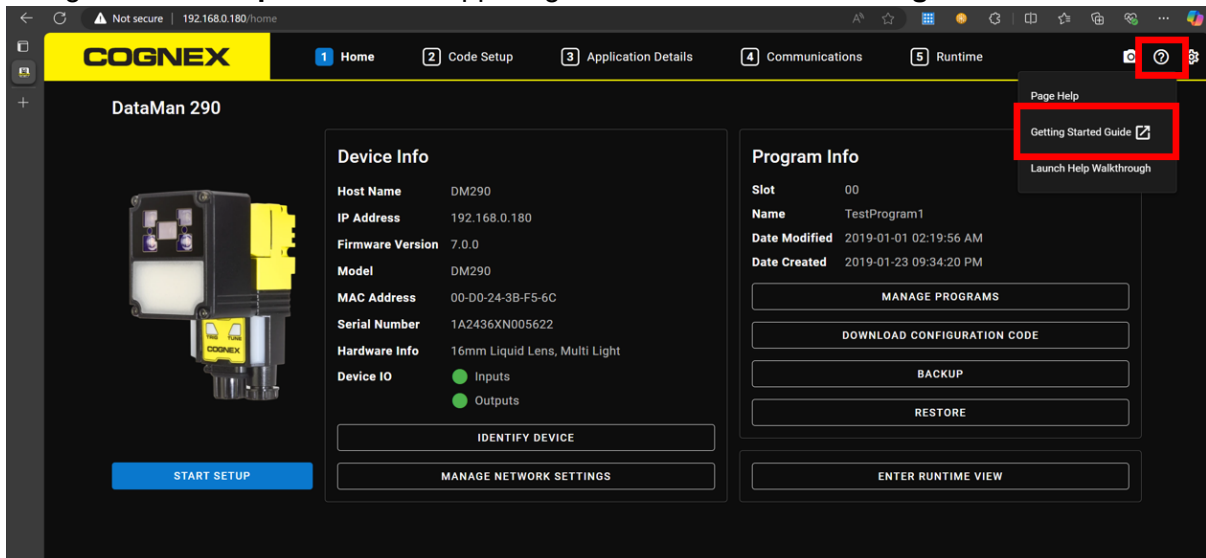
AOP Files

An **AOP** (Add-On Profile) is a software extension or plugin used in industrial automation systems to simplify the integration and configuration of a specific device or module within a control system, particularly for communication over industrial protocols like **EtherNet/IP**, **DeviceNet**, or others supported by Rockwell Automation (Allen-Bradley).

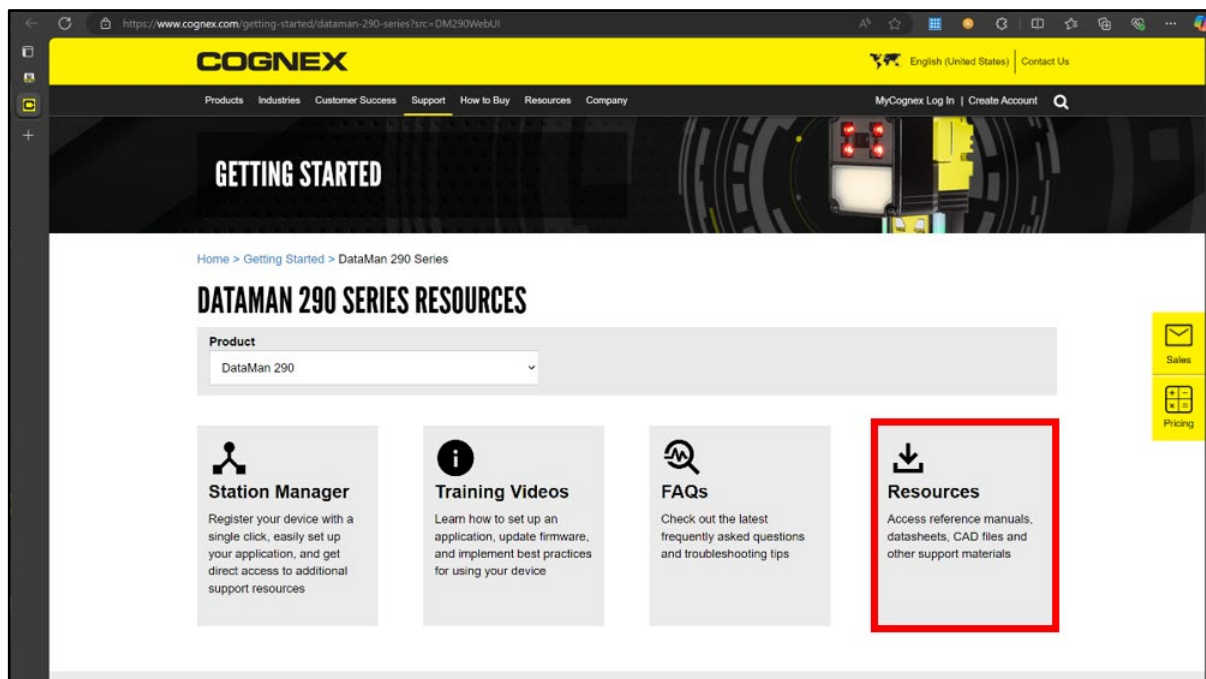
NOTE ABOUT COGNEX DATAMAN AOP: *There is no distinct DM290 AOP. There are other compatible DM AOPs that are available that we will demonstrate how to configure in this document.*

AOP files can be downloaded from Cognex.com. The recommended way to obtain resources for your device is to use the DataMan WebUI. Open your Web Browser and navigate to the assigned IP Address of your device. The DataMan WebUI should appear as shown below.

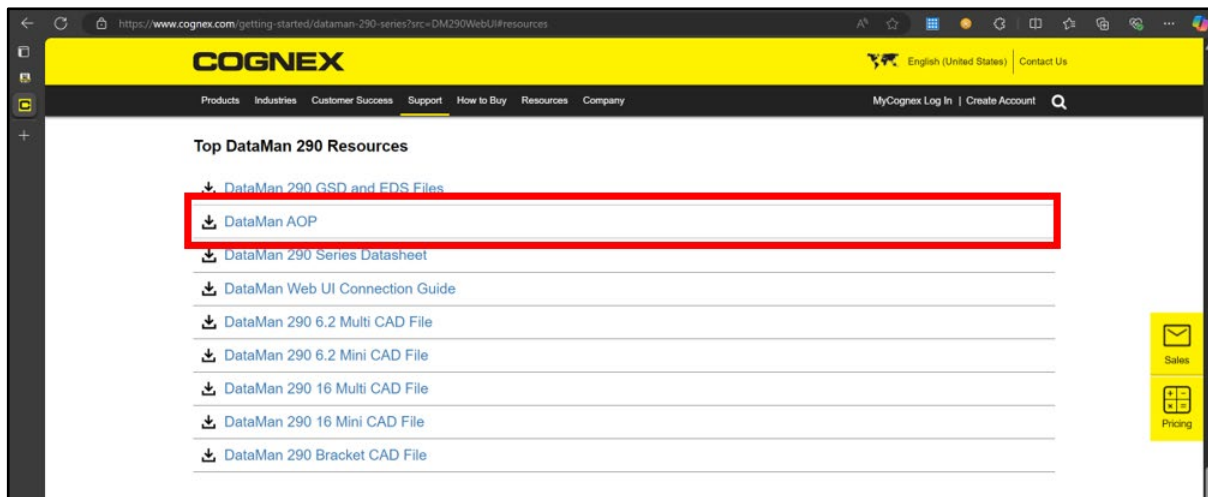
1. Navigate to the **Help** menu in the upper right corner and select **Getting Started Guide**.



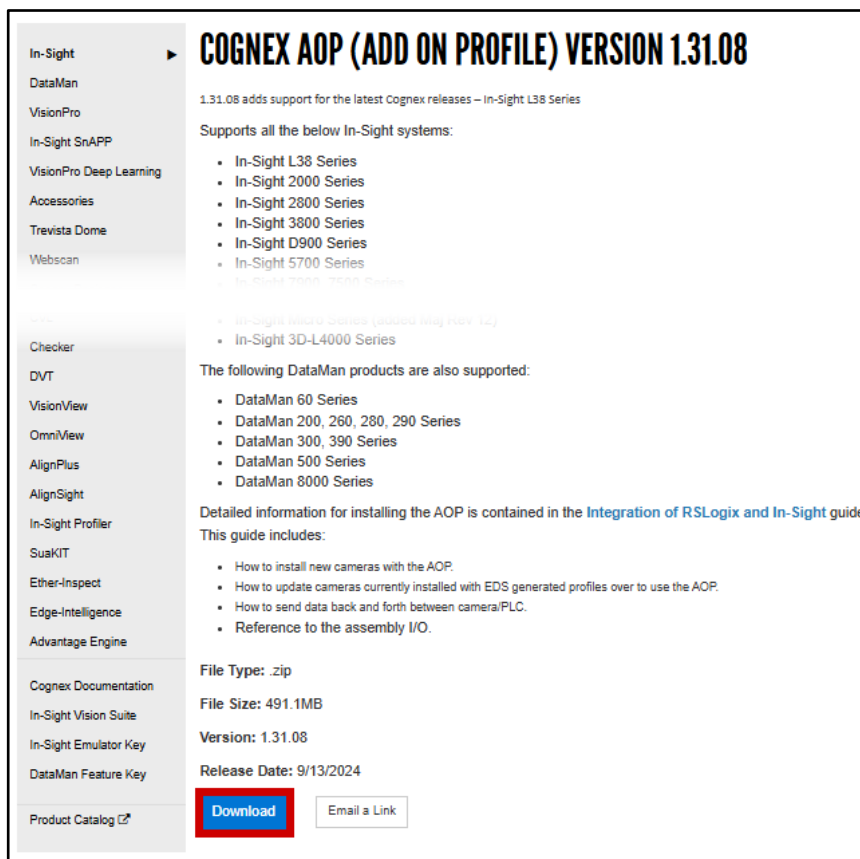
2. Select **Resources**.



3. Select **DataMan AOP** from the Resources list.



4. Click the **Download** button.

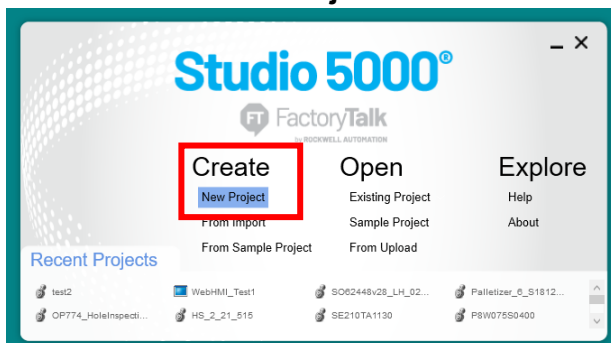


5. Unzip and copy the downloaded folder to your PLC programming PC.

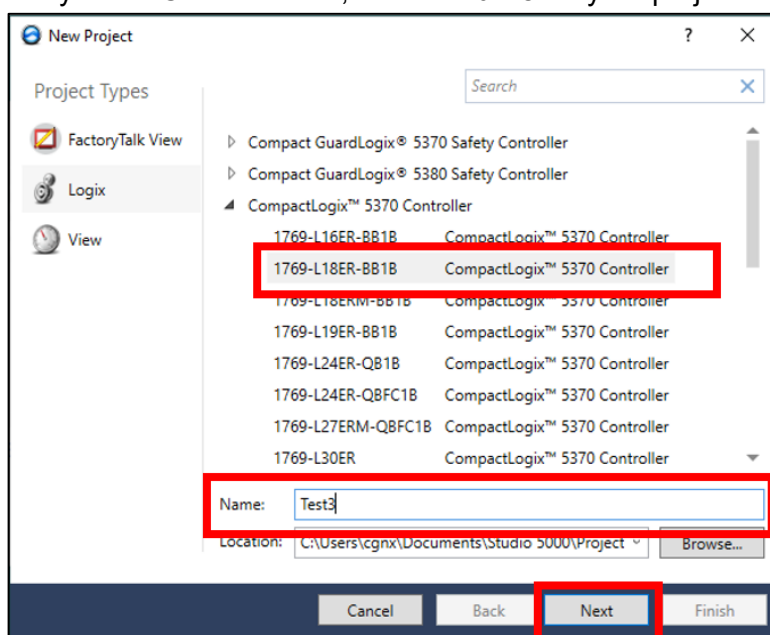
PLC Setup

Create a Rockwell Project

1. Open **Rockwell Studio 5000**.
2. Select **Create - New Project**.

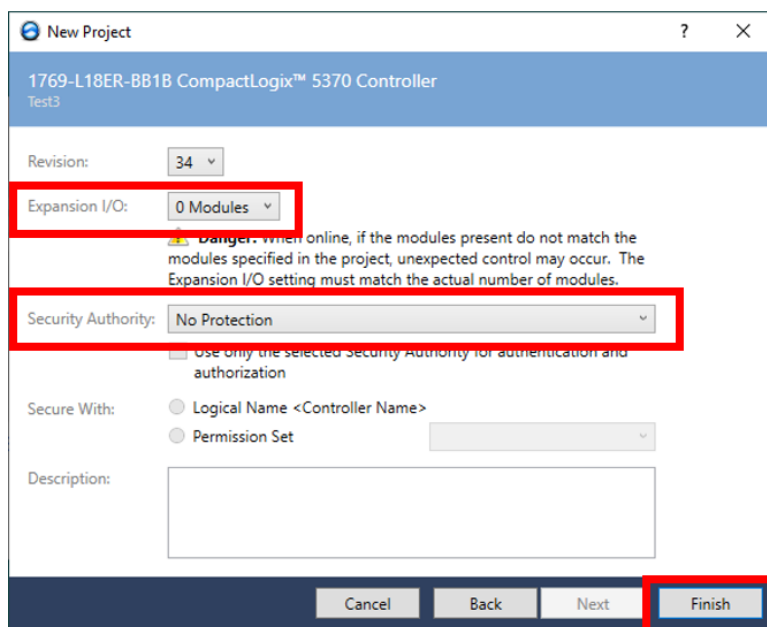


3. Select your PLC from the list, enter a **Name** for your project and click the **Next** button.

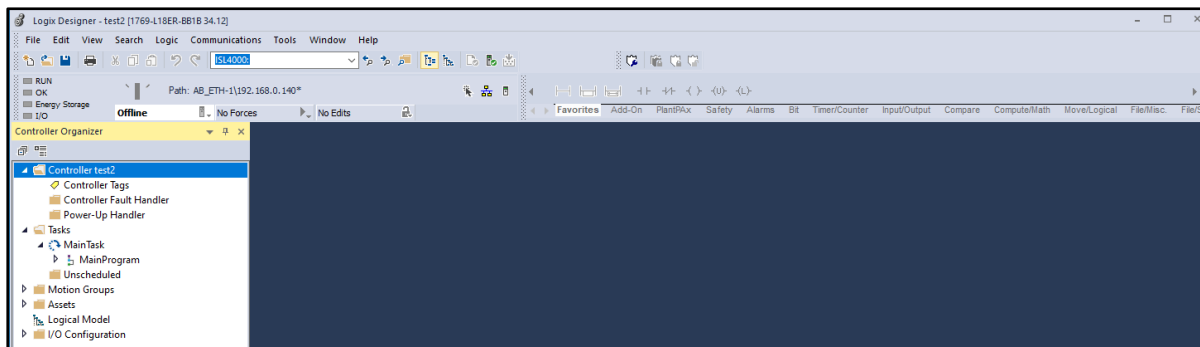


4. Select the I/O Configuration and Protection settings:
 - *Expansion I/O* = 0 Modules
 - *Security Authority* = No Protection

5. Click the **Finish** button.



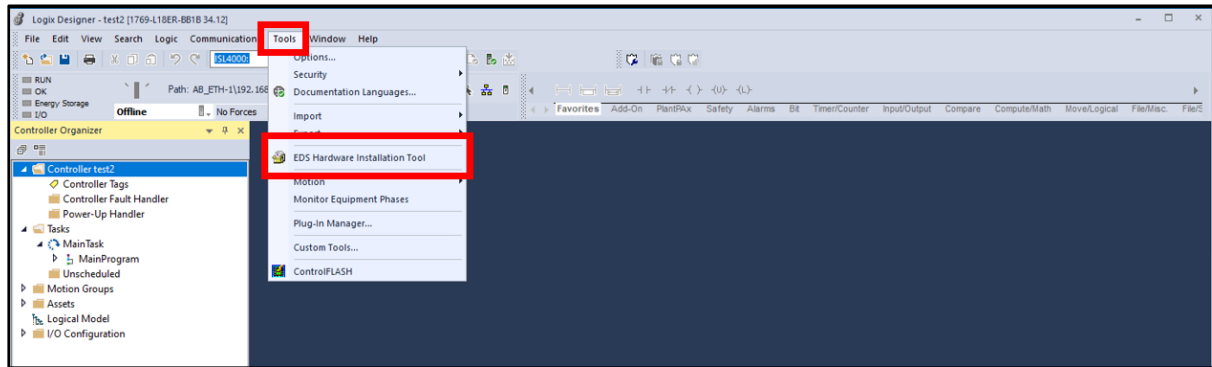
The new project opens.



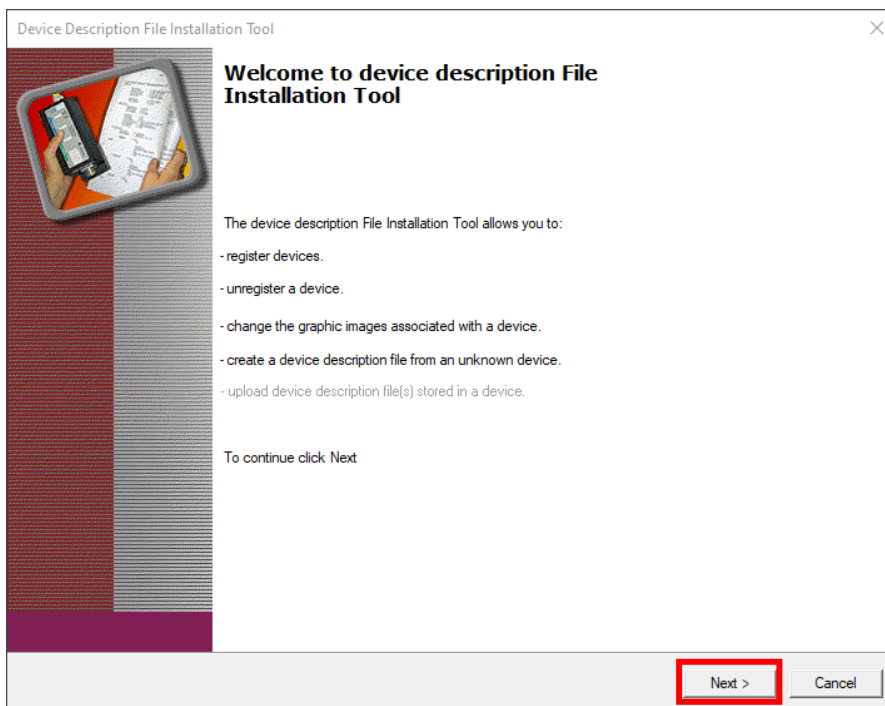
EDS Installation

Make sure you are Offline.

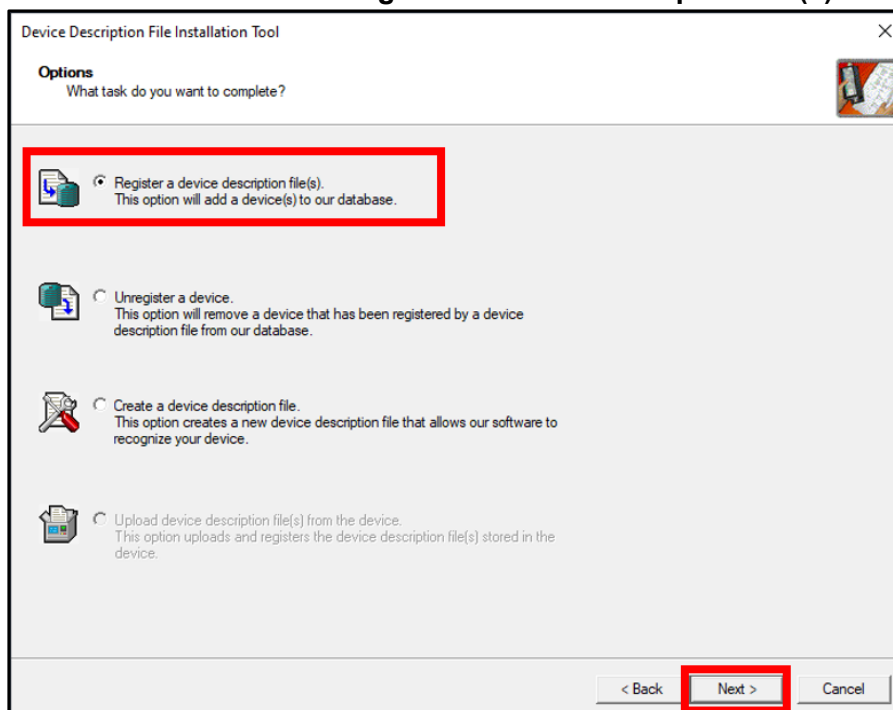
1. From Rockwell Studio 5000, open the **Tools** menu and select **EDS Hardware Installation Tool** from the list.



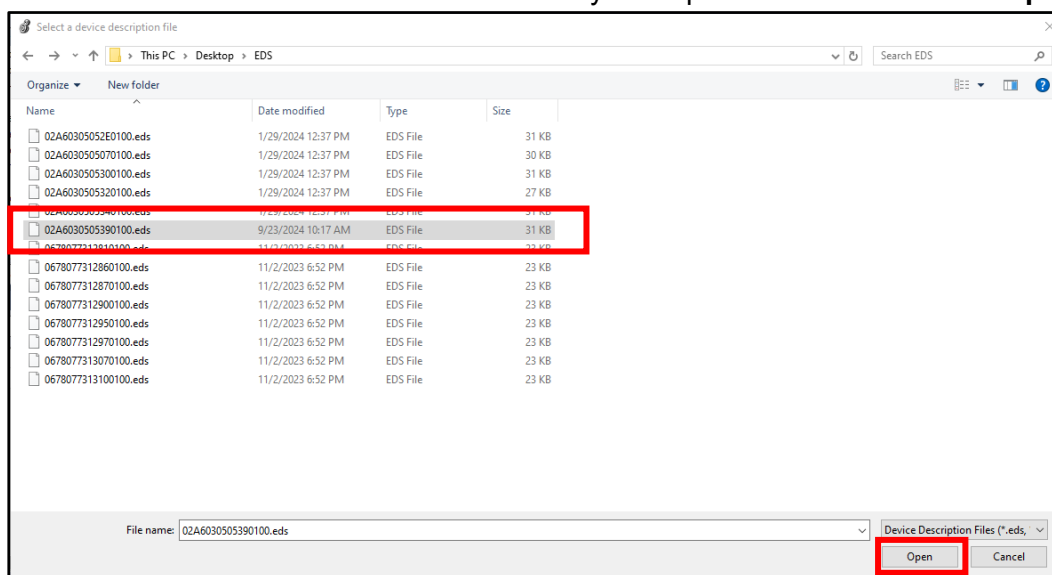
2. Click the **Next** button.



3. Select the radio button to **Register a device description file(s)** and click the **Next** button.



4. Select the **02A6030505390100.eds** file from your copied folder and click the **Open** button.



5. Select the radio button to **Register a single device description file** and click the **Next** button.

Device Description File Installation Tool

Registration
Device description file(s) will be added to your system for use in Rockwell Automation applications.

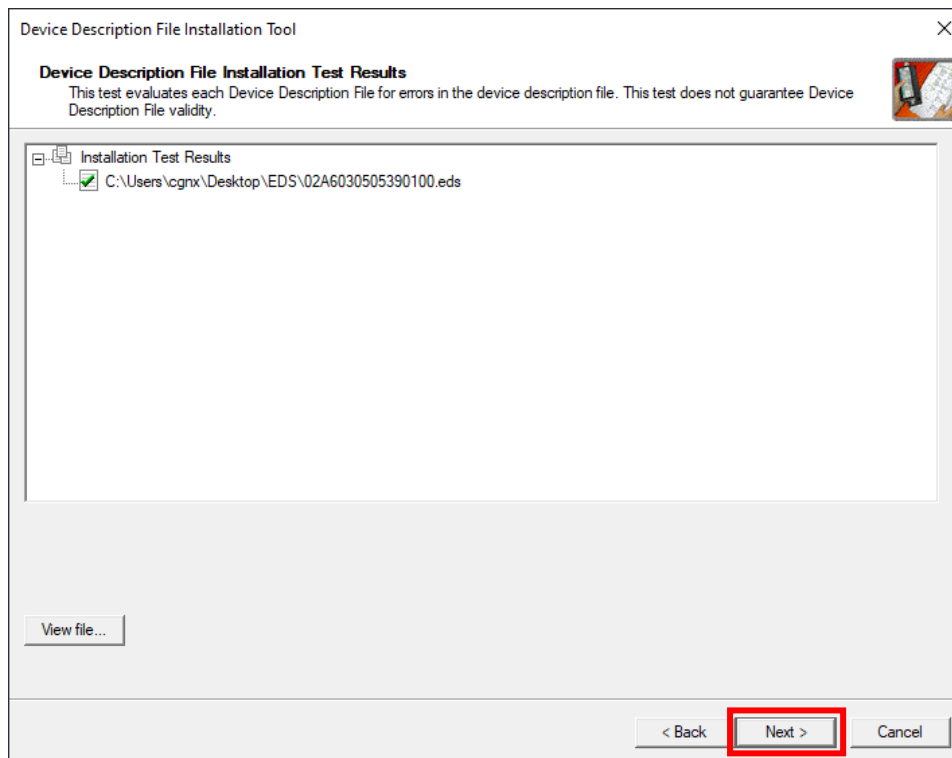
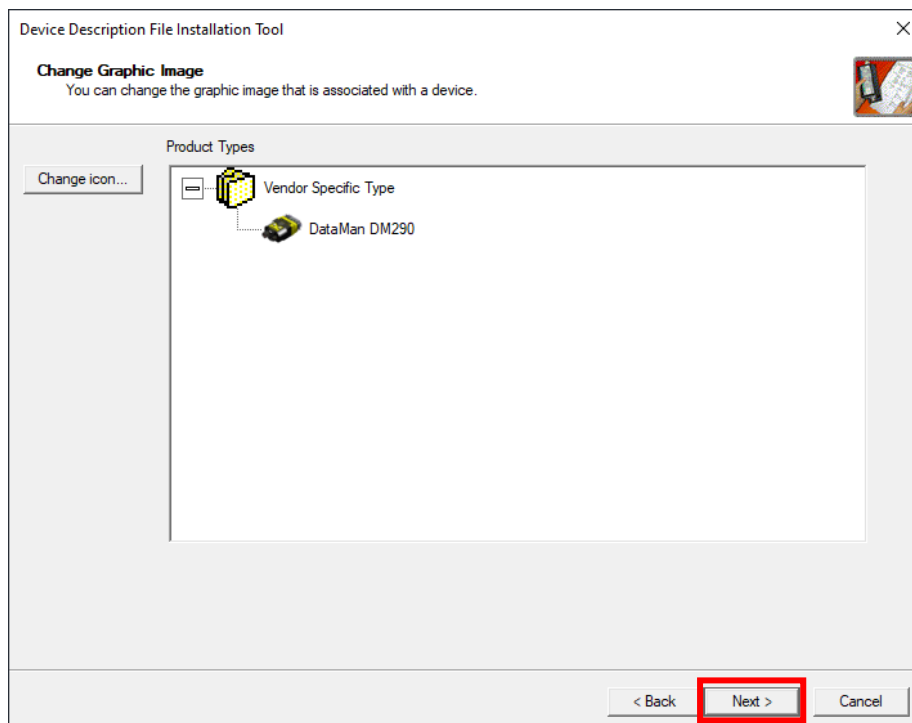
☒ Register a single device description file
☐ Register a directory of device description files ☐ Look in subfolders

Named:

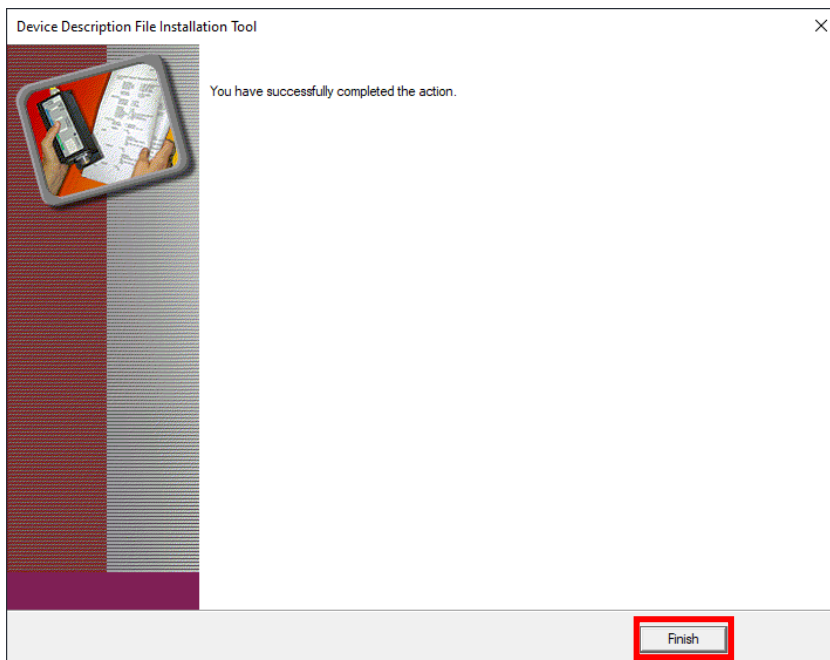
 * If there is an icon file (.ico) with the same name as the file(s) you are registering then this image will be associated with the device.

To perform an installation test on the file(s), click Next

< Back **Next >** Cancel

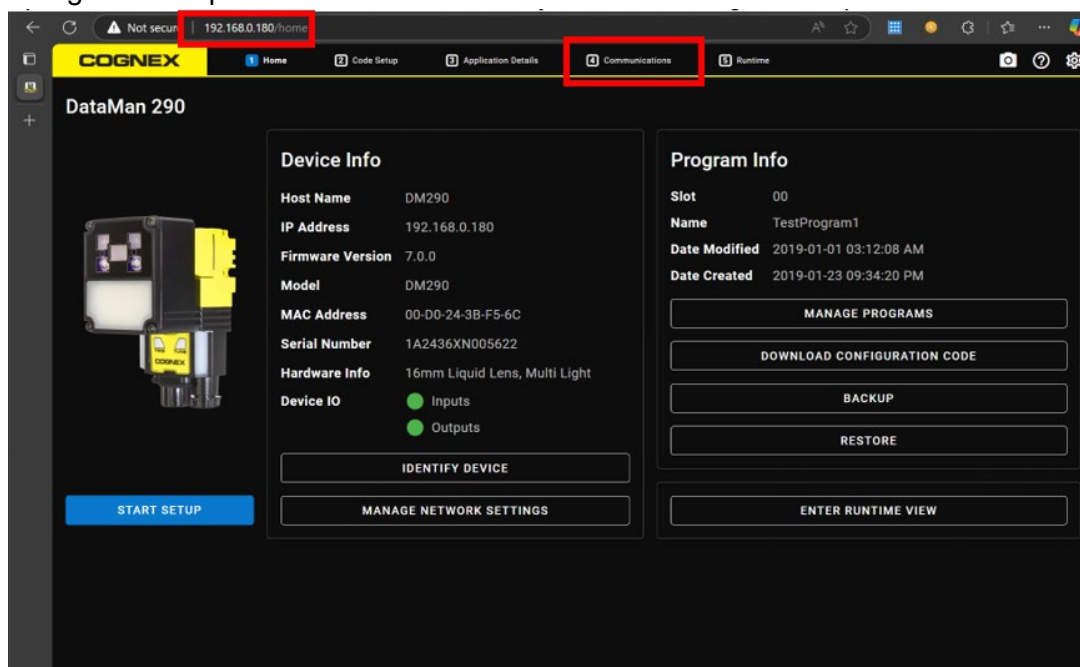
6. Click the **Next** button.7. Click the **Next** button.

8. Click the **Finish** button.

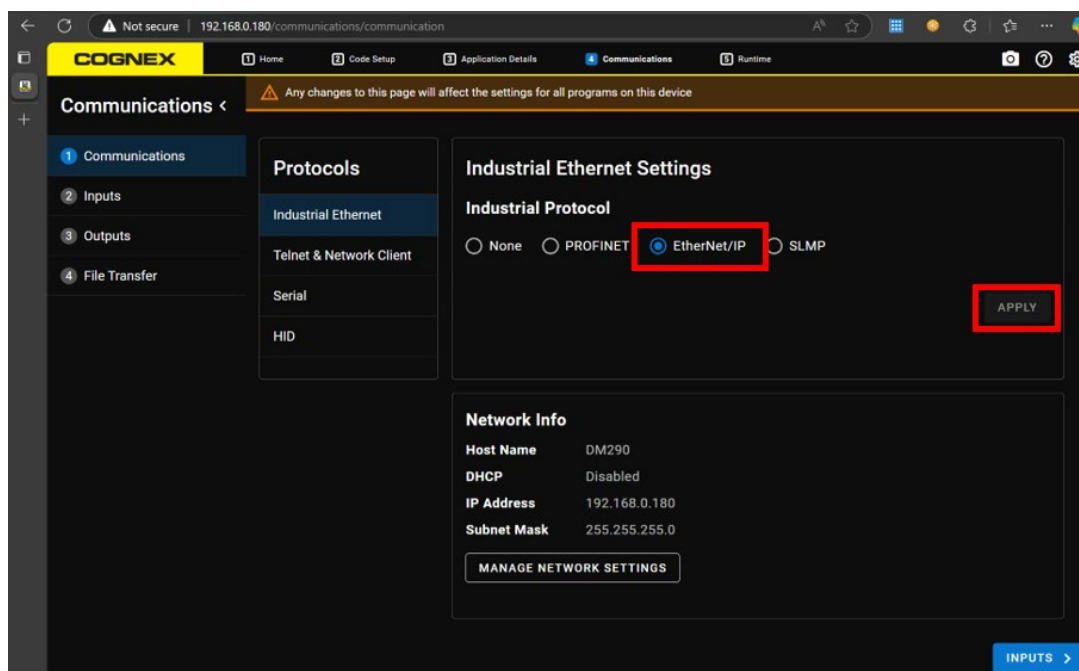


DataMan WebUI Communications Section

1. Open a Web Browser and enter the IP Address of your DM290.
2. Navigate to Step 4 **Communications**.



3. Select the **EtherNet/IP** radio button to enable EtherNet/IP and click the **Apply** button.

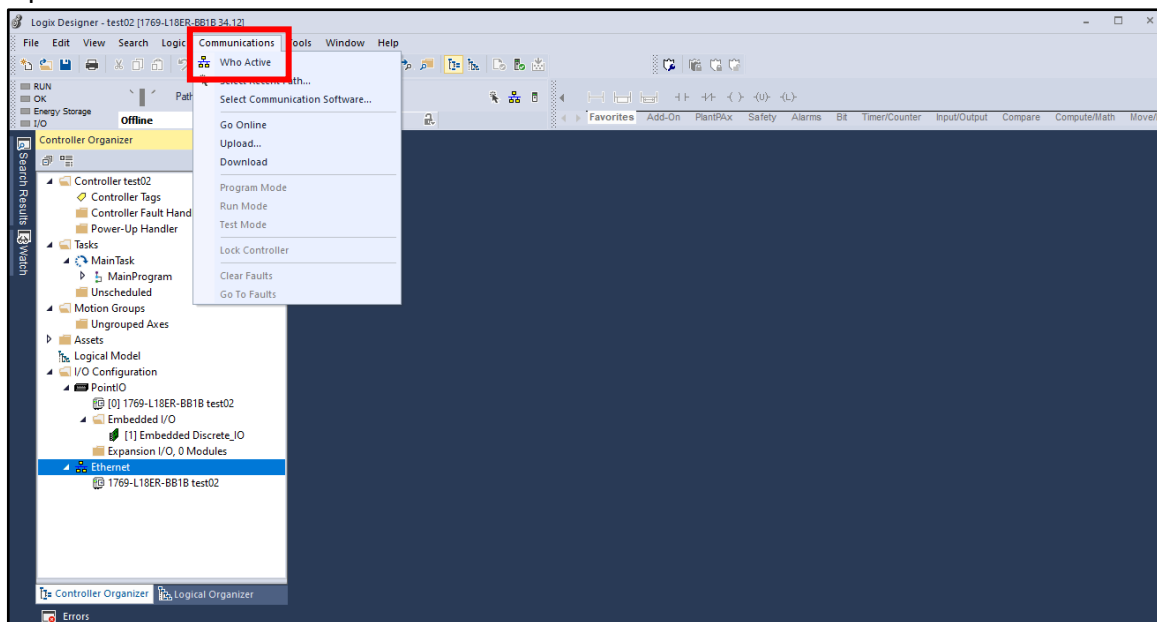


A reboot will be required for the changes to take effect.

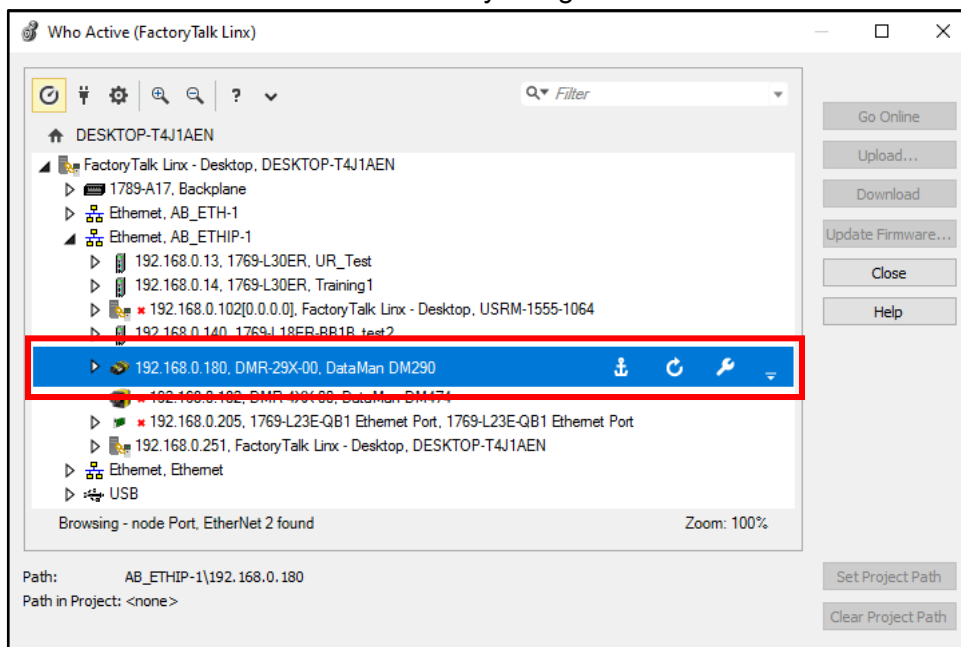
Verify EDS Installation

After the DM290 has rebooted go to Rockwell Studio 5000.

1. Open the **Communications** menu and select **Who Active** from the list.



2. Confirm the DM290 is on the correctly assigned IP Address.

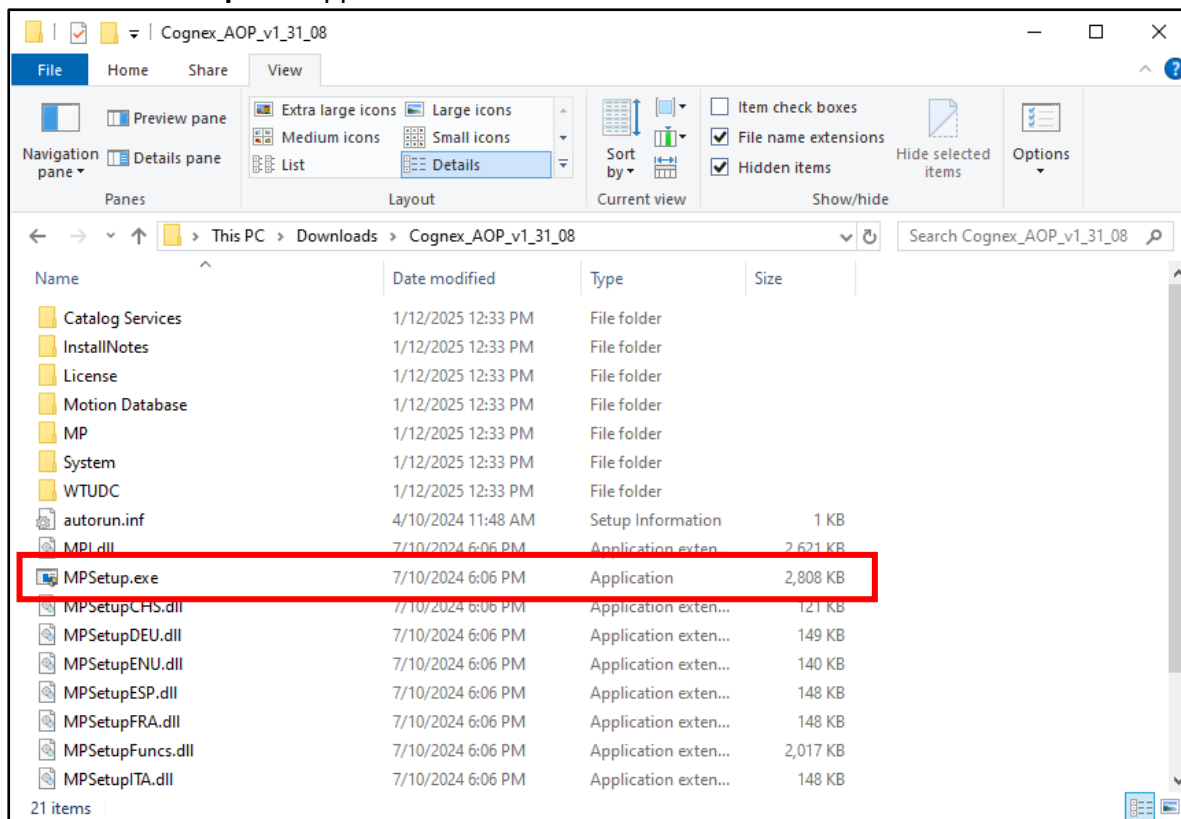


3. Close the Who Active window.

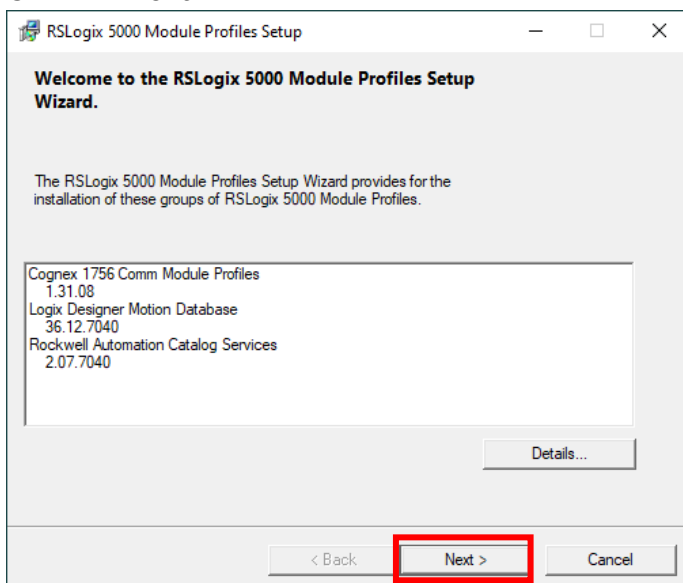
AOP Installation

Make sure all Rockwell Software is shut down to not interfere with the installation.

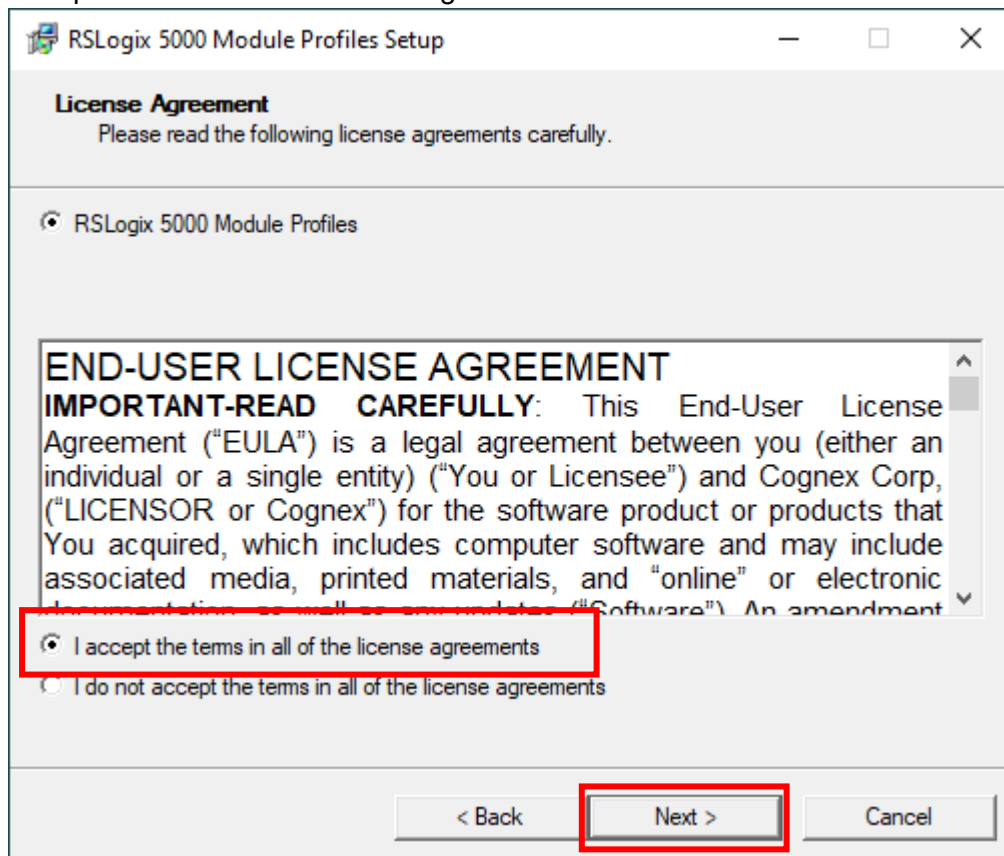
1. Run the **MPSetup.exe** application from the Downloaded and Extracted folder.



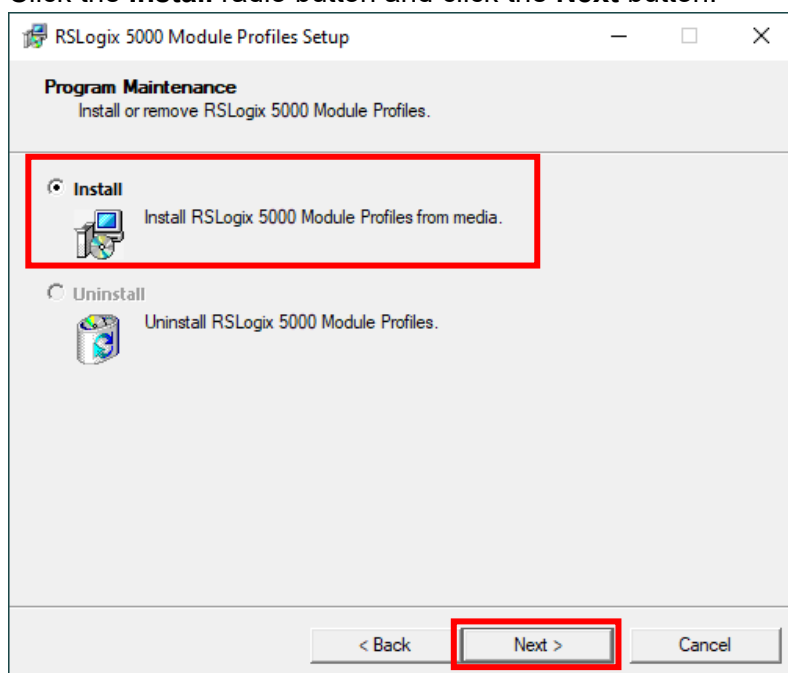
2. Click the **Next** button.



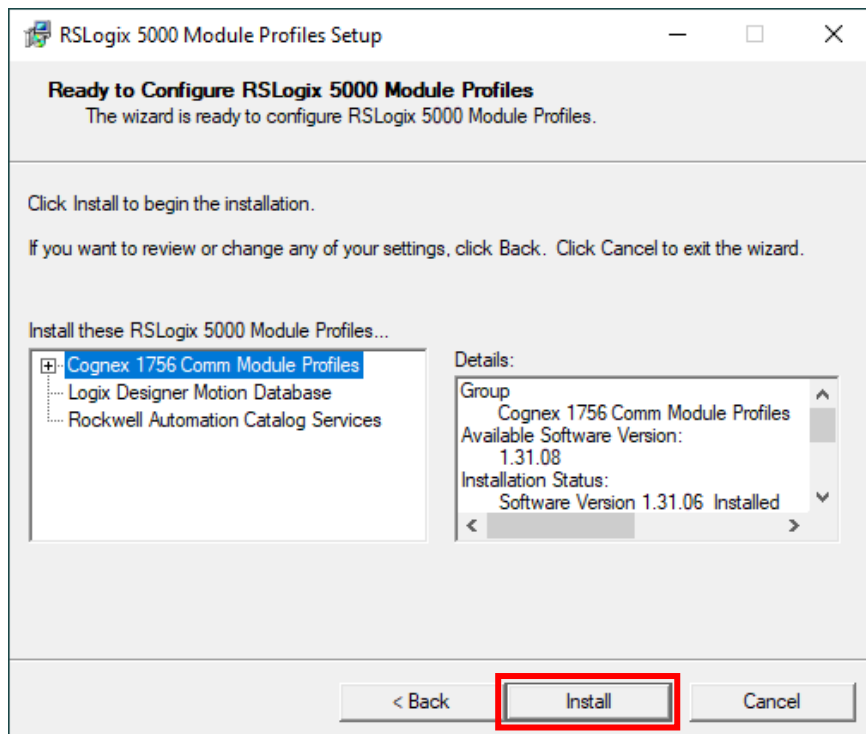
- Accept the terms of the license agreements and click the **Next** button.



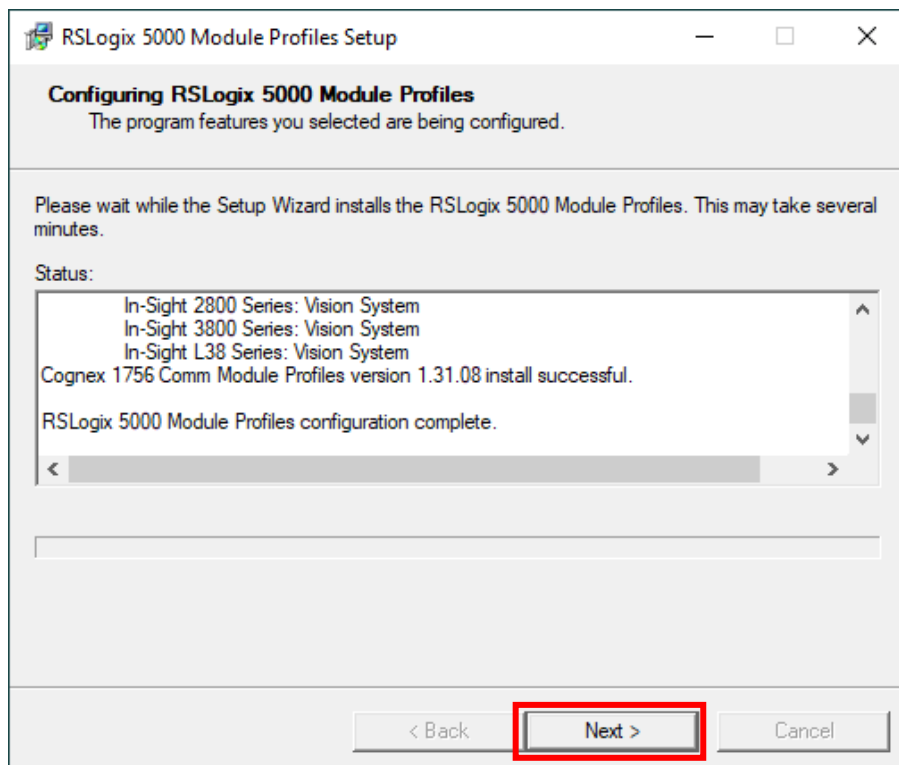
- Click the **Install** radio button and click the **Next** button.



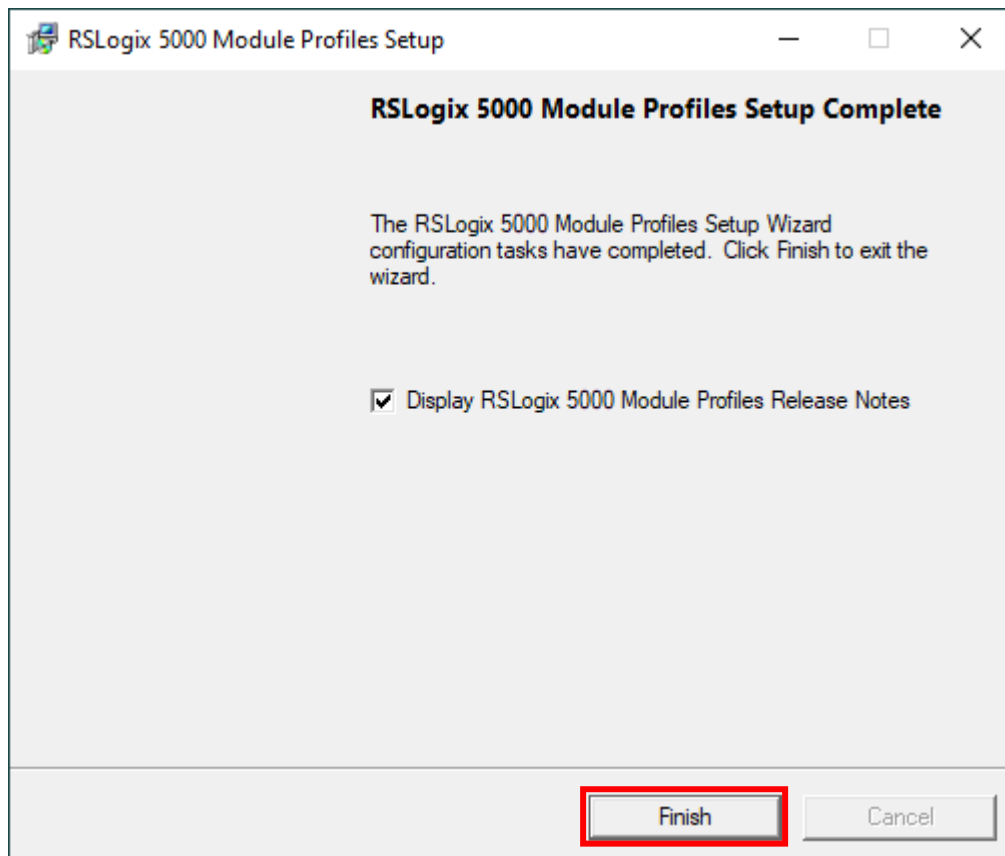
- Click the **Install** button.



- Click the **Next** button.



7. Click the **Finish** button.



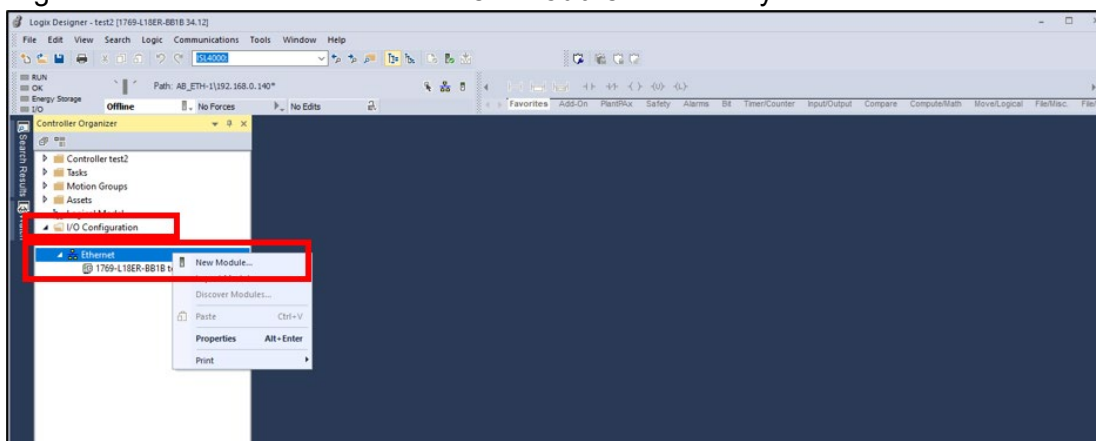
8. Restart the PC.

NOTE: AOPs reside on the computer they are installed on.

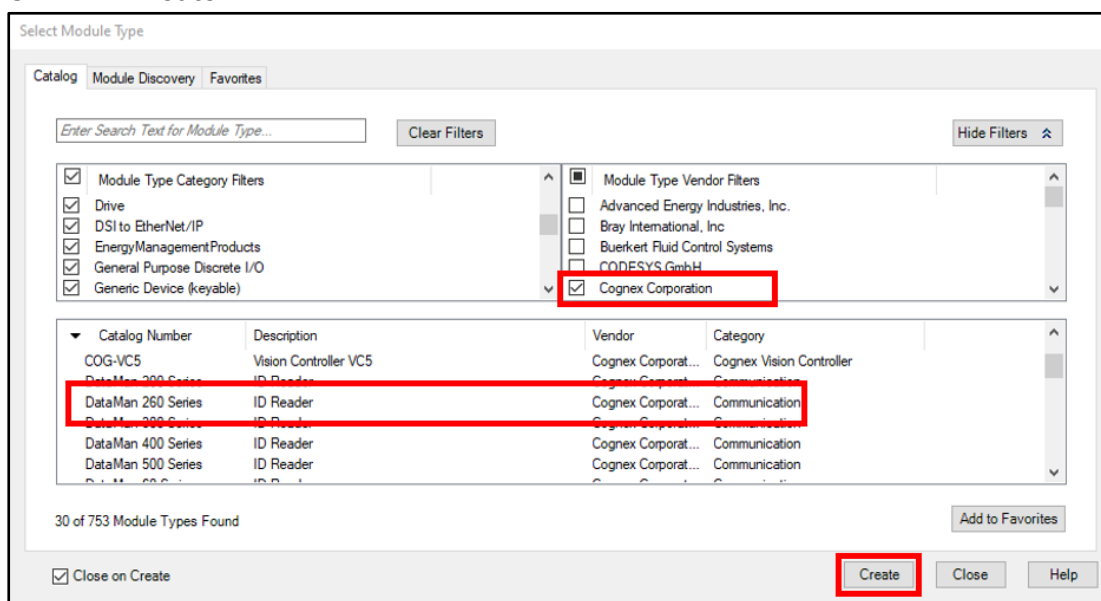
Add a Camera to PLC Network Devices

Confirm the PLC is Offline.

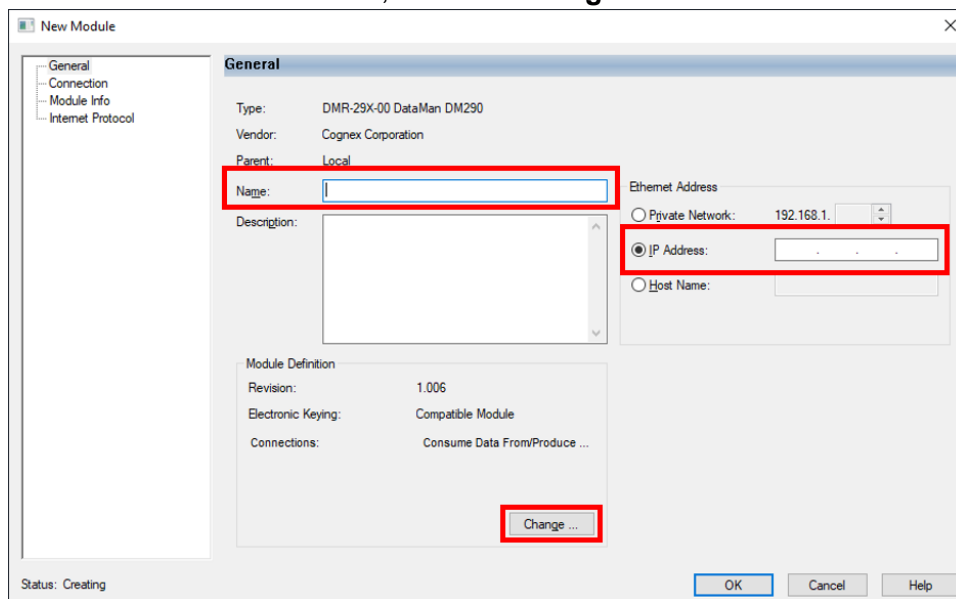
1. Open Rockwell Studio 5000.
2. From the **Controller Organizer** menu, navigate to **I/O Configuration – Ethernet**.
3. Right click on Ethernet and select **New Module** from the fly-out list.



4. Select the appropriate camera model using the filters listed below. You can also type *Cognex* into the search field.
NOTE: As mentioned previously, there is no AOP for the DM290, but there are compatible AOPs can be used.
5. Check the **Cognex Corporation** checkbox.
6. Select **DataMan 260 Series**.
7. Click the **Create** button.

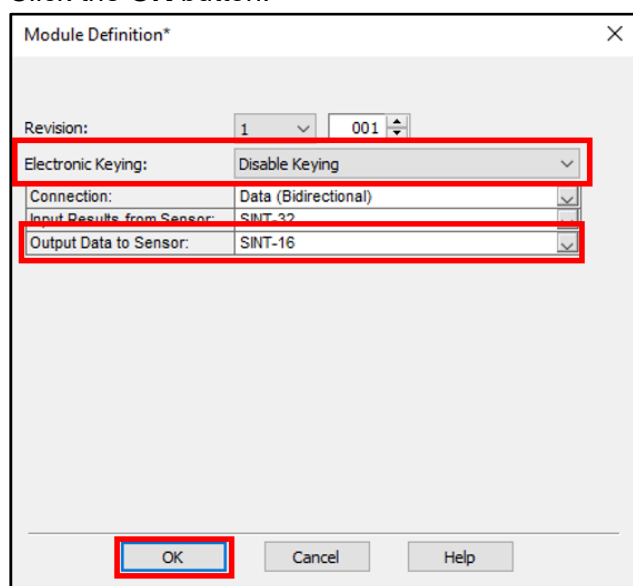


8. Enter a unique name for the AOP (e.g., DM290).
9. Add a **Description**.
10. Set the **Ethernet Address** to the camera's IP address.
11. To edit the Module Definition, click the **Change** button.

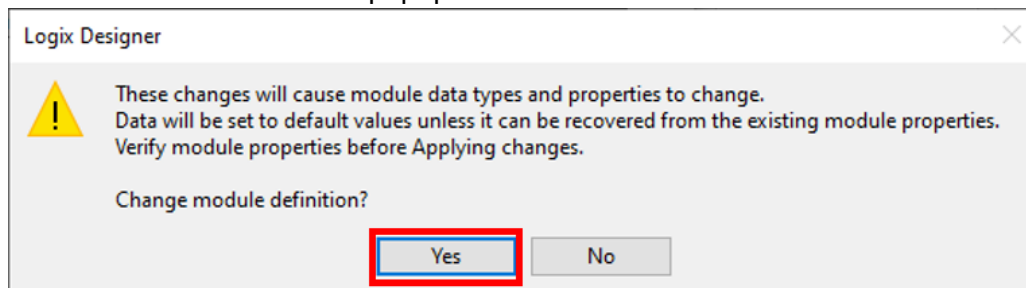


A new window opens.

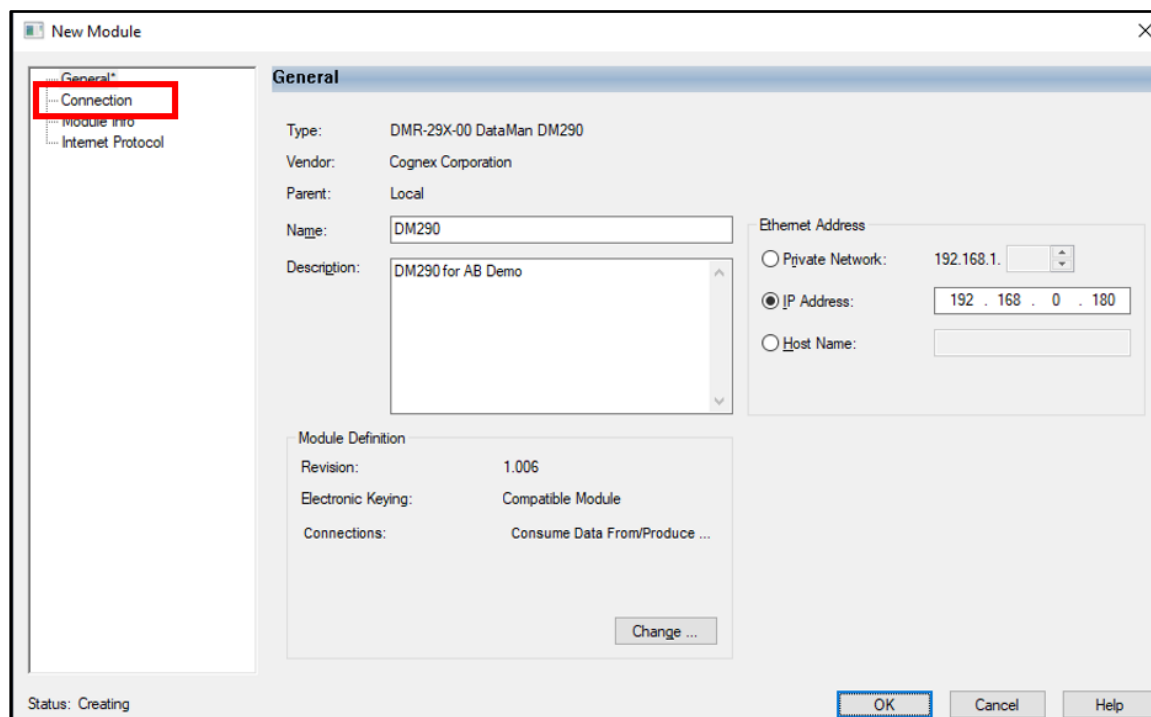
12. Select **Disable Keying** from the **Electronic Keying** drop-down list.
13. Set **Output Data to Sensor** as needed.
NOTE: *This is the size of the data to be transmitted, so ensure that the length is enough.*
14. Click the **OK** button.



15. Click the **Yes** button on the popup.



16. Select **Connection** from the Menu.



What is RPI?

Requested Packet Interval is a setting used in industrial protocols like **EtherNet/IP** and **DeviceNet** to determine how often data is exchanged between a Controller (PLC) and a Device (like a sensor) on the network.

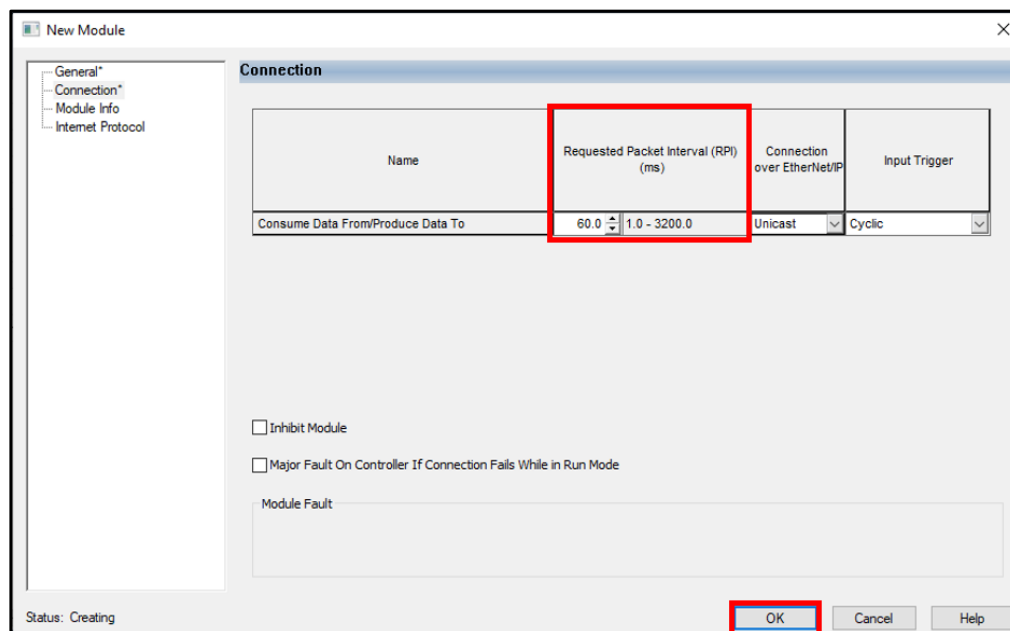
The **RPI** determines how often data is exchanged between a controller and a device. It's like setting a heartbeat for communication. Lower RPIs are faster but create more network traffic, while higher RPIs are slower but reduce traffic. The key is to balance performance needs with network capacity.

Best practice and a starting point is to set your RPI at 60ms, and depending on your application, adjust from there.

Why is RPI Important?

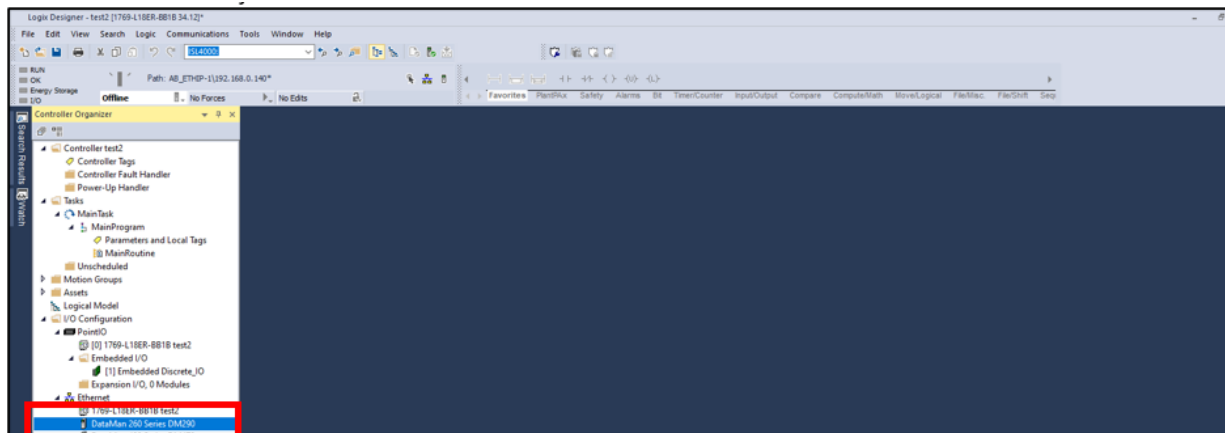
- **System Performance:** A faster RPI (lower number, e.g., 10ms) means more frequent updates, which is good for applications requiring precise, high-speed control, such as motion control or real-time monitoring.
- **Network Traffic:** A slower RPI (higher number, e.g., 100ms) reduces the frequency of communication, which helps to lower network traffic and prevent overload.
- **Balance:** You need to balance the RPI setting based on the application's speed requirements and the network's capacity.

1. Set the RPI to the desired value, a good starting value is **60ms**.
2. Click the **OK** button.



AOP Verification

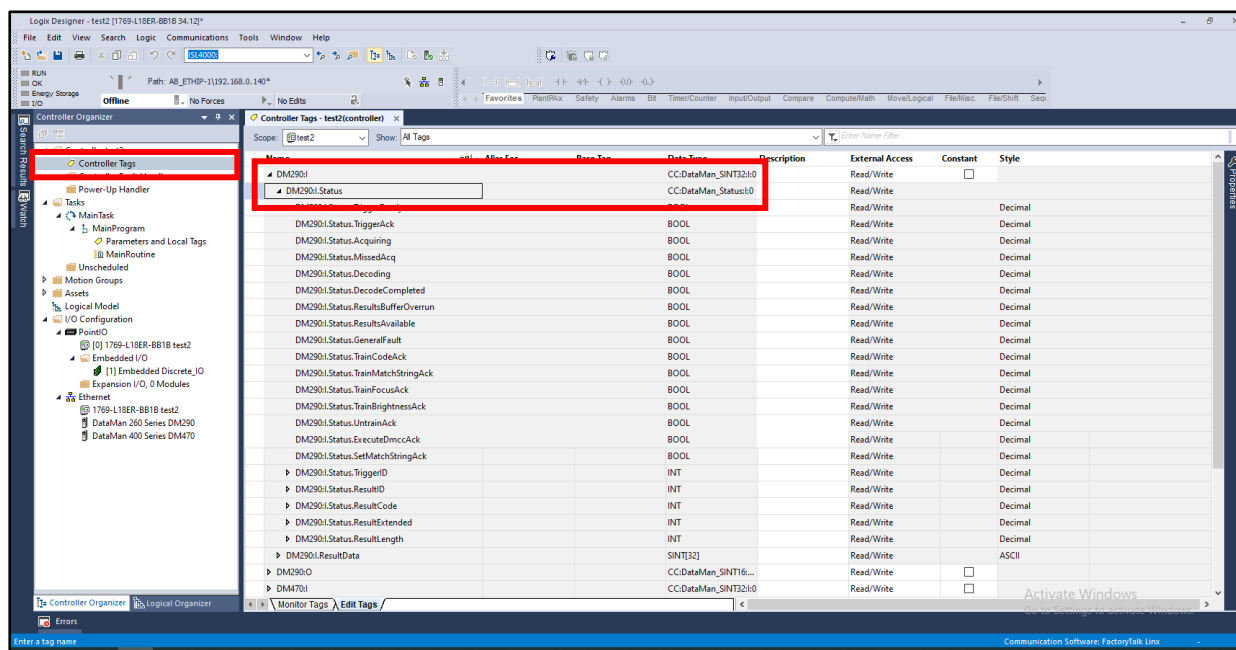
You should now see your device listed.



Verify Your I/O Data

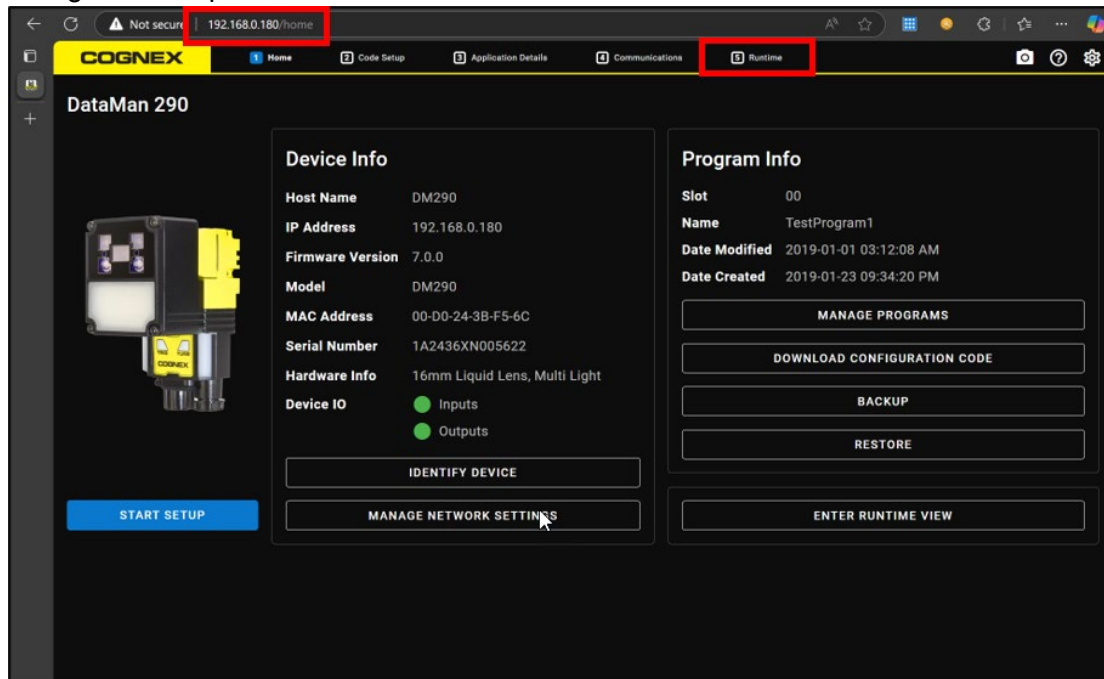
Structure in the Controller Tags as shown below.

1. Select **Controller Tags** and scroll to your **DM290**.

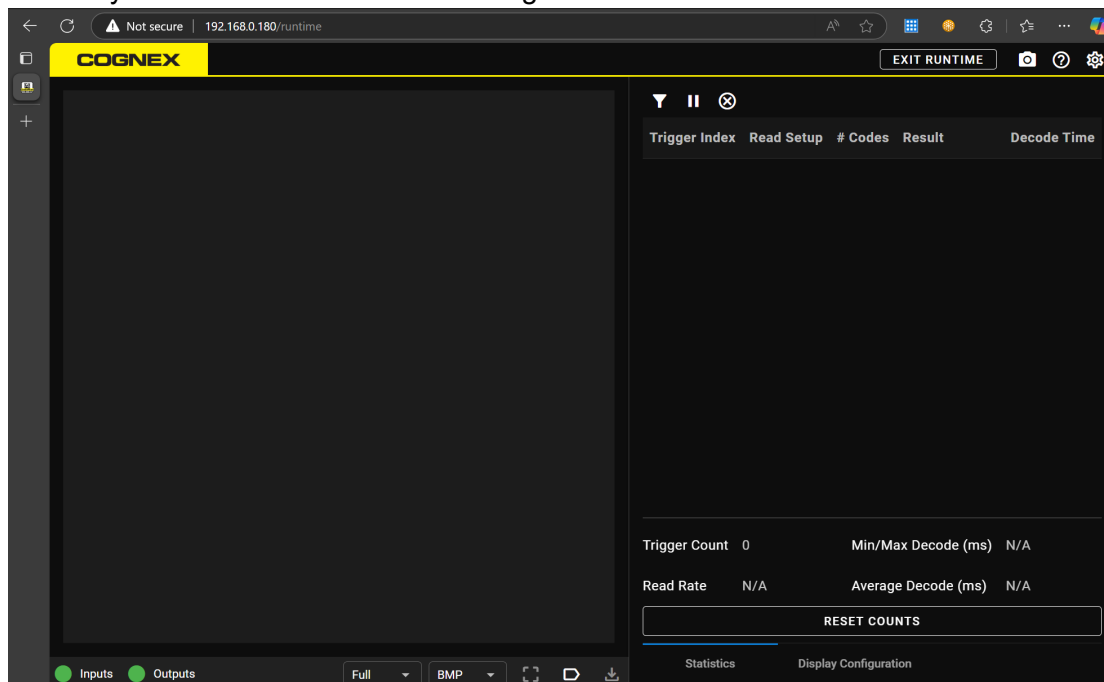


Trigger Camera Verification

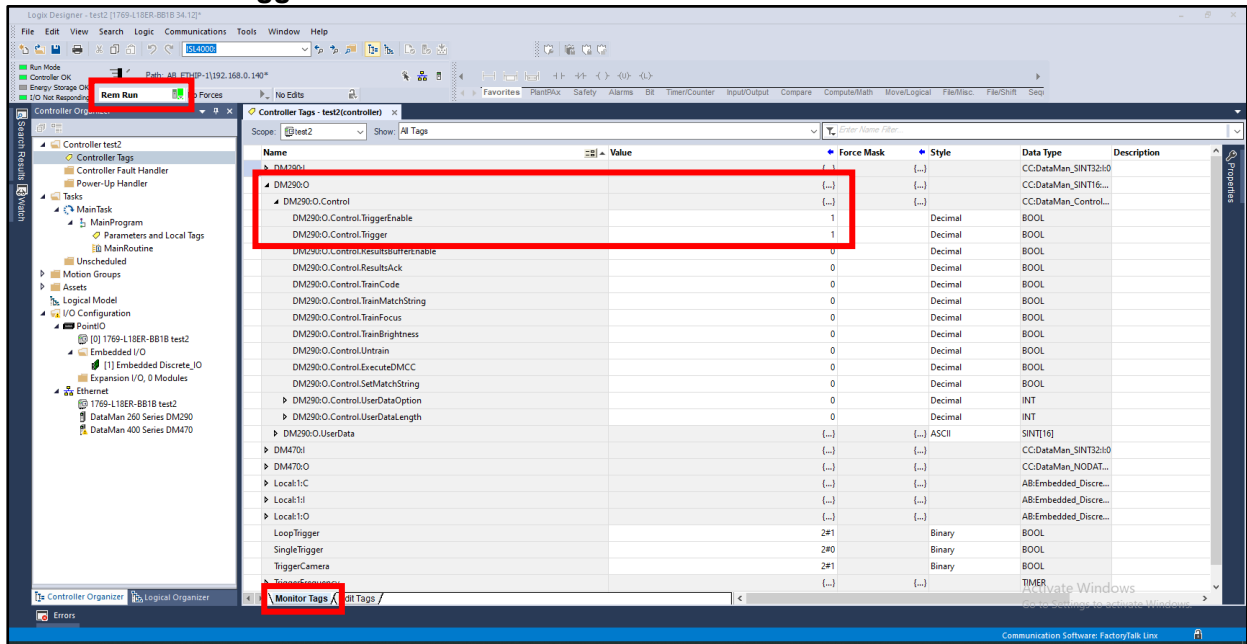
1. Return to the Cognex DataMan WebUI, open a Web Browser and enter the IP Address of your DM290 to open the Cognex DataMan WebUI.
2. Navigate to Step 5 **Runtime**.



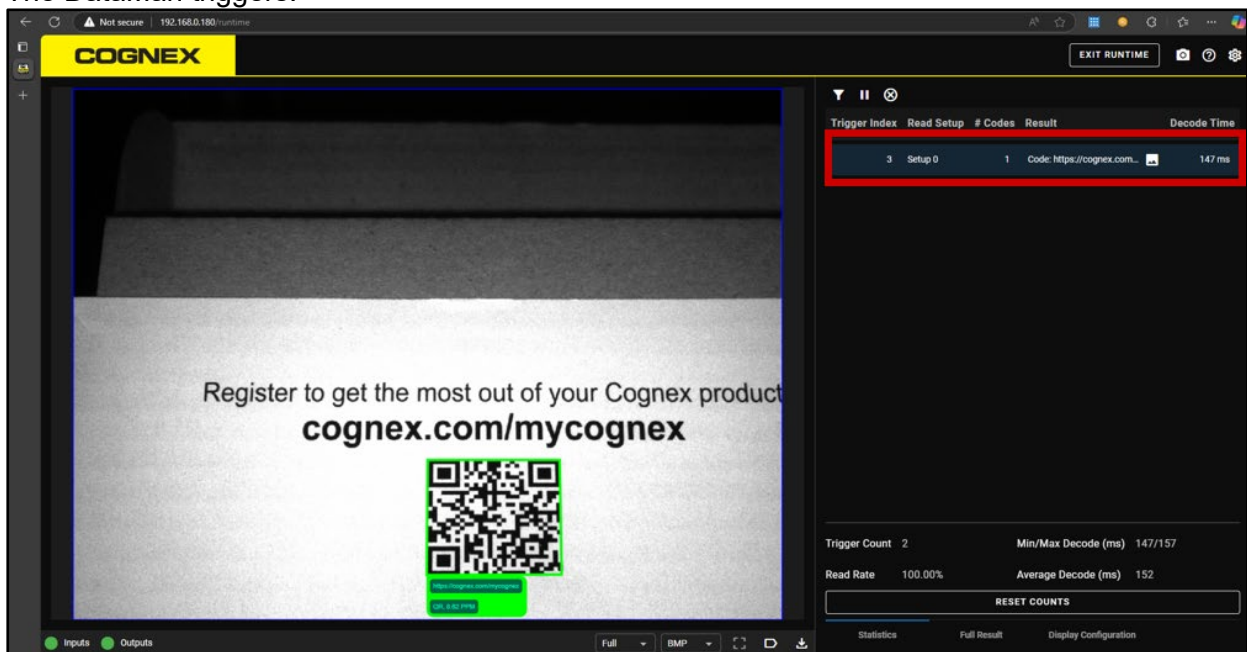
3. Ensure your Runtime looks like this image.



4. In Rockwell Studio 5000, go **Online** with the PLC.
5. Go to the **Monitor Tags** tab and expand the **DM290:O** setting.
6. Expand the **DM290:O.Control** setting.
7. Set **Control.TriggerEnable** to 1.
8. Set **Control.Trigger** to 1.



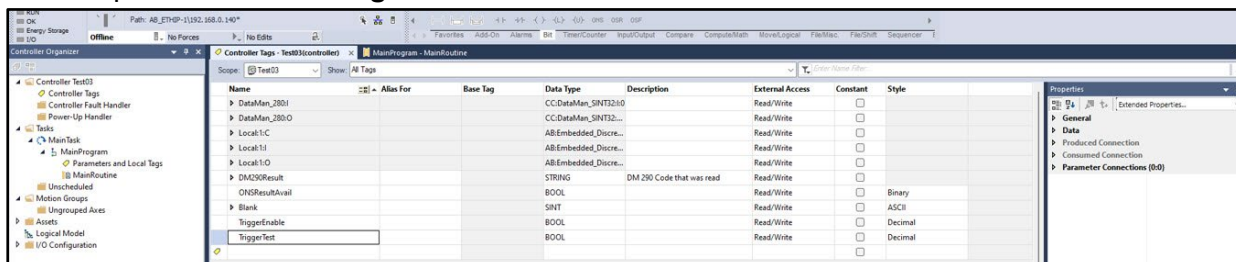
9. Return to the Cognex WebUI.
- The DataMan triggers!



Sample Code

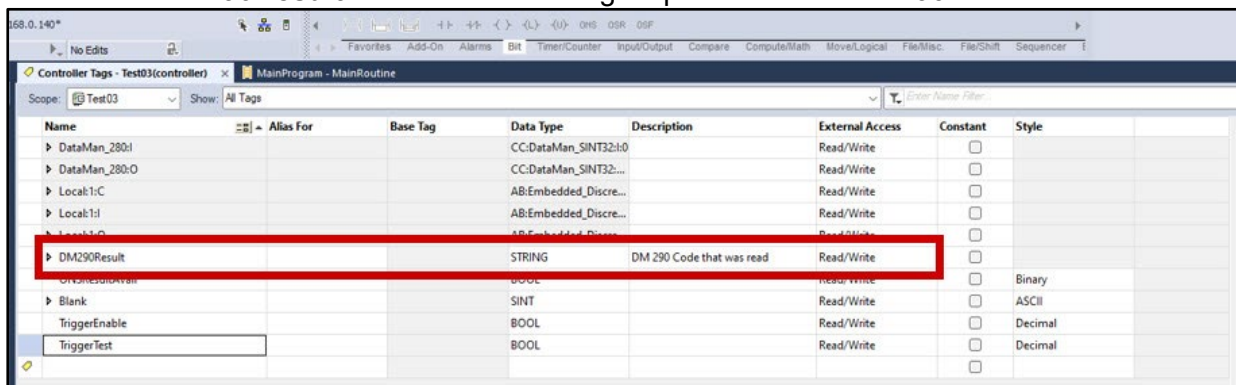
Controller Tags

1. Setup the **Controller Tags** as shown below.

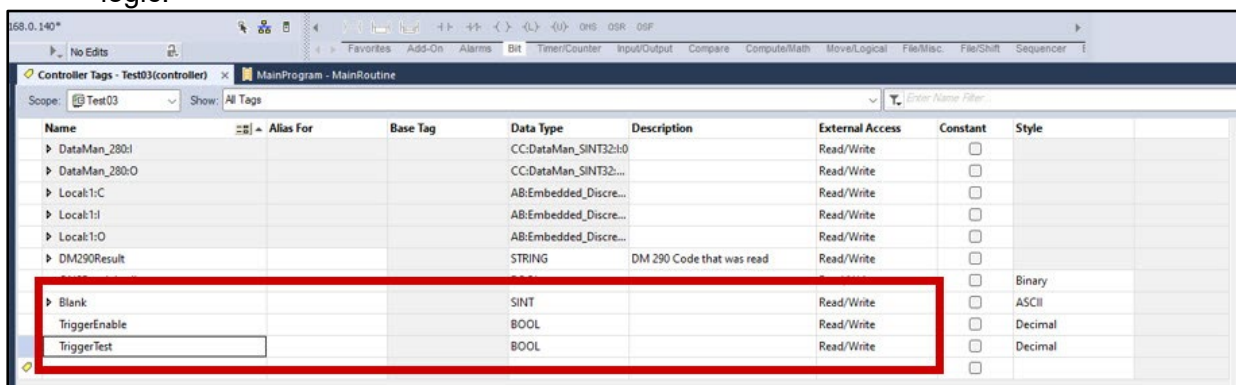


2. Review the Results:

- The **DM290Result** must match the length specified in the DM290 I.Result.Data.

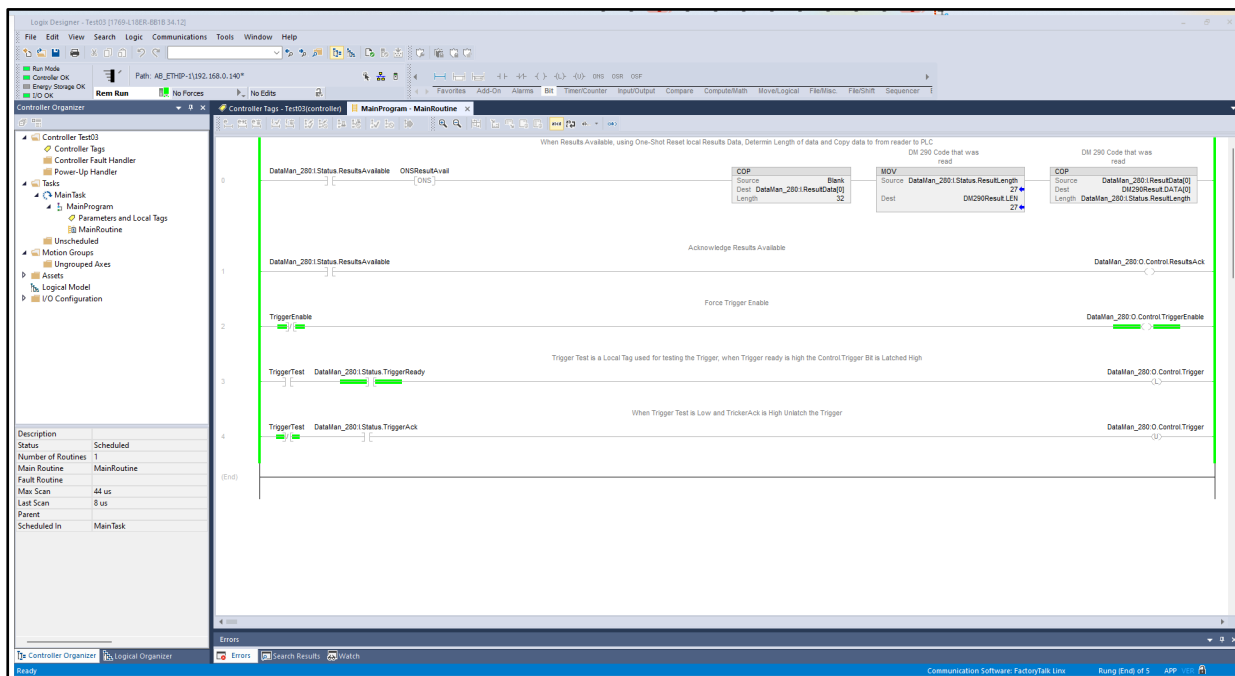


- **Blank** is an empty array. It is used to simply reset the Controller Tag, so the old data is removed.
- **TriggerEnable** is a local Controller Tag to enable the TriggerEnable in your DM290 O.Control.TriggerEnable
- **TriggerTest** is a local Controller Tag to initiate the trigger, toggle this bit to test your logic.



Main Program Code

This is a simple 5-rung program to test trigger the DM290.



Sample Successful Result Read

Your Code data should be posted to the DataMan I.ResultData[x] as shown below.

The screenshot shows the Siemens STEP 7 HW Config software interface. The main window displays the 'MainProgram - MainRoutine' ladder logic diagram. The left sidebar shows the 'Controller Organizer' with a tree view of the project structure, including 'MainProgram' and 'MainRoutine'. The right sidebar shows the 'Properties' window for the selected object. The bottom status bar indicates 'Ready' and 'Communication Software: FactoryTalk Link'.

Controller Organizer (Left Sidebar):

- Controller Test03
 - Controller New Tags
 - Controller Fault Handler
 - Power-Up Handler
 - Tasks
 - Ch MainTask
 - MainProgram
 - Parameters and Local Tags
 - MainRoutine
 - Unscheduled
 - Motion Groups
 - Unscheduled Axes

MainProgram - MainRoutine (Main Window):

Name	DB	Value	Force Mask	Style	Data Type	Description	Constant
DataMan_2801.ResultData			[...]		ASCII	SINT[32]	
DataMan_2801.ResultData[0]			'H'	ASCII	SINT		
DataMan_2801.ResultData[1]			'Y'	ASCII	SINT		
DataMan_2801.ResultData[2]			'Y'	ASCII	SINT		
DataMan_2801.ResultData[3]			'P'	ASCII	SINT		
DataMan_2801.ResultData[4]			'S'	ASCII	SINT		
DataMan_2801.ResultData[5]			'S'	ASCII	SINT		
DataMan_2801.ResultData[6]			'J'	ASCII	SINT		
DataMan_2801.ResultData[7]			'J'	ASCII	SINT		
DataMan_2801.ResultData[8]			'C'	ASCII	SINT		
DataMan_2801.ResultData[9]			'O'	ASCII	SINT		
DataMan_2801.ResultData[10]			'G'	ASCII	SINT		
DataMan_2801.ResultData[11]			'H'	ASCII	SINT		
DataMan_2801.ResultData[12]			'E'	ASCII	SINT		
DataMan_2801.ResultData[13]			'X'	ASCII	SINT		
DataMan_2801.ResultData[14]			'I'	ASCII	SINT		
DataMan_2801.ResultData[15]			'C'	ASCII	SINT		
DataMan_2801.ResultData[16]			'O'	ASCII	SINT		
DataMan_2801.ResultData[17]			'M'	ASCII	SINT		
DataMan_2801.ResultData[18]			'J'	ASCII	SINT		
DataMan_2801.ResultData[19]			'I'	ASCII	SINT		
DataMan_2801.ResultData[20]			'C'	ASCII	SINT		
DataMan_2801.ResultData[21]			'Y'	ASCII	SINT		
DataMan_2801.ResultData[22]			'O'	ASCII	SINT		
DataMan_2801.ResultData[23]			'G'	ASCII	SINT		
DataMan_2801.ResultData[24]			'H'	ASCII	SINT		
DataMan_2801.ResultData[25]			'E'	ASCII	SINT		
DataMan_2801.ResultData[26]			'X'	ASCII	SINT		
DataMan_2801.ResultData[27]			'S00'	ASCII	SINT		
DataMan_2801.ResultData[28]			'S00'	ASCII	SINT		
DataMan_2801.ResultData[29]			'S00'	ASCII	SINT		
DataMan_2801.ResultData[30]			'S00'	ASCII	SINT		

Properties (Right Sidebar):

- General
- Data
- Produced Connection
- Consumed Connection
- Parameter Connections (80)

Status Bar (Bottom):

Ready | Communication Software: FactoryTalk Link