Allen-Bradley Micro800 Series Driver (v1.01+)

Information Sheet for Crimson v3.0+

Compatible Devices

- Allen-Bradley Micro800 Series PLCs

## Verified Device

- Micro820 2080-LC20-20QBB

Overview

The Micro800 Series driver allows access to data tags in Allen-Bradley Micro800 series PLCs. It also provides a method to import tag definitions from Connected Components Workbench into Crimson 3.0+.

Serial Configuration

In Rockwell Automation's Connected Components Workbench (CCW) software open the Project Organizer window via the View Menu then double click on the controller at the top level of the tree in the Project Organizer window to open the controller tab.
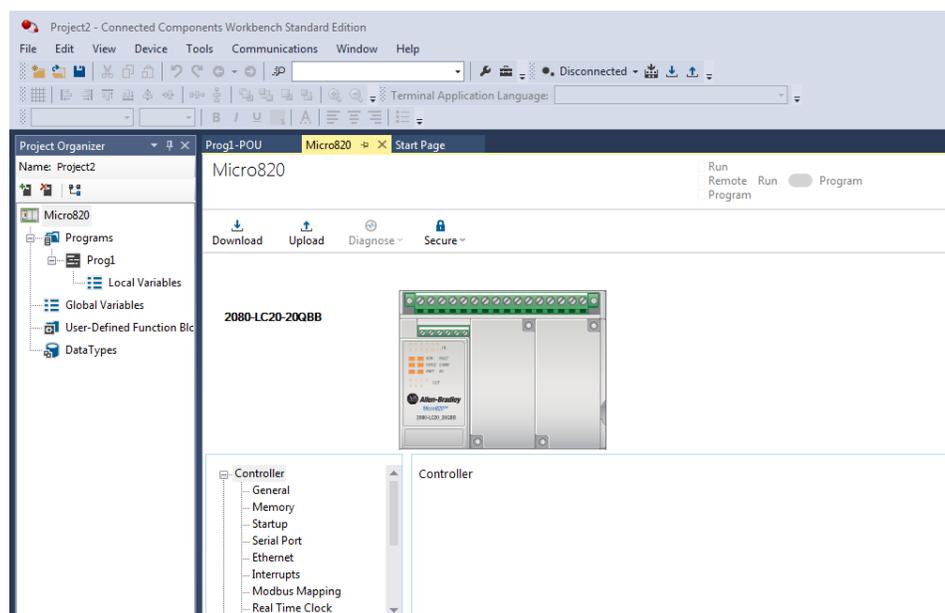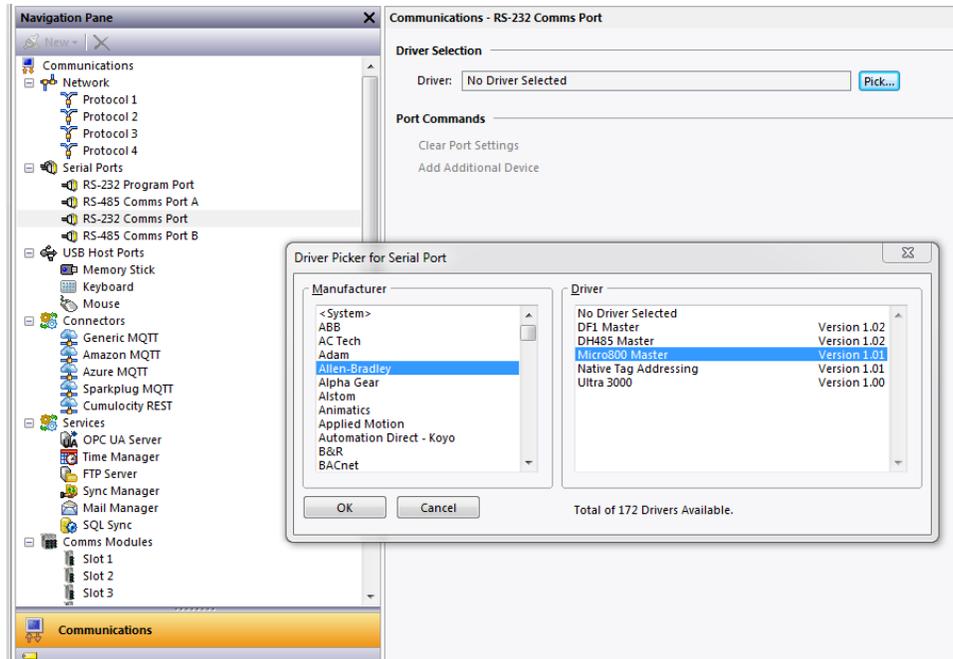
In the Controller tree within the controller tab, click on Serial Port.
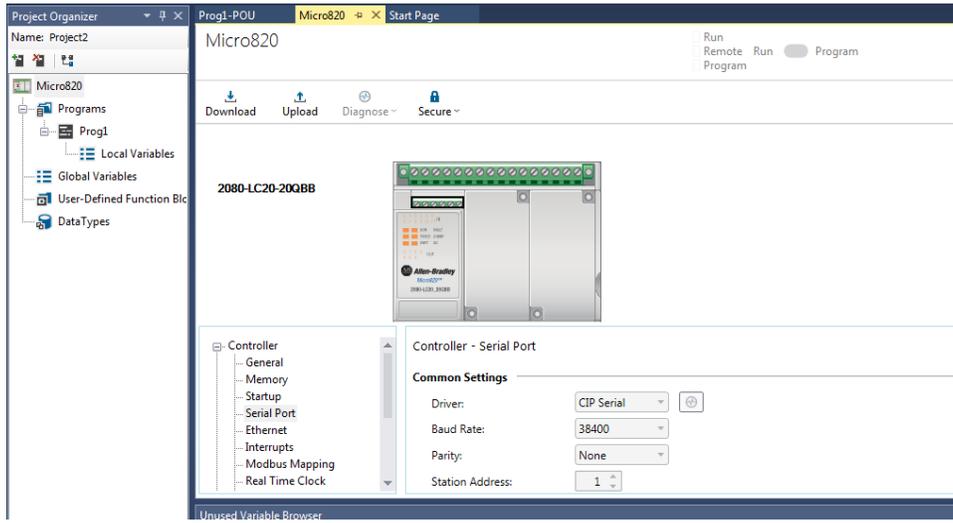
Set the Driver to CIP Serial and note/adjust the Baud Rate, Parity and Station Address in that they are suitable for the application.

In Crimson's Communications category select the desired serial port in the Communications tree and click on the Pick… button.

Find the Allen-Bradley Micro800 Master communications driver as shown above and click OK.

Modify the Baud Rate and Parity settings such that it mirrors the port settings in the CCW software.
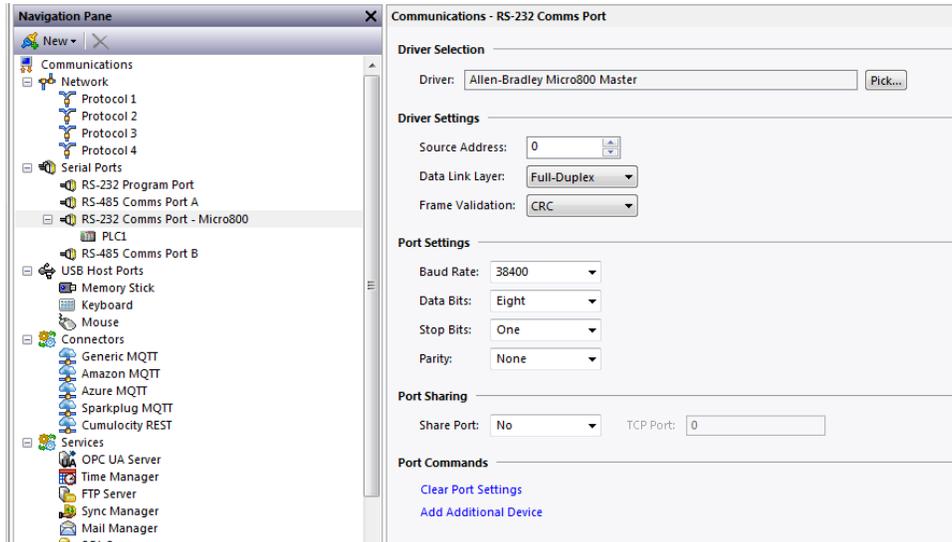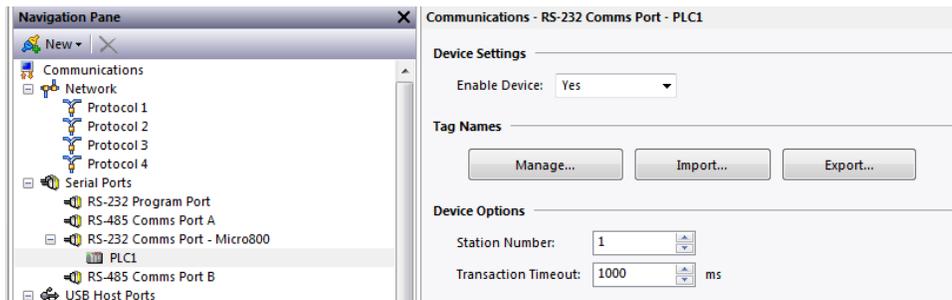

Driver settings are available as follows:

Source Address: Configure the unique address that will represent the Red Lion device on the CIP network.

Data Link Layer: Select between Full-Duplex or Half-Duplex communications. This should be configured to match the setting used by the Micro800 PLC.

Frame Validation: Choose from CRC or BCC for the frame validation. This should be configured to match the setting used by the Micro800 PLC.

In Crimson click on the PLC device and set the Station Number to the same number as the Station Address in the CCW software.
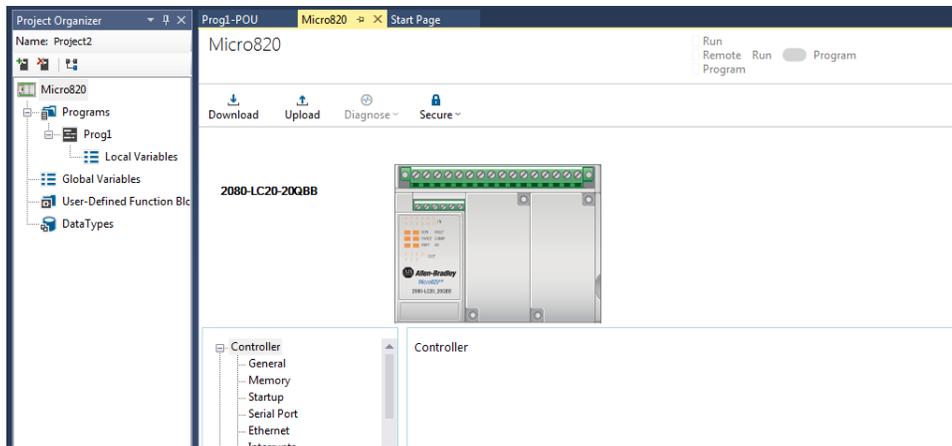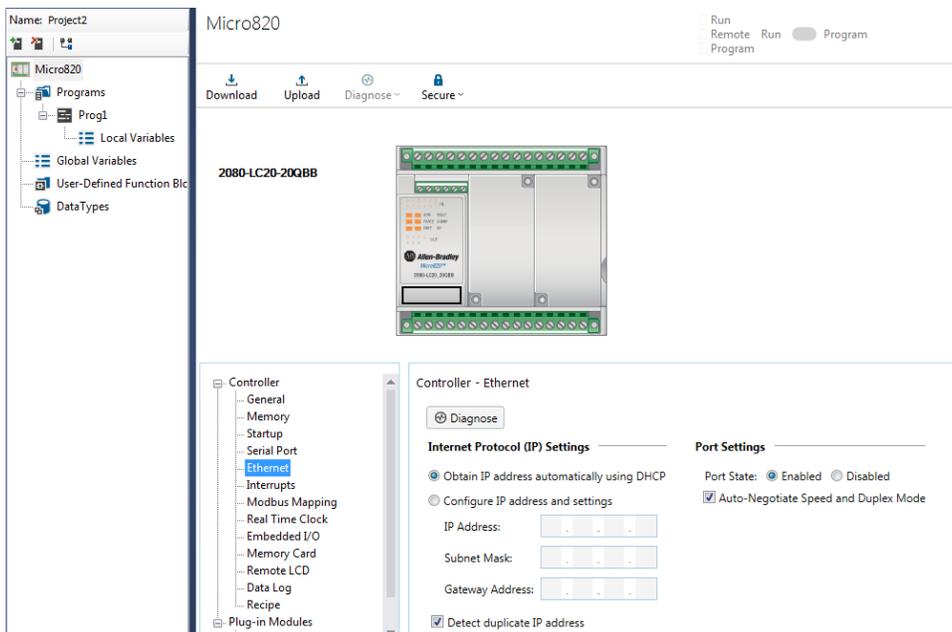
Device settings are available as follows:

> Transaction Timeout: This is the amount of time that the driver will wait before a transaction is considered to have failed. Shorter times will detect failures sooner, but longer times will be more tolerant of slow connections.

Ethernet Configuration

In Rockwell Automation's Connected Components Workbench (CCW) software open the Project Organizer window via the View Menu then double click on the controller at the top level of the tree in the Project Organizer window to open the controller tab.
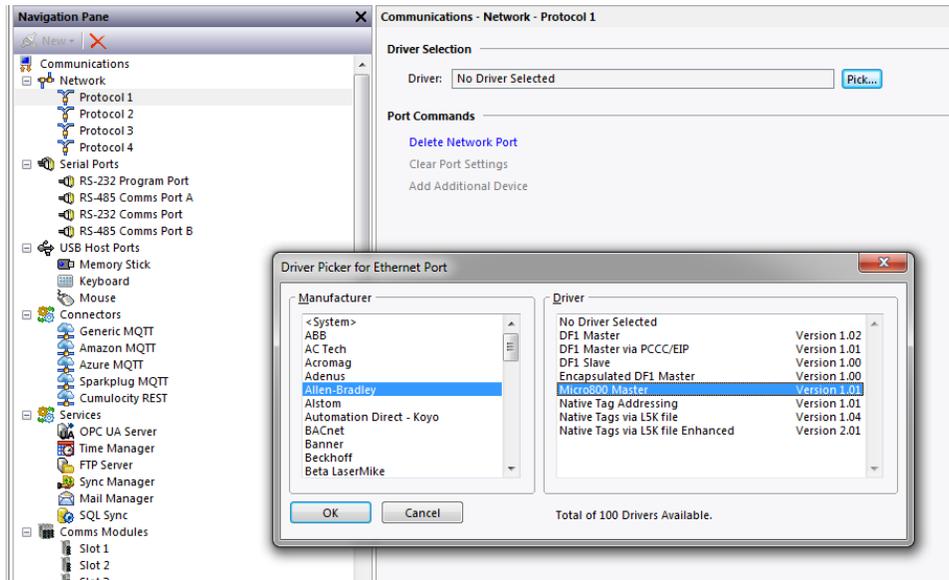

In the Controller tree within the controller tab, click on Ethernet.

Configure an appropriate IPv4 address according to the network requirements. Please consult your IT department for assistance if needed.

In Crimson's Communications category select an available protocol in the Network element of the Communications tree and click on the Pick… button.

Find the Allen-Bradley Micro800 Master communications driver as shown above and click OK.

In Crimson click on the PLC device.
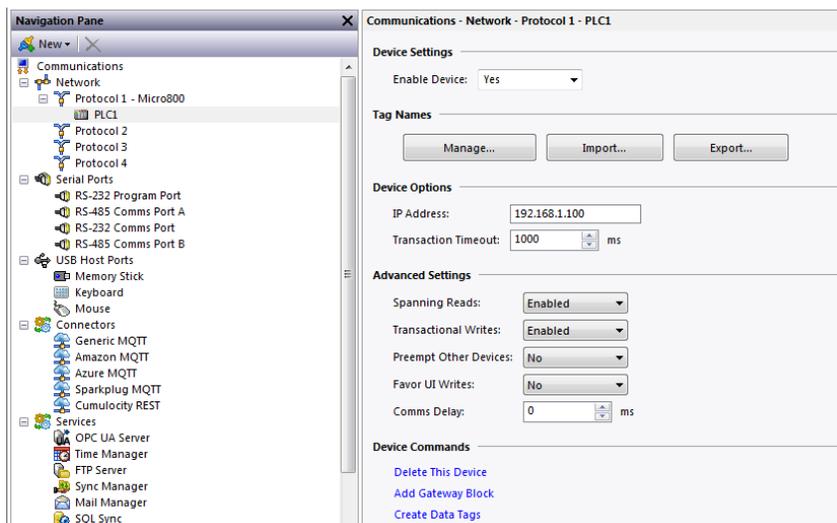
Device settings are available as follows:

IP Address: This is the IP address of the target Micro800 PLC.

Transaction Timeout: This is the amount of time that the driver will wait before a transaction is considered to have failed. Shorter times will detect failures sooner, but longer times will be more tolerant of slow connections.
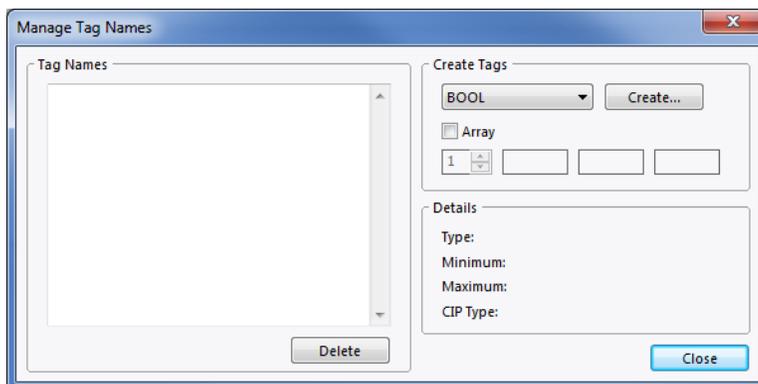
Tag Creation

The driver maintains a list of tag names that correspond to the tags configured in the Micro800 PLC. A tag import mechanism is provided, but these tags can also be manually created.
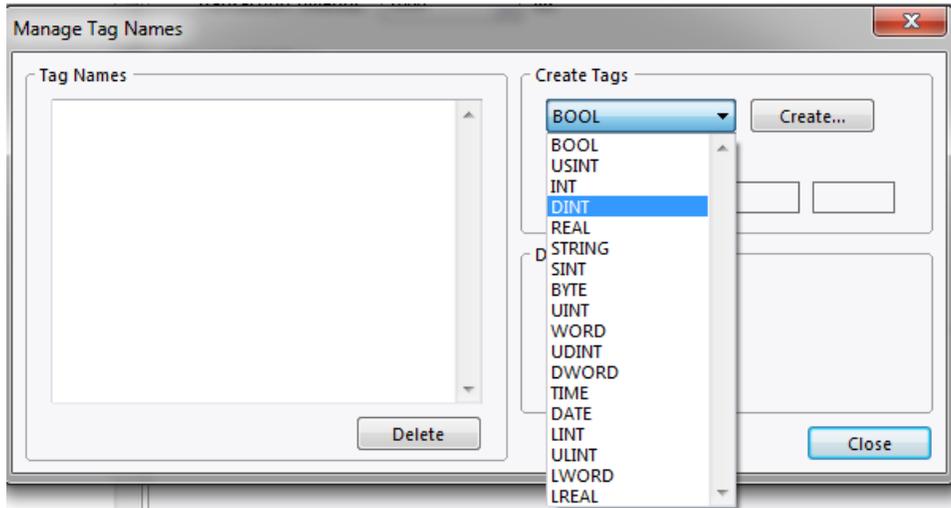
To create a tag, click on the Manage button from the device configuration page:
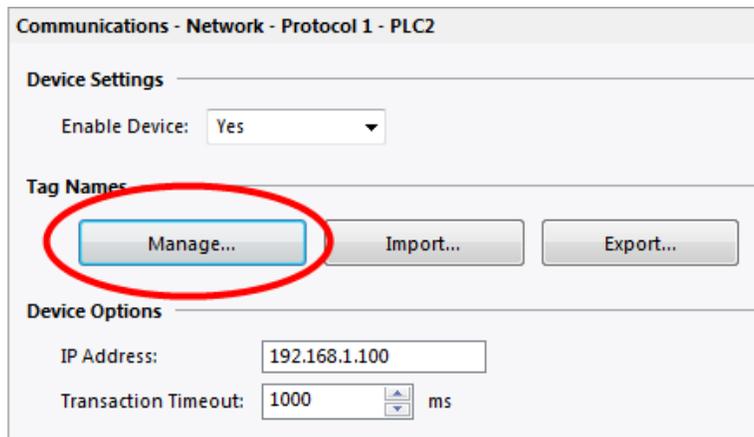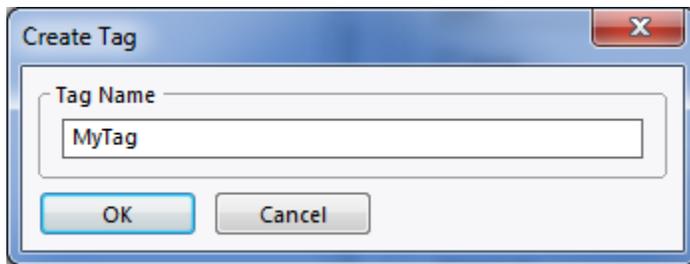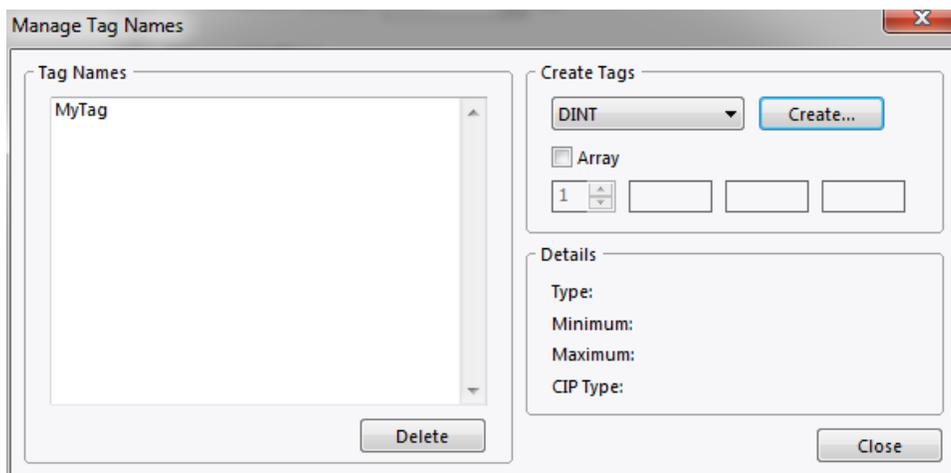

The following dialog will appear:

To create a new tag, select the appropriate type from the drop-down box:


Then click the Create button and the following dialog will appear:

Enter the name of the tag as found in Connected Components Workbench and click OK.

To create an array, click the Array checkbox and set how many dimensions the array should be, up to a maximum of 3. This will enable a corresponding box for each dimension. Enter the maximum size of the array for each dimension. The dimensions are assumed to start at index and span to the maximum dimension, inclusive. Then click create and name the tag as above. Use driver v1.01+ in Crimson 3.1+ for support of string arrays.
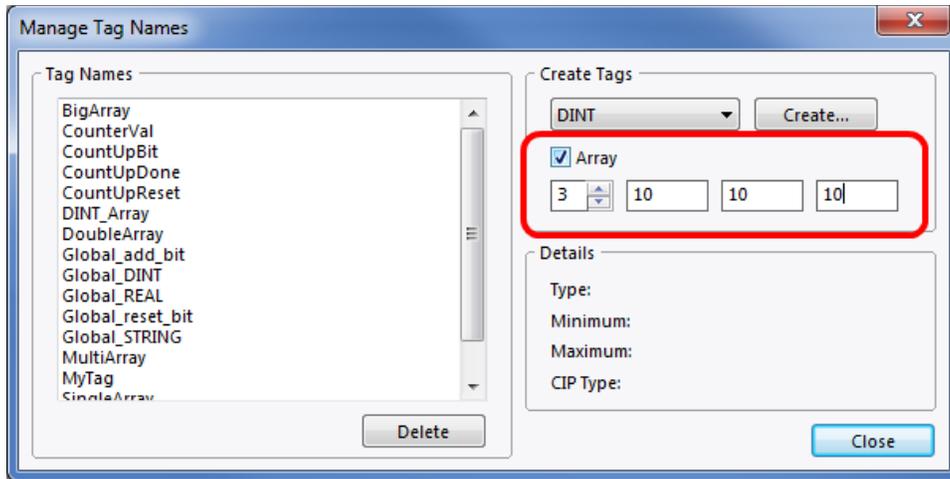
Tag Import and Export

This section will describe the procedure to export tags from Connected Components Workbench and then import the file into Crimson 3.0.

First, open the project for the Micro800 PLC in Connected Components Workbench. There are two ways to export the tags in the project to a file.
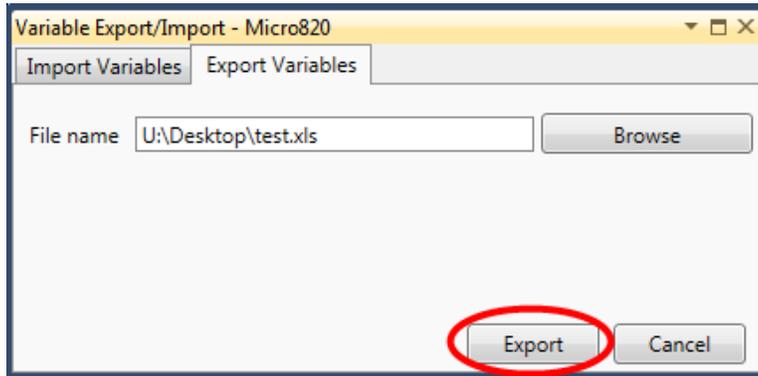
The first way is to select the Device menu from the main menu bar. Then select Export->Variables to Excel:
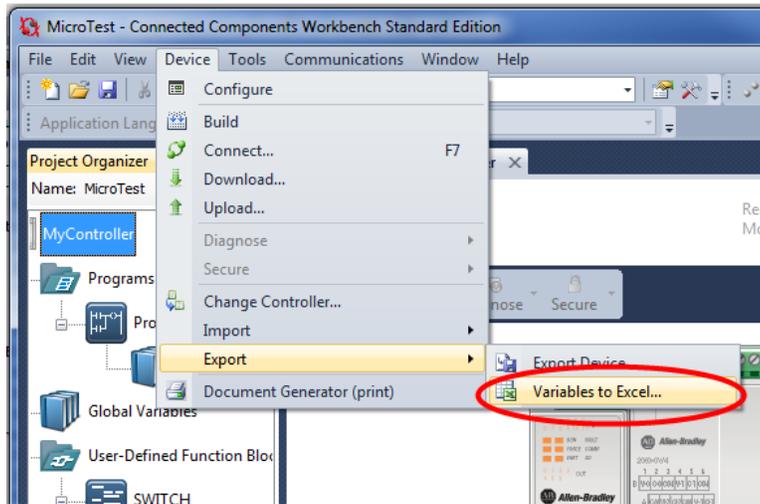
Alternatively, right-click on the controller's name, and select Export->Variables to Excel:
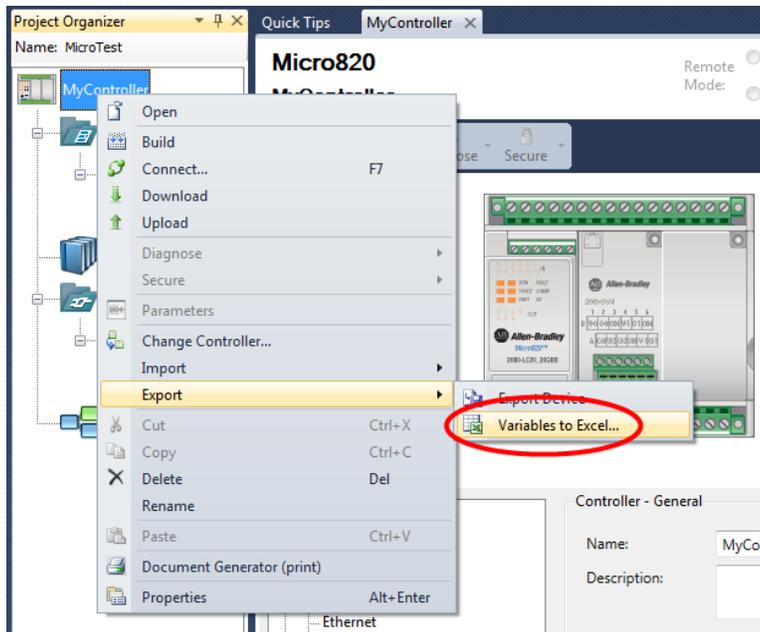
A dialog will appear. Select the desired location and name for the exported file and click the Export button:


Now the variables are in a spreadsheet file in Excel format, but Crimson 3.0 is unable to read Excel files directly. The file will need to be saved as a Comma Separated Values (CSV) file as descibed below.

First, open the exported spreadsheet file in Excel. Then, select File->Save As from the main menu bar. Select the CSV file type from the drop-down menu, and save the file:
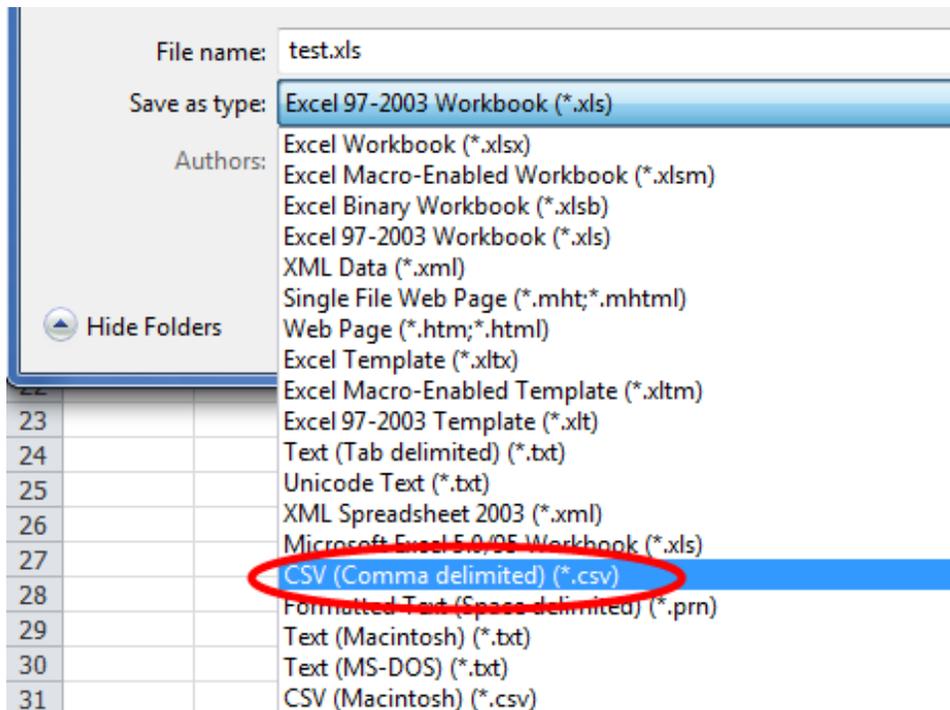
Now go to Crimson 3.0, and click on the import button in the driver's configuration page:
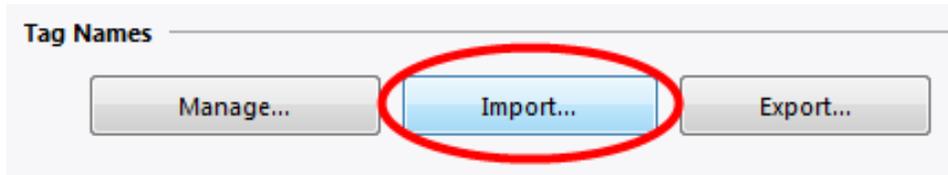
Use the file selection dialog to navigate to the location where the CSV file was saved. Click the Open button and the tags in the file will be automatically created and are available to map in Crimson 3.0.

Tags can also be exported from Crimson 3.0 to a CSV file. Select the export button and use the dialog to select a name and location for the exported file. This file can be imported in other Crimson 3.0 databases.

Mapping to Crimson 3.0+ Tags

The "Select Address" dialog box can be found by selecting the device representing the Micro800 device in the Source drop down box of a Tag created in the Data Tag category in Crimson.
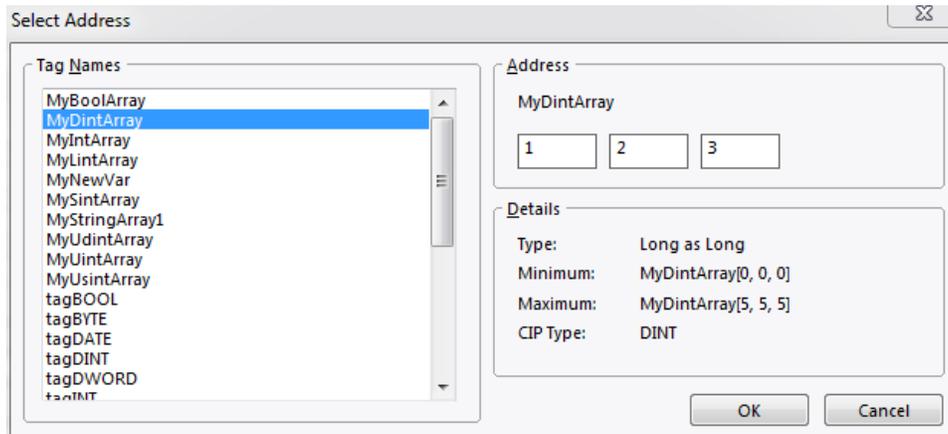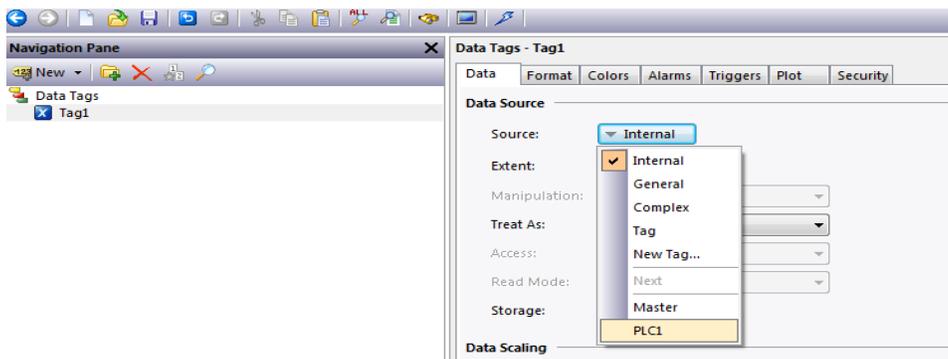

Highlight the desired tag name and click OK. If the tag name represents an array, enter the desired offsets into the offset boxes and click OK.

For array assignments set the Extent field in the Data Source group to a value consistent with the assigned Source index and the array length as created or imported.
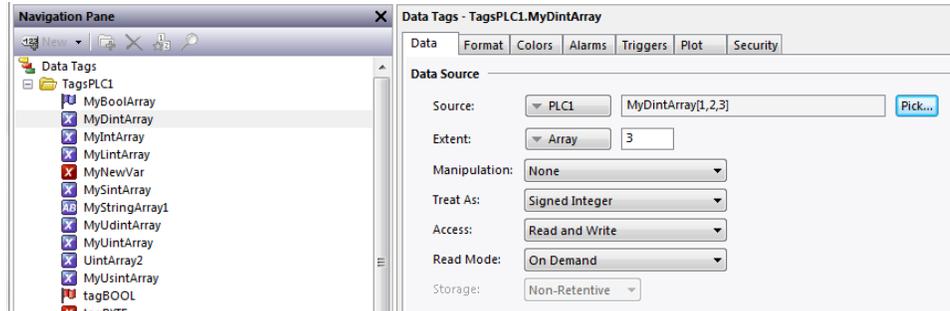

String Access

Strings should be assigned to a string tag with the Data Source Packing element set to None as shown below.
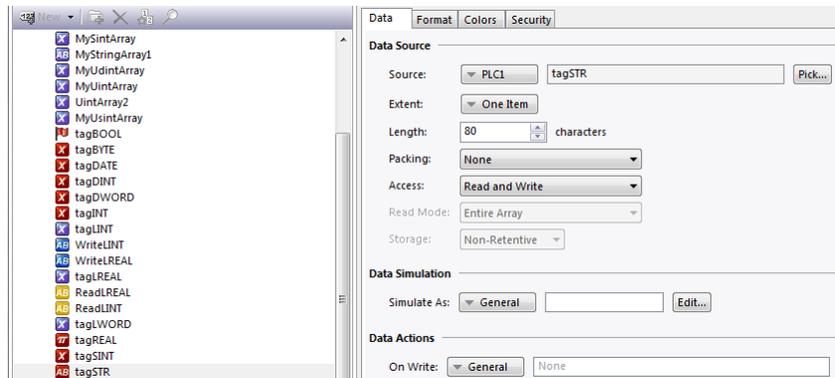
Ensure that the Length property in the Data Source group is set to the same value as specified in the tag import operation.
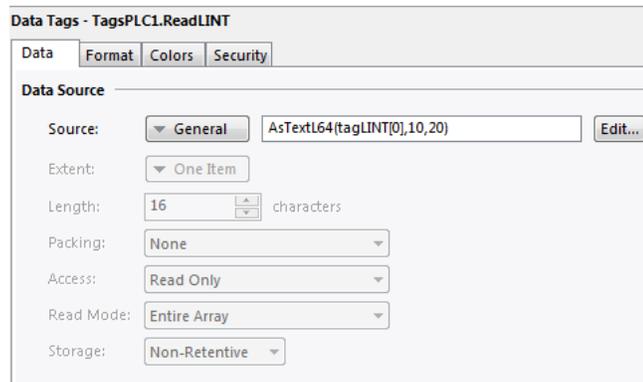
64-bit Data Access

Map 64-bit data types (LINT, ULINT, LWORD, LREAL) to a tag and set the Extent property in the Data Source group to a value two times the number of 64-bit values that this tag will represent.
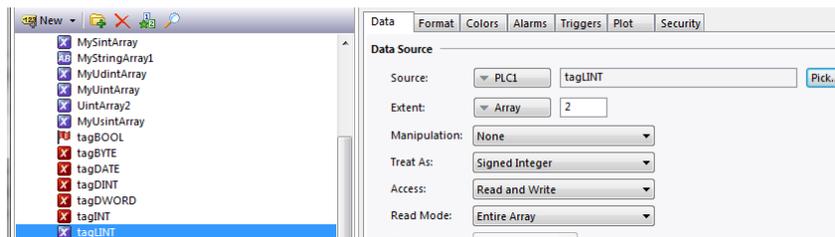
Use the following user functions to get double values.

cstring AsTextL64(*data, radix, count*) for integers
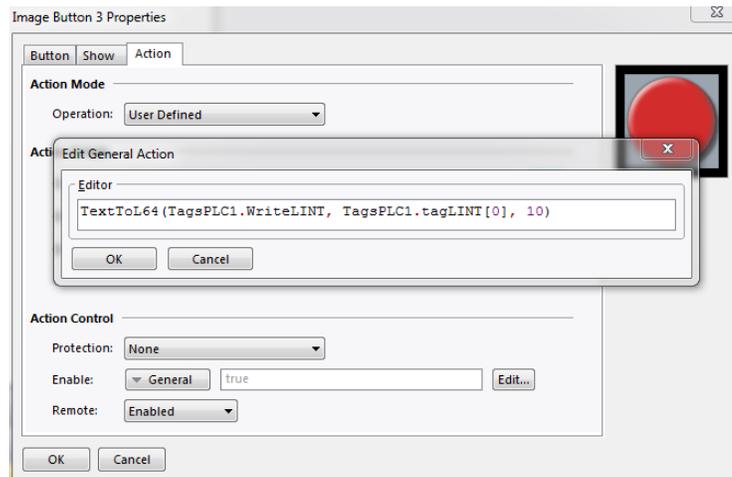cstring AsTextR64(*data*) for reals

Where *data* is the first element in the array of the double value that will be passed as a string, *radix* is the number base to be used and *count* is the number of digits to generate.

Data Tags - TagsPLC1.ReadLINT

| Data | Format | Colors | Security |

Data Source

Source: ▼ General | AsTextL64(tagLINT[0],10,20) | Edit...

Extent: ▼ One Item

Length: 16 characters

Packing: None

Access: Read Only

Read Mode: Entire Array

Storage: Non-Retentive

Use the following user functions to set double values.

void TextToL64(*input, output*) for integers
void TextToR64(*input, output*) for reals

Where *input* is a string representing a double value and *output* is the first element in the array of the double value to be set.

Image Button 3 Properties

| Button | Show | Action |

Action Mode

Operation: User Defined

Acti Edit General Action

Editor

TextToL64(TagsPLC1.WriteLINT, TagsPLC1.tagLINT[0], 10)

OK | Cancel

Action Control

Protection: None

Enable: ▼ General | true | Edit...

Remote: Enabled

OK | Cancel

Crimson 3.1+ Auto Mapped Tag Creation

Red Lion's Micro800 driver version v1.01+ also supports Crimson 3.1+ automatically mapped tag creation from an imported CSV file.

First, follow the steps in the previous Tag Import and Export section to produce a CSV file suitable for import.

Next, in Crimson 3.1+ go to the Communications category and select the PLC device that represents the Micro800 device.
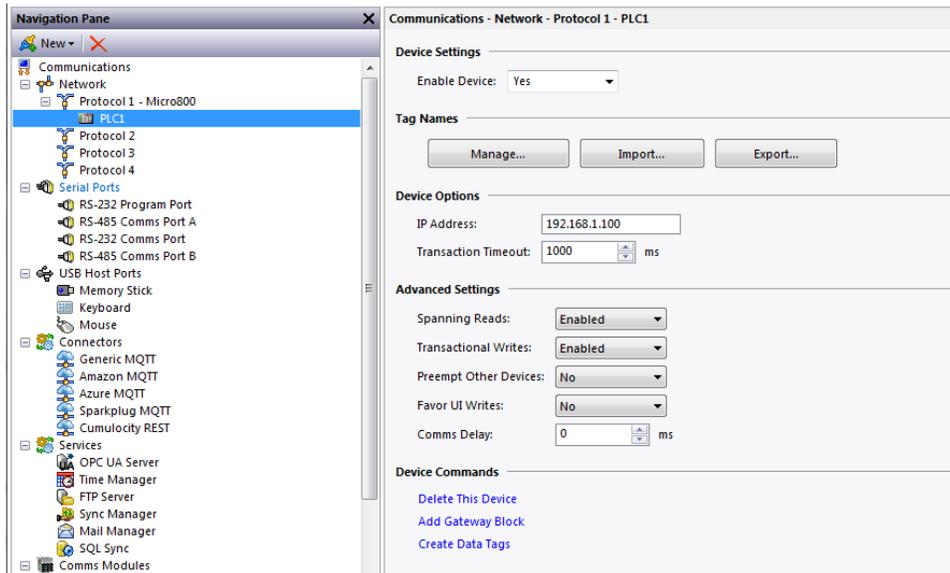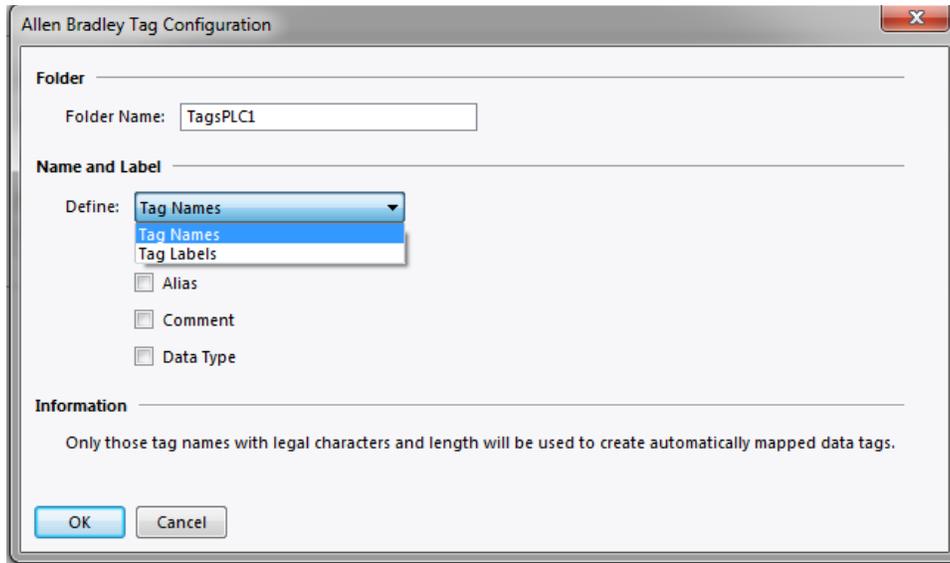

Click on the Create Data Tags link in the Device Command group.
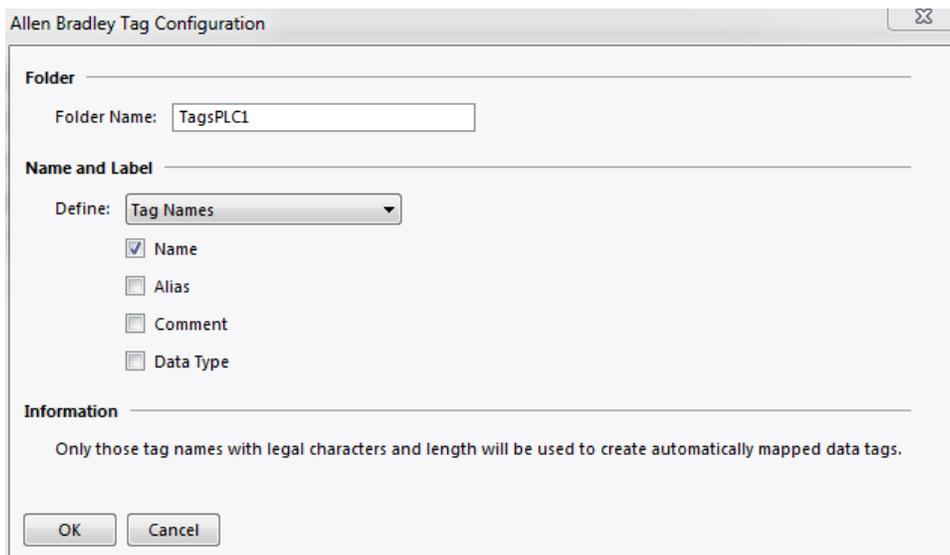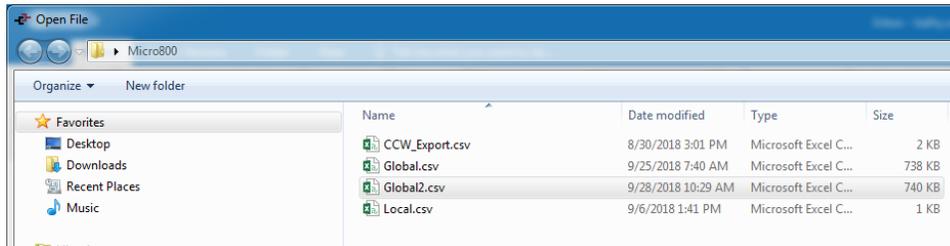
The Folder Name defines the name of the folder in the Crimson's Data Tag category in which the newly created data tags will reside. Modify the text if desired.

Use the UI elements in the Name and Label group to set the newly created tags names and/or labels based upon aspect(s) of the imported file.
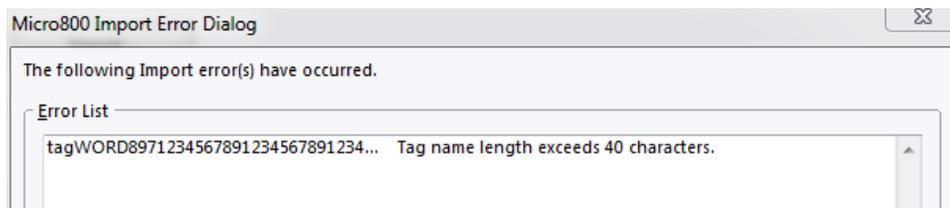

Click OK which will launch the Open File dialog box.

Select the desired previously prepared for import CSV file and click OK.

Crimson will attempt to replace illegal characters with an underscore. Any remaining duplicate or illegal tag name details are shown in the Micro800 Import Error Dialog.

Tags are now auto created and exist in the Data Tags category in Crimson available for further configuration and usage.
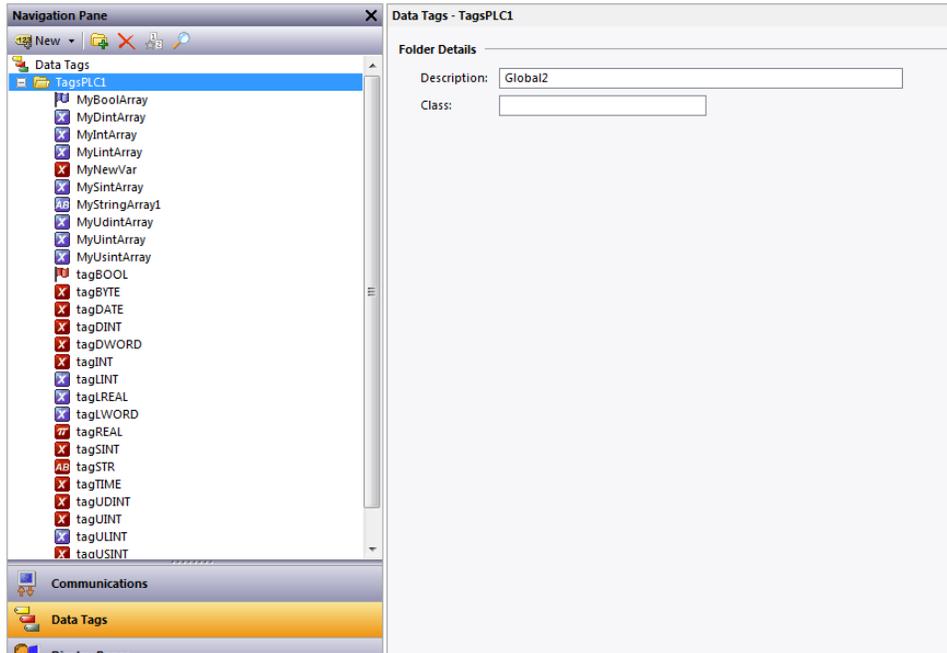

Note array tags Read Mode property (in the Data Source group) is initially set to Entire Array. To improve efficiency the Read Mode can be set to On Demand as shown below.
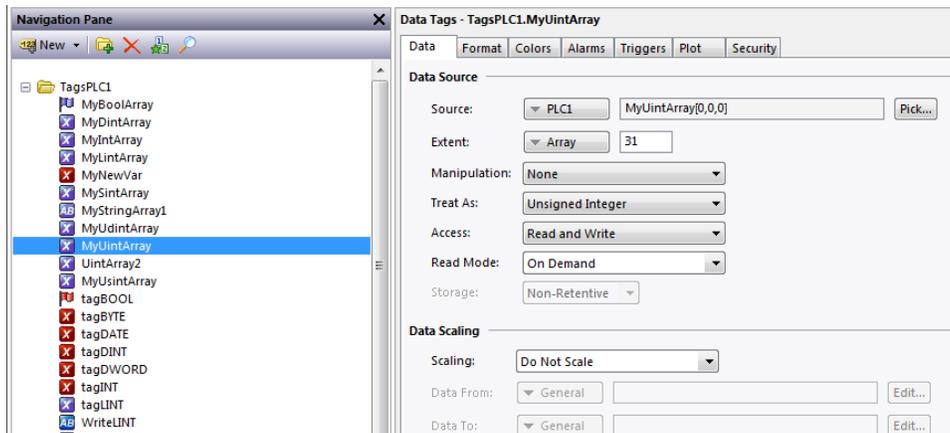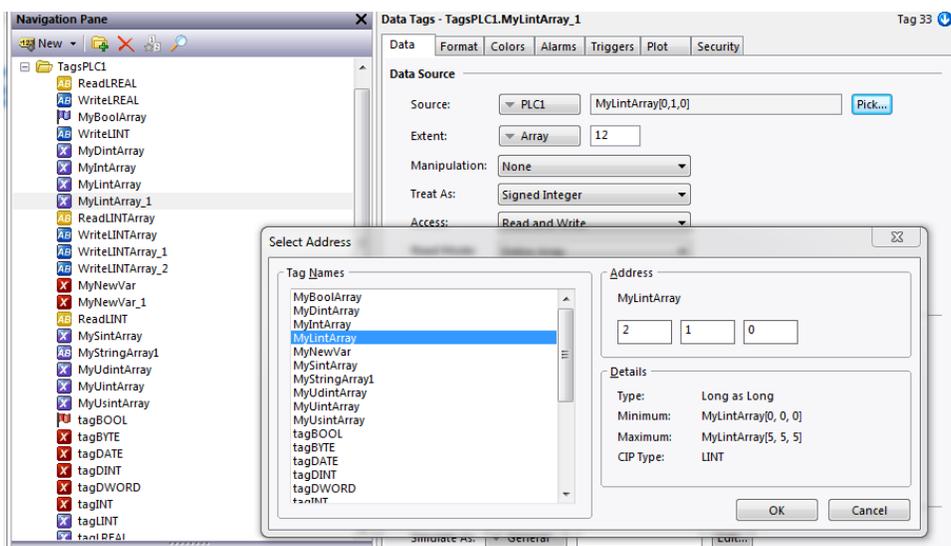

Multi-dimensional arrays will have an array tag created to access a single dimension of the array.
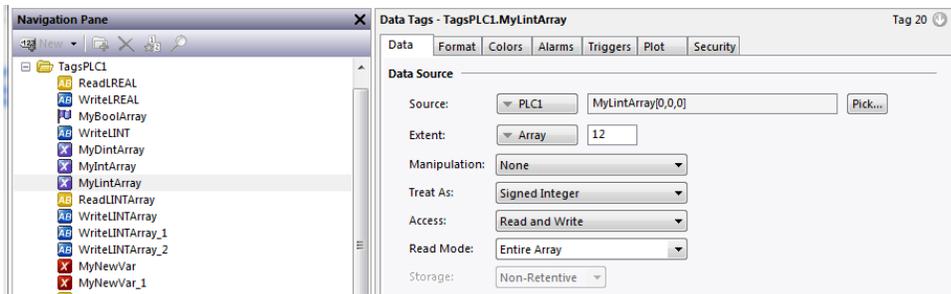
To access another single dimension of the multidimensional array – right click on the created array tag and select Smart Duplicate.
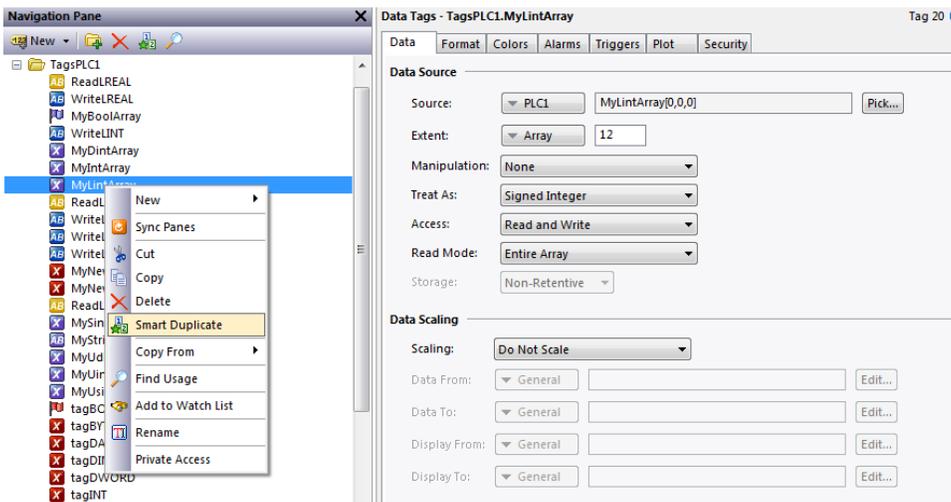
Select the newly created tag and click on the Pick… button in the Data Source group of the Data tab.

Enter the desired starting element and click OK.

Cable Information

RS232 Serial Connection

Micro800	Red Lion Device
Tx	2 Rx
Rx	5 Tx
G	3/4 COMM

Ethernet – Standard Ethernet Cable

Revision History

02/04/2016 – Created
08/30/2018 – Updated to new Crimson 3.0+ information sheet format.
10/18/2018 – Added Crimson 3.1+ Auto Mapped Tag Creation section.
10/22/2018 – Added 64-bit data access notes.
02/20/2019 – Added clarification of string array support for driver v1.01+.