SLS Inputs using CompactLogix/ControlLogix AOI(Add-On Instruction)

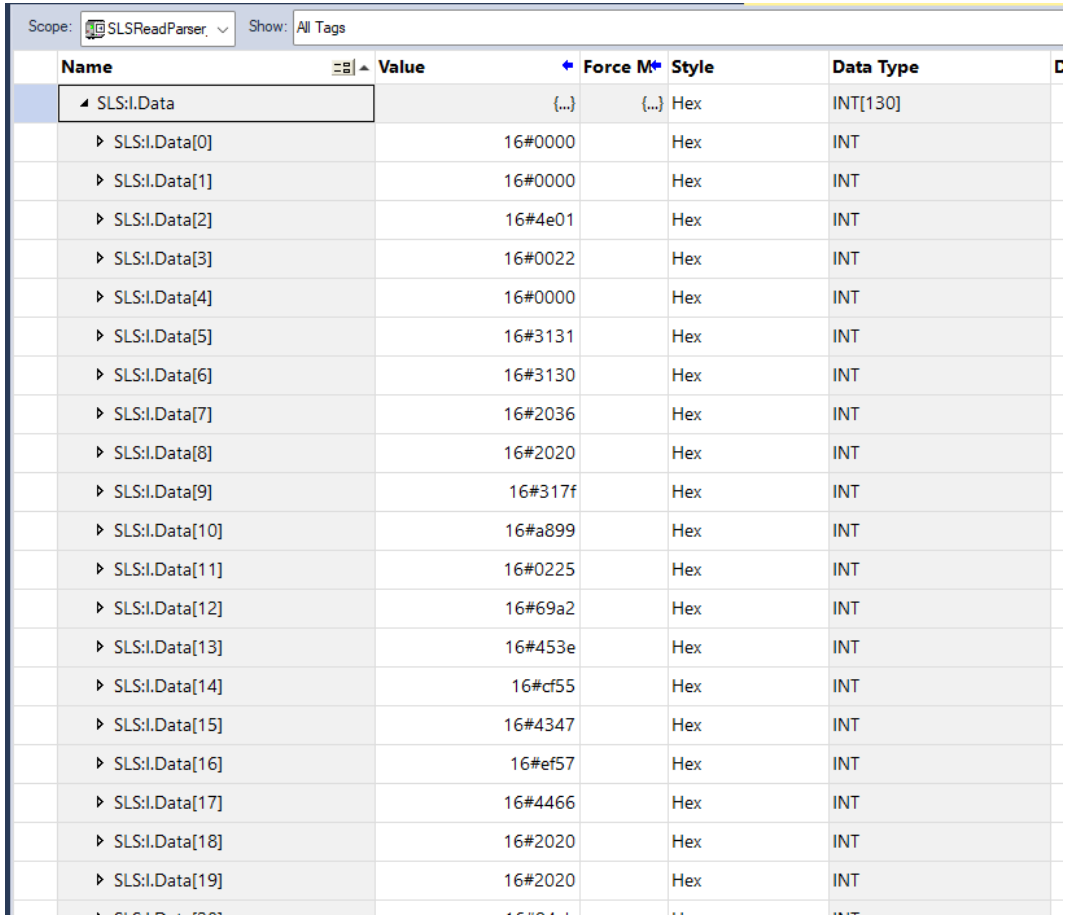
Link to Video Demonstration

CONTROL/COMPACTLOGIX COMMS

GMCCUTCHEON NOTES 9/10/2024

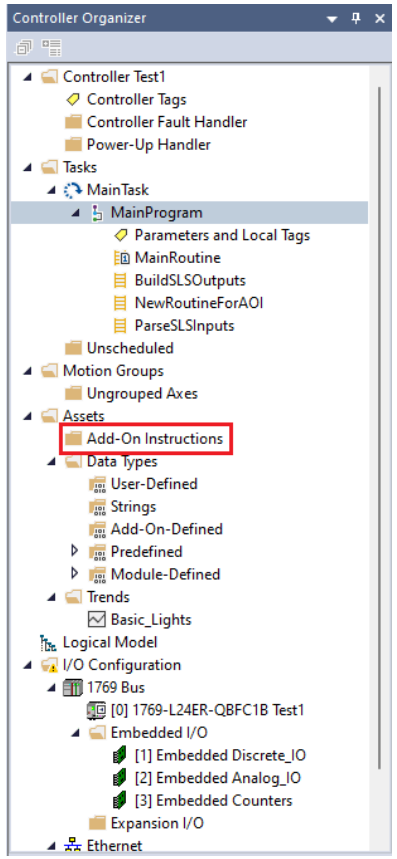
PLC Global Input Tag From SLS

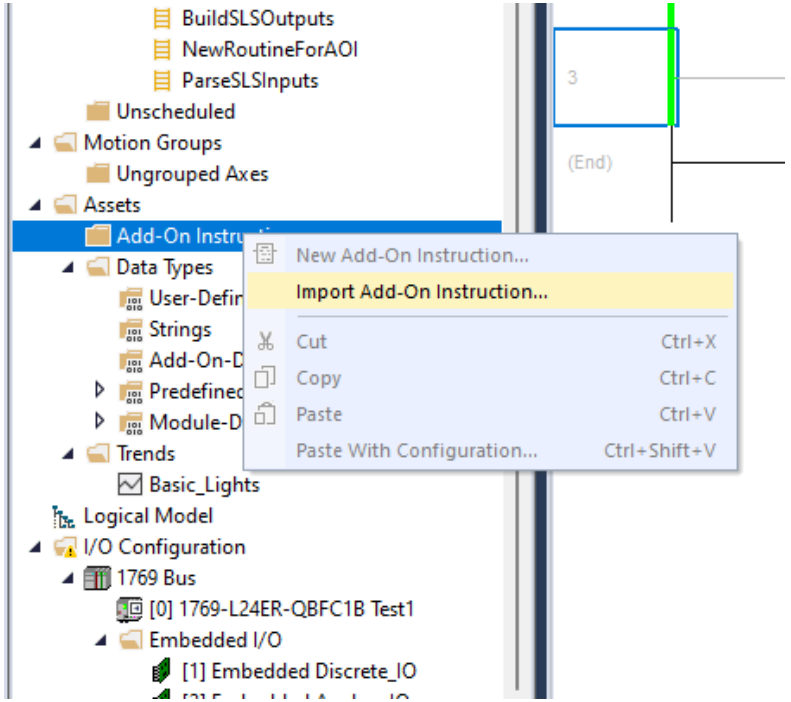
- The global tag name where the data from the SLS registers will arrive will have the same name as the module that was set up to manage the communications to the SLS device.
- The array length is typically 130-bytes.



Importing the AOI (Add-On Instruction)

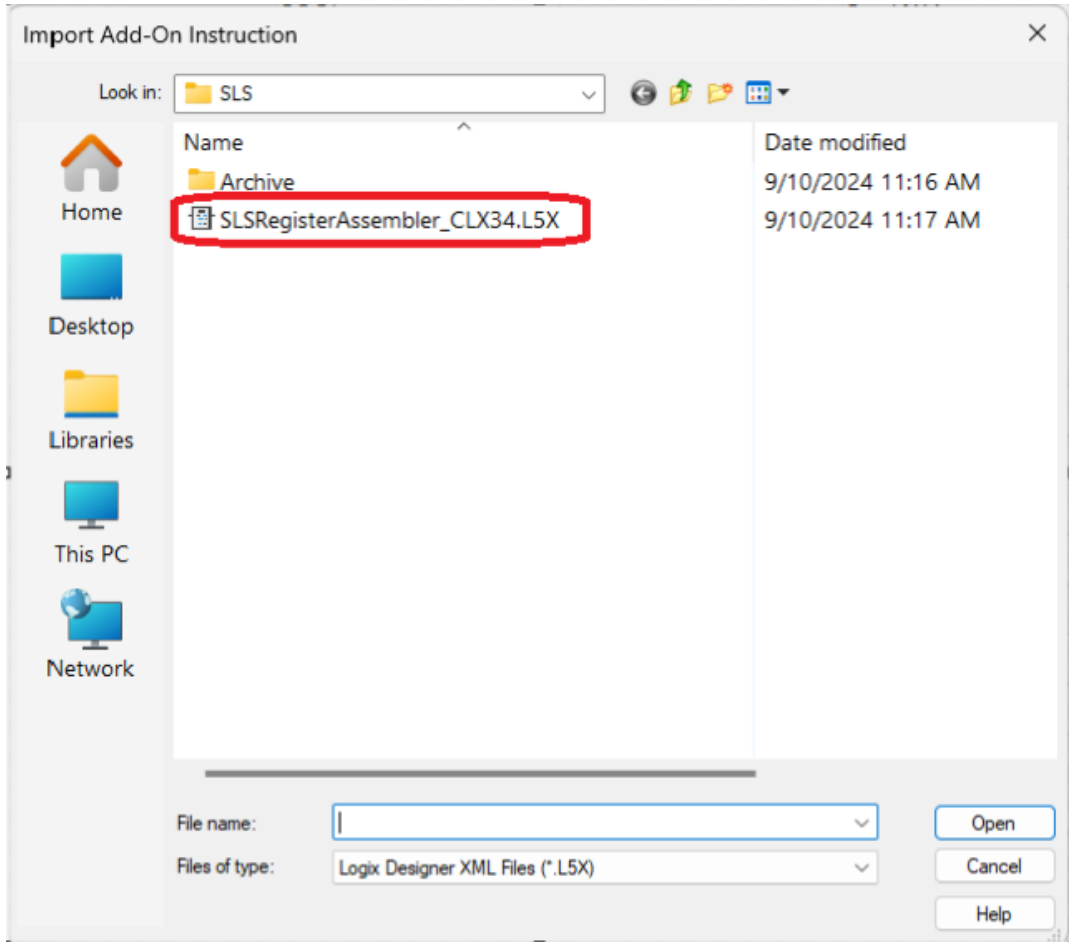
- After you have added the communication module and confirmed it's connection to the SLS it is time to import the SLS Add-On Instruction.
- The Add-On Instructions Folder is located in the Assets Folder on the Controller Organizer Tab of Studio 5000.
- Right-click the Add-On Instructions Folder to bring up the menu and select Import Add-On Instruction





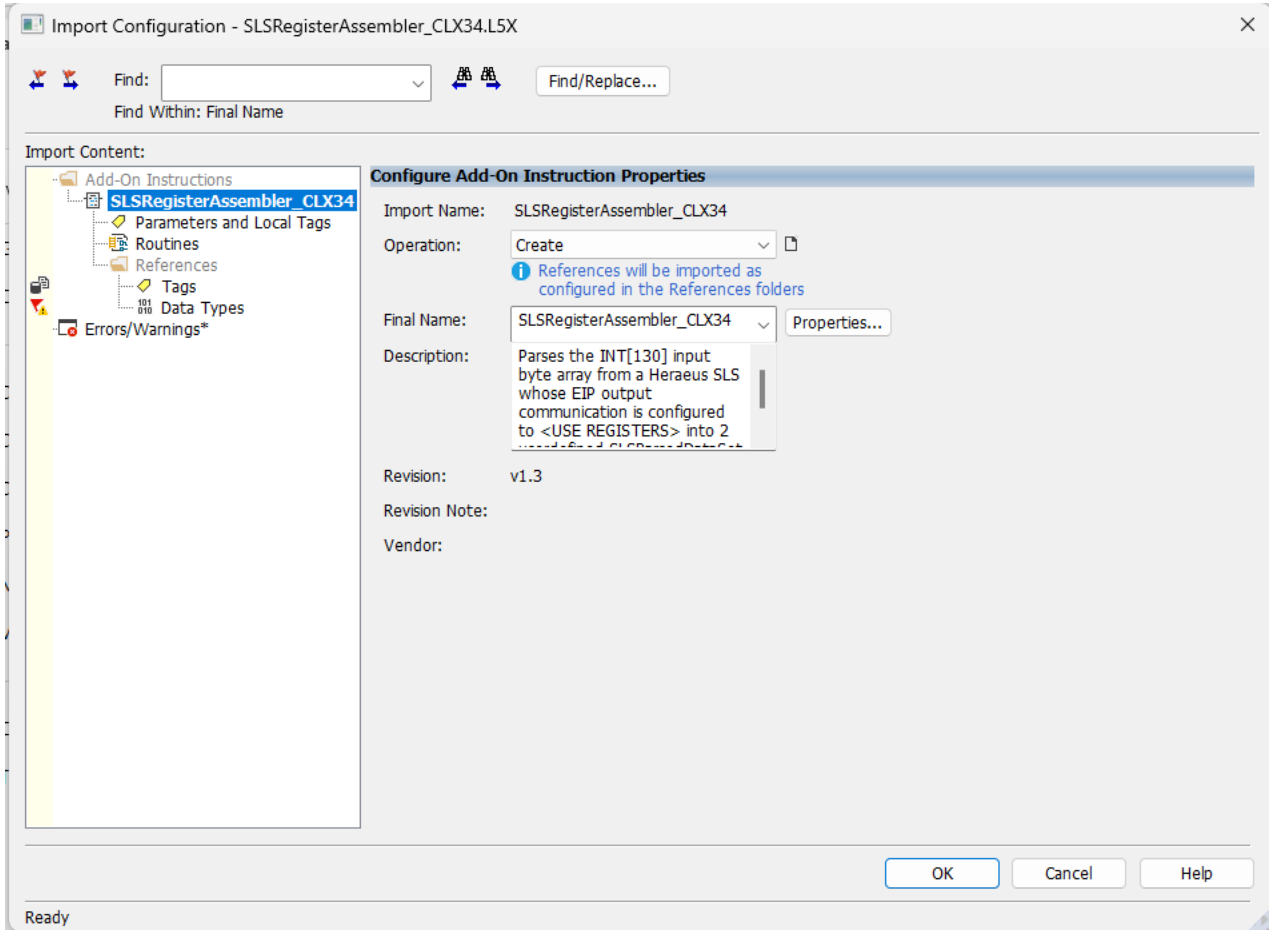
Importing the AOI (Cont.)

- Browse to the location you saved the SLS Add-On Instruction from HEN, and open that file to import it into your project. (This file will be named "SLSRegisterAssembler_CLX34.LX5“ or similar)



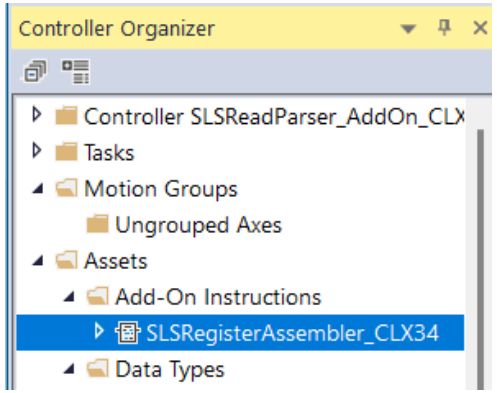
Importing the AOI (Cont.)

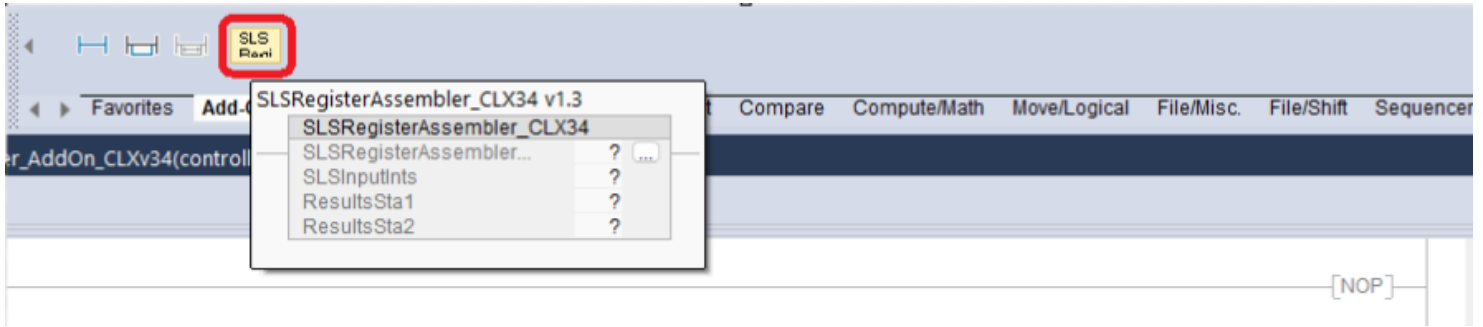
- A configuration window with details describing the Add-on instruction will pop up allowing you to confirm that you have selected the Add-On instruction you intended.
- Click the OK button to perform the import.



Importing the AOI (Cont.)

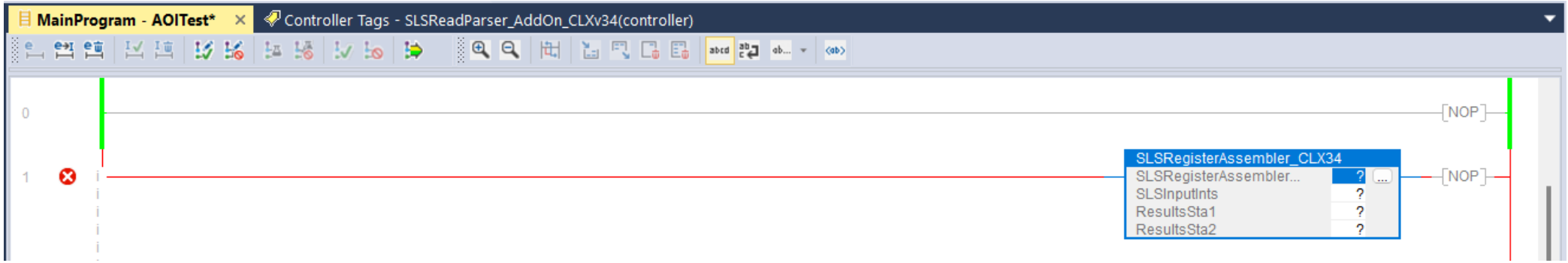
- Once the Import is complete the SLSRegisterAssembler_CLX34 will show up under the Add-On Instructions Folder under Assets and be available for use.
- The Add-On Instruction will be available on the element group toolbar in the Add-on group tab.
- An image of the AOI control will pop up if the mouse is hovered over the Add-On icon.





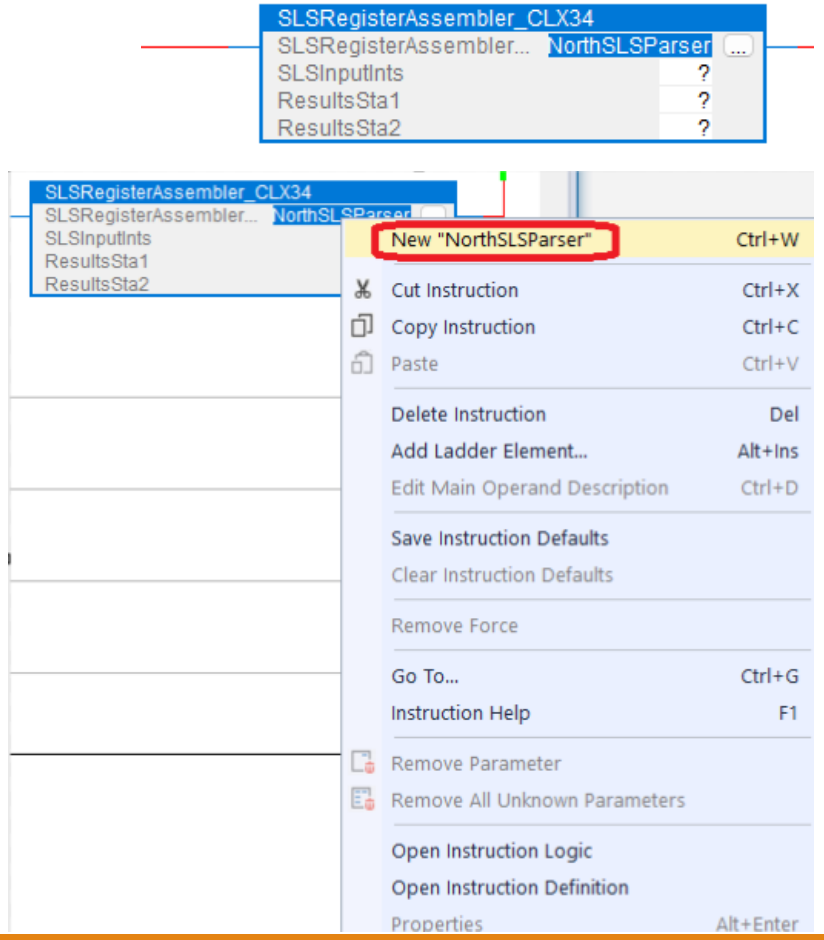
Adding the AOI to Ladder

- Edit or add an appropriate rung and drag the SLSRegisterAssembler_CLX34 instruction onto the rung.



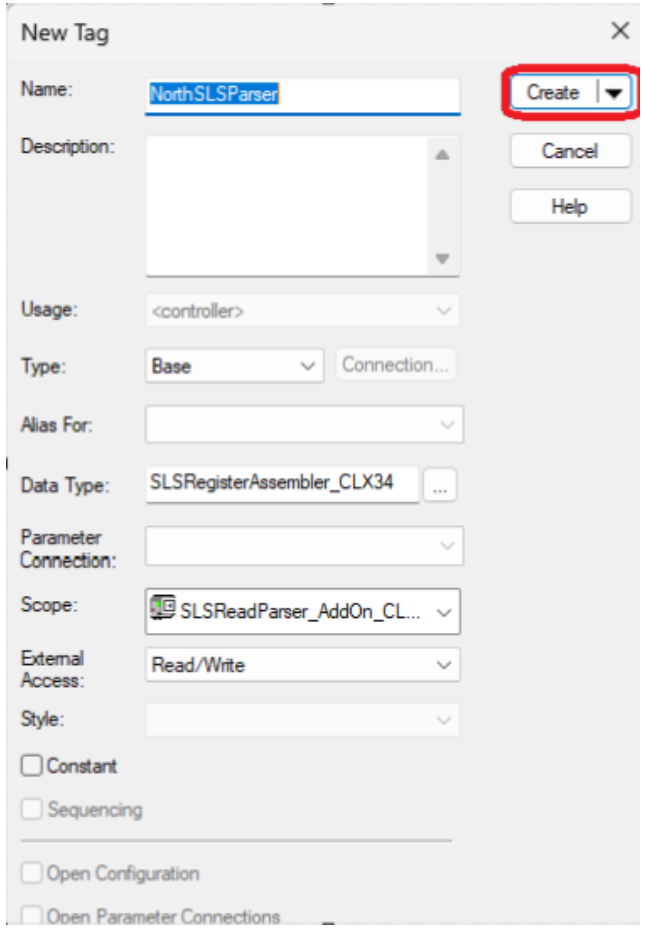
Adding the AOI to Ladder (Cont.)

- Start adding tags to the control. For the SLSRegisterAssembler_CLX34 Field:: Give the control an appropriate tag name….
- ...and then define that tag by right clicking the tag and selecting "New 'TagName' “.



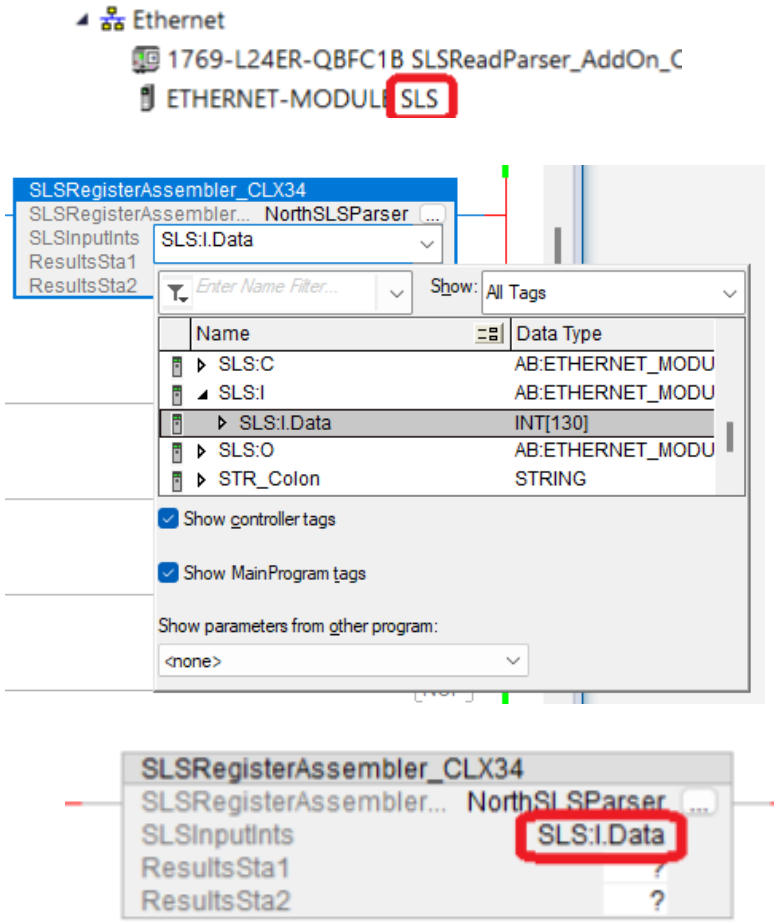
Adding the AOI to Ladder (Cont.)

- This opens the New Tag window...just leave everything at the defaults and click the <Create> button.



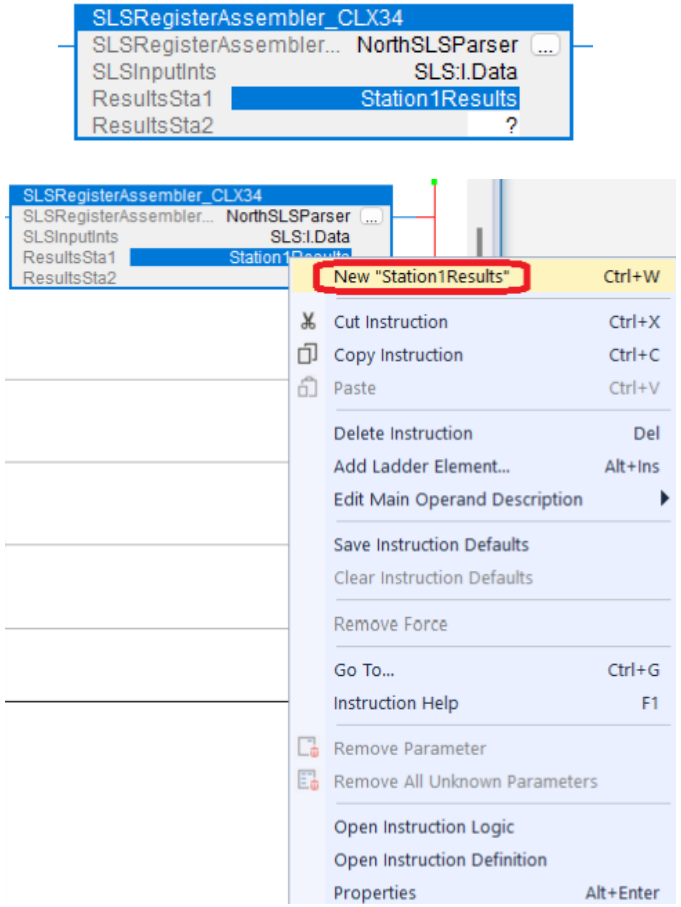
Adding the AOI to Ladder (Cont.)

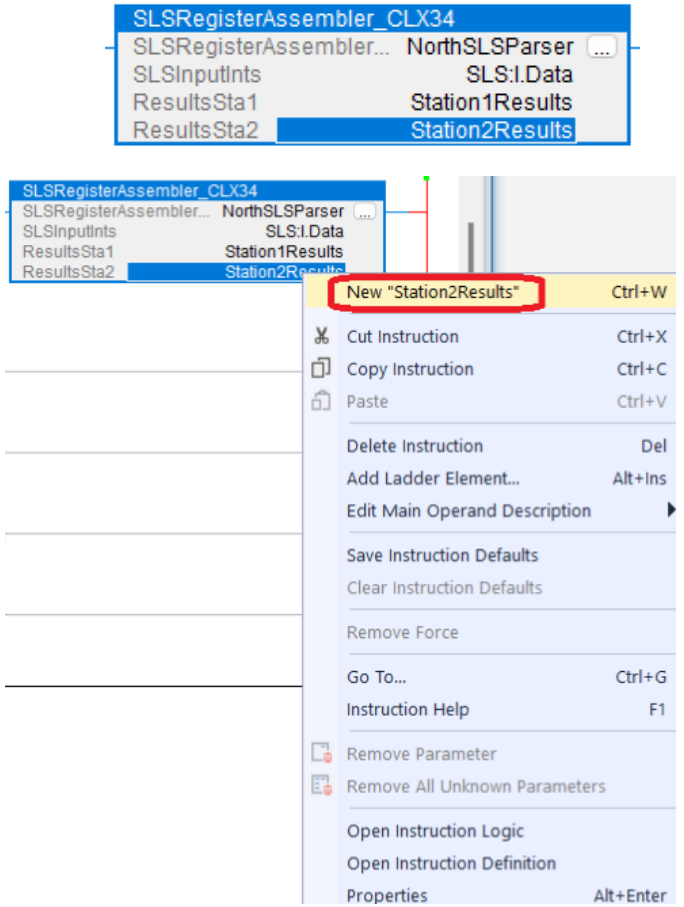
- For the SLSInputInts Field:: This is where you point the data from the incoming communication module to the AOI instruction. Notice the name you gave the module communicating with the SLS. In this case it is “SLS".
- Add the name of the Ethernet module in the program you are working on then click the down arrow beside that name. Expand the Tagname tree and select the one with the ":I.Data" added to the end. In this case it would be “SLS:I.Data".



Adding the AOI to Ladder (Cont.)

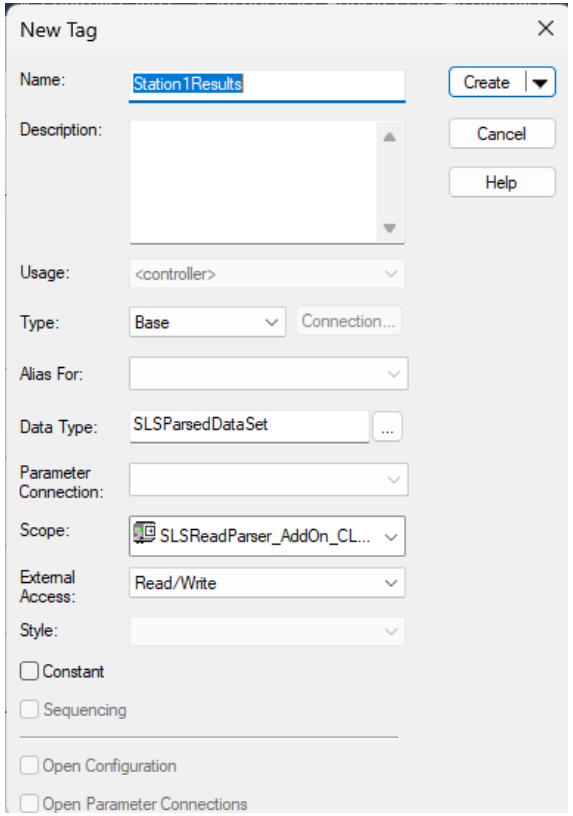
- For each of the station results Fields:: Give the results an appropriate tag name...
- ...and then define that tag by right-clicking the tag and selecting "New 'TagName' ".

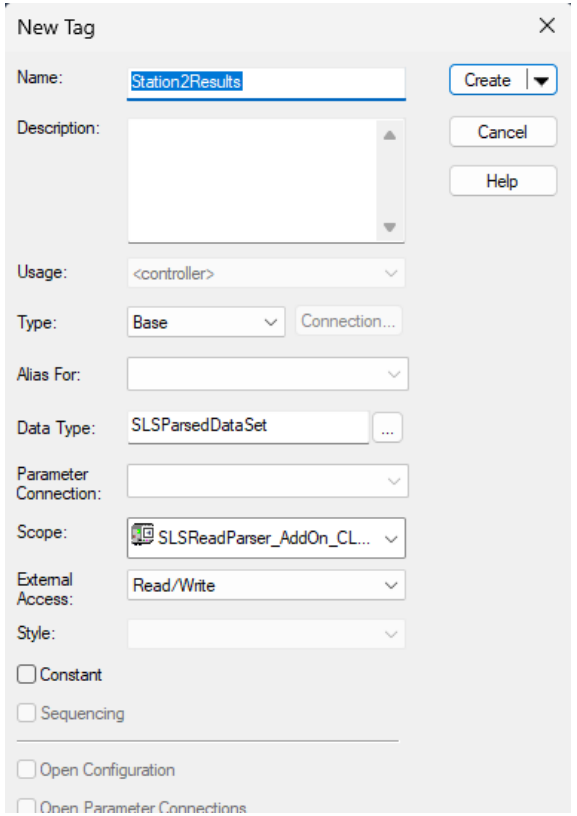




Adding the AOI to Ladder (Cont.)

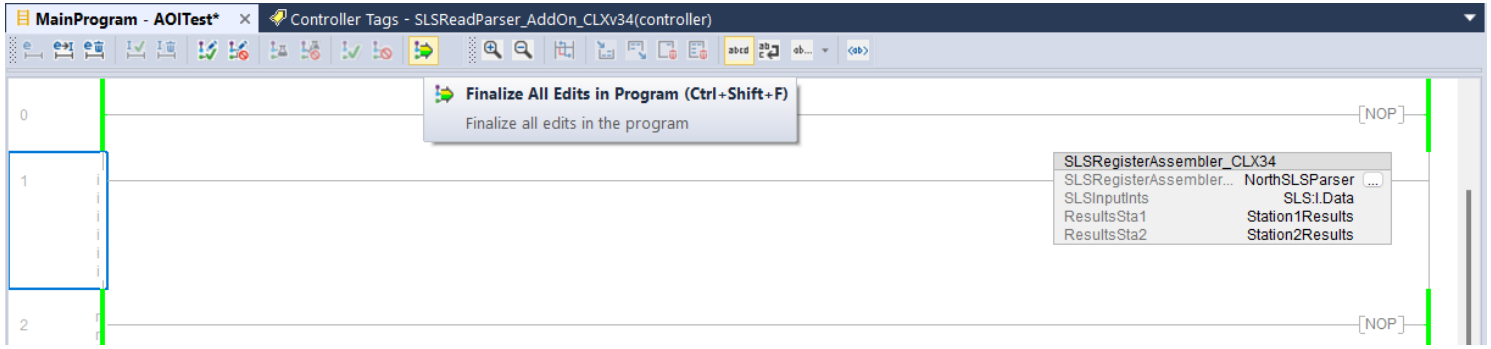
- This opens the New Tag window...just leave everything at the defaults and click the <Create> button.
- These SLSParsedDataSet UDT tags will be where the parsed values from the inputs elements are placed for each station.
- At typical setup might have a connection to a robot arm to station 1. That UDT tag might be named “RobotResults”.
- A manual pole may be connected to station 2. That UDT tag might be named “PoleResults”.

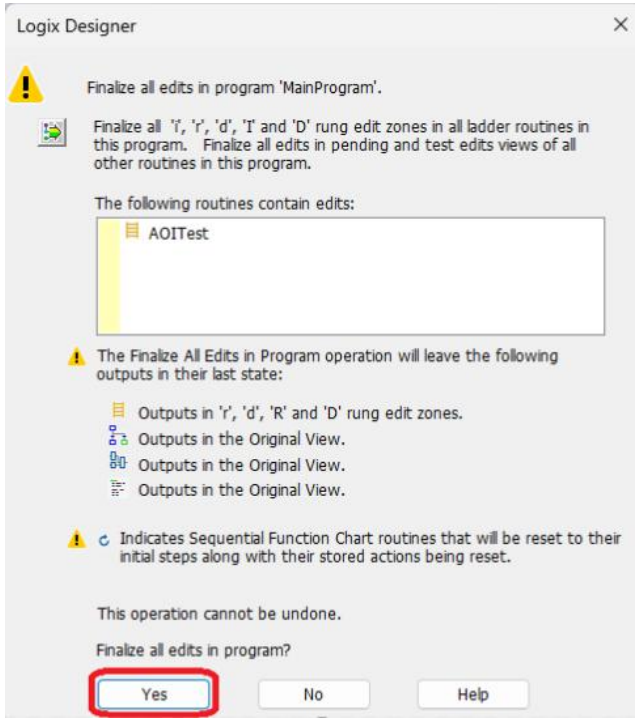




Adding the AOI to Ladder (Cont.)

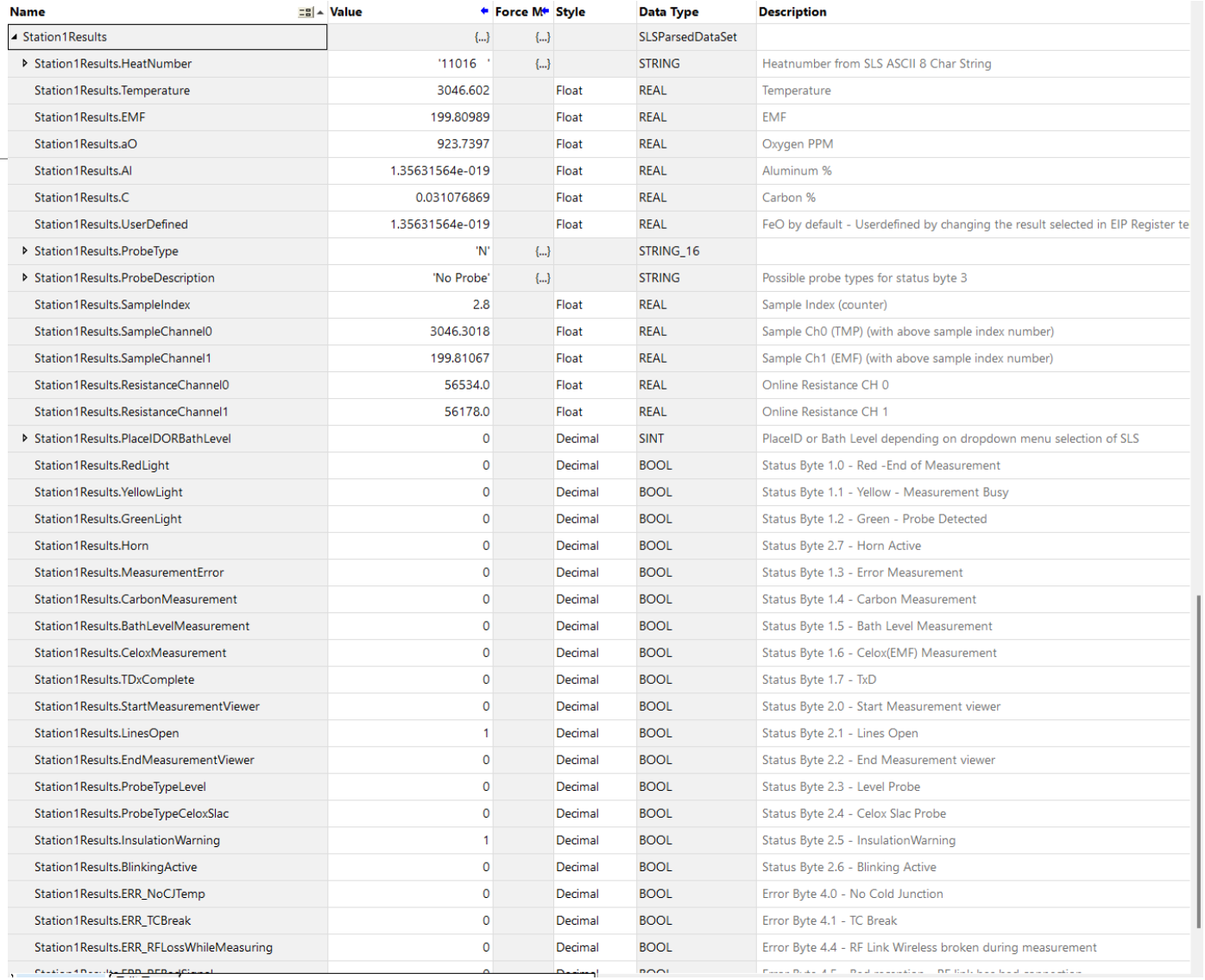
- Correct any errors and finalize all edits as normal to add changes to the processor.





Monitoring the Parsed Results

- In the controller tags window, locate the tagname that was entered in the Add-on ResultsSta1 parameter field.
- The parsed result data structure will look like this with the UDT SLSParsedDataSet tagname reflecting your tagname choice. In this case it is Station1Results.
- Expand the SLSParsedDataSet tag to display the individual data fields.
- Link to video demonstrating this procedure



Name	Value	Force M	Style	Data Type	Description
Station1Results	{...}	{...}		SLSParsedDataSet	
Station1Results.HeatNumber	'11016 '	{...}		STRING	Heatnumber from SLS ASCII 8 Char String
Station1Results.Temperature	3046.602		Float	REAL	Temperature
Station1Results.EMF	199.80989		Float	REAL	EMF
Station1Results.aO	923.7397		Float	REAL	Oxygen PPM
Station1Results.Al	1.35631564e-019		Float	REAL	Aluminum %
Station1Results.C	0.031076869		Float	REAL	Carbon %
Station1Results.UserDefined	1.35631564e-019		Float	REAL	FeO by default - Userdefined by changing the result selected in EIP Register te
Station1Results.ProbeType	'N'	{...}		STRING_16	
Station1Results.ProbeDescription	'No Probe'	{...}		STRING	Possible probe types for status byte 3
Station1Results.SampleIndex	2.8		Float	REAL	Sample Index (counter)
Station1Results.SampleChannel0	3046.3018		Float	REAL	Sample Ch0 (TMP) (with above sample index number)
Station1Results.SampleChannel1	199.81067		Float	REAL	Sample Ch1 (EMF) (with above sample index number)
Station1Results.ResistanceChannel0	56534.0		Float	REAL	Online Resistance CH 0
Station1Results.ResistanceChannel1	56178.0		Float	REAL	Online Resistance CH 1
Station1Results.PlaceIDORBathLevel	0		Decimal	SINT	PlaceID or Bath Level depending on dropdown menu selection of SLS
Station1Results.RedLight	0		Decimal	BOOL	Status Byte 1.0 - Red -End of Measurement
Station1Results.YellowLight	0		Decimal	BOOL	Status Byte 1.1 - Yellow - Measurement Busy
Station1Results.GreenLight	0		Decimal	BOOL	Status Byte 1.2 - Green - Probe Detected
Station1Results.Horn	0		Decimal	BOOL	Status Byte 2.7 - Horn Active
Station1Results.MeasurementError	0		Decimal	BOOL	Status Byte 1.3 - Error Measurement
Station1Results.CarbonMeasurement	0		Decimal	BOOL	Status Byte 1.4 - Carbon Measurement
Station1Results.BathLevelMeasurement	0		Decimal	BOOL	Status Byte 1.5 - Bath Level Measurement
Station1Results.CeloxMeasurement	0		Decimal	BOOL	Status Byte 1.6 - Celox(EMF) Measurement
Station1Results.TDxComplete	0		Decimal	BOOL	Status Byte 1.7 - TxD
Station1Results.StartMeasurementViewer	0		Decimal	BOOL	Status Byte 2.0 - Start Measurement viewer
Station1Results.LinesOpen	1		Decimal	BOOL	Status Byte 2.1 - Lines Open
Station1Results.EndMeasurementViewer	0		Decimal	BOOL	Status Byte 2.2 - End Measurement viewer
Station1Results.ProbeTypeLevel	0		Decimal	BOOL	Status Byte 2.3 - Level Probe
Station1Results.ProbeTypeCeloxSlac	0		Decimal	BOOL	Status Byte 2.4 - Celox Slac Probe
Station1Results.InsulationWarning	1		Decimal	BOOL	Status Byte 2.5 - InsulationWarning
Station1Results.BlinkingActive	0		Decimal	BOOL	Status Byte 2.6 - Blinking Active
Station1Results.ERR_NoCJTemp	0		Decimal	BOOL	Error Byte 4.0 - No Cold Junction
Station1Results.ERR_TCBreak	0		Decimal	BOOL	Error Byte 4.1 - TC Break
Station1Results.ERR_RFLossWhileMeasuring	0		Decimal	BOOL	Error Byte 4.4 - RF Link Wireless broken during measurement

Reference Information

SLSParsedDataSet UDT Field Definition

- HeatNumber - Heatnumber from SLS ASCII 8 Char String
- Temperature - Temperature
- EMF - EMF
- aO - Oxygen PPM
- Al - Aluminum %
- C - Carbon %
- UserDefined - FeO by default - Userdefined by changing the result selected in EIP Register telegram offset 40(Place 1)/104(Place 2)
- ProbeType
- ProbeDescription - Possible probe types for status byte 3
- SampleIndex - Sample Index (counter)
- SampleChannel0 - Sample Ch0 (TMP) (with above sample index number)
- SampleChannel1 - Sample Ch1 (EMF) (with above sample index number)
- ResistanceChannel0 - Online Resistance CH 0
- ResistanceChannel1 - Online Resistance CH 1
- PlaceIDORBathLevel - PlaceID or Bath Level depending on dropdown menu selection of SLS
- RedLight - Status Byte 1.0 - Red -End of Measurement
- YellowLight - Status Byte 1.1 - Yellow - Measurement Busy
- GreenLight - Status Byte 1.2 - Green - Probe Detected
- Horn - Status Byte 2.7 - Horn Active
- MeasurementError - Status Byte 1.3 - Error Measurement
- CarbonMeasurement - Status Byte 1.4 - Carbon Measurement
- BathLevelMeasurement - Status Byte 1.5 - Bath Level Measurement
- CeloxMeasurement - Status Byte 1.6 - Celox(EMF) Measurement
- TDxComplete - Status Byte 1.7 - TxD
- StartMeasurementViewer - Status Byte 2.0 - Start Measurement viewer
- LinesOpen - Status Byte 2.1 - Lines Open
- EndMeasurementViewer - Status Byte 2.2 - End Measurement viewer
- ProbeTypeLevel - Status Byte 2.3 - Level Probe
- ProbeTypeCeloxSlac - Status Byte 2.4 - Celox Slac Probe
- InsulationWarning - Status Byte 2.5 - InsulationWarning
- BlinkingActive - Status Byte 2.6 - Blinking Active
- ERR_NoCJTemp - Error Byte 4.0 - No Cold Junction
- ERR_TCBreak - Error Byte 4.1 - TC Break
- ERR_RFLossWhileMeasuring - Error Byte 4.4 - RF Link Wireless broken during measurement
- ERR_RFBadSignal - Error Byte 4.5 - Bad reception - RF link has bad connection
- ERR_NoEvaluation - Error Byte 4.6 - No evaluation

Additional Information

Module Connection Option – Generic Ethernet Module

- Name the module. In this case ‘SLS. The controller tags automatically created to manage the data from this module will use this name (ie SLS:I.Data[0]).
- Change the Comm format to INT.
- Add the EIP address for the SLS instrument. In this example ‘10.10.10.155’.
- Enter the Connection Parameters as shown on the screenshot .
- Click <Ok>