

RSLogix5000 Add-On Instructions: Network Acquisition Trigger

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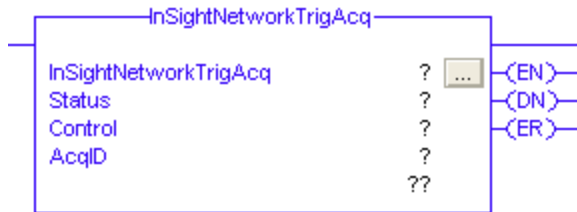
In-Sight Sensor Network Triggered Acquisition (InSightNetworkTrigAcq)

The InSightNetworkTrigAcq instruction is used to trigger camera acquisitions from a ControlLogix or CompactLogix PLC using an Ethernet/IP implicit connection. The InSightNetworkTrigAcq instruction triggers an acquisition each time the instruction is enabled. The instruction unlatches the enable (EN) bit when the acquisition is done (DN) or the acquisition errors (ER). When the DN bit is set, the AcqID holds the Acquisition Count returned from the camera for the acquisition that was triggered. All of the handshaking between the PLC and the camera is handled inside the instruction. The user only needs to enable the instruction at a certain rate and wait for the DN bit to be set and then use the AcqID elsewhere in their ladder logic to read the inspection results from the camera.

This instruction can be coupled with another Add-On instruction, the InSightResultsBuffering instruction, to easily read the inspection results for the PLC triggered acquisition.

This Add-On instruction should be used with an In-Sight camera added to the ControlLogix PLC using the Cognex Add-On Profiles. In-Sight cameras at firmware version 3.30.0 and newer support the Add-On Profiles. In-Sight cameras at firmware version 3.40.0 and newer support the Add-On instructions since the Status.Acquisition Count is implemented.

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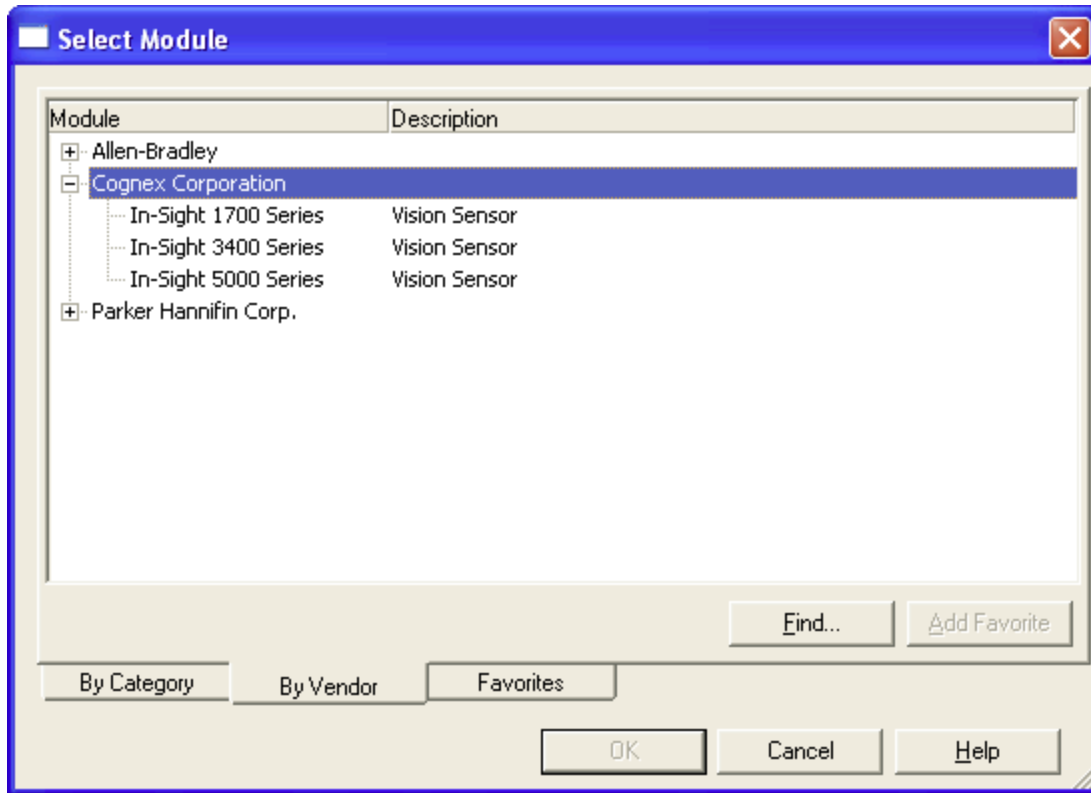
Parameters

Operand	Type	Format	Description
InSightNetworkTrigAcq	Control	tag	control structure for instruction operation
Status	CC:InSight3 Status:I:0	tag (from Module Defined type when add camera to I/O)	In-Sight camera status bits and words
Control	CC:InSight3 Control:O:0	tag (from Module Defined type when add camera to I/O)	In-Sight camera control bits
AcqID	DINT	tag	Acquisition Count (ID) of network triggered acquisition

Using the InSightNetworkTrigAcq AOI in RSLogix5000 (requires v16.00+)

1. Verify that RSLogix5000 v16.00 or later is installed.
2. Open RSLogix5000.
3. On the File Menu, select New...
4. Select the Controller type, select revision 16, give the controller a name, and add a description.
5. Under the I/O Configuration node in the Controller Organizer pane on the left, add a Cognex In-Sight camera to the configuration.

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Use the Cognex Add-On Profile by selecting the correct In-Sight Series camera under the Cognex Corporation node in the Select Module dialog.

6. A New Module dialog will appear asking you to configure the In-Sight camera. Select and fill in the appropriate information for your camera.

Set the Requested Packet Interval (RPI) to the maximum amount of time between when the instruction is enabled and when the acquisition actually occurs in the camera.

For example, if you trigger acquisitions every 100 ms and want the acquisition in the camera to occur in at most 20 ms after enabling the instruction or if you want to know the AcqID in 20ms after the acquisition finishes then set the RPI to at most 20 ms. Click OK and you will see the camera in the I/O tree under the Ethernet node.

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7. Right click the Add-On Instructions node and select Import Add-On instruction... from the context menu and browse to the InSightNetworkTrigAcq.L5X file. Click the Import button. The InSightNetworkTrigAcq Add-On Instruction now appears under the Add-On instructions node.
8. Open the Main Routine, add a rung, click the Add-On tab in the Instruction toolbar:



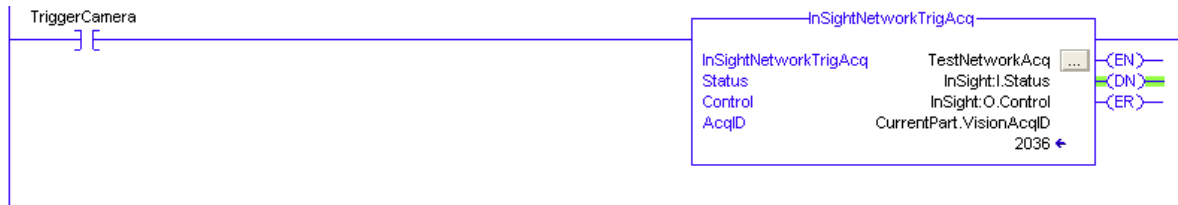
then click the InSightNet button to insert the instruction on the rung.

9. After it is inserted, edit the instructions operands similar to the following:
 - a. InSightNetworkTrigAcq is the control structure for the instruction, type in a tag name, right click on the name and create a new tag of the InSightNetworkTrigAcq type.
 - b. Status is the status structure from the module defined type when the camera was added to the configuration using the Add-On Profile. If you named your camera OCVTop, the status structure would be OCVTop:I.Status. You can also find this by looking in the controller tags when you double click the Status field in the instruction and click the arrow in the listbox.
 - c. Control is the control structure from the module defined type when the camera was added to the configuration using the Add-On Profile. Using the above example, the control structure would be OCVTop:O.Control.
 - d. AcqID is a tag that is used to hold the count for the Acquisition Count for the completed acquisition (DN is set). The tag is a DINT, its value will range from 0 to 65535, and can be created when right clicking on the tag name and selecting new. This tag is not used in this example but it can be used to verify that the current acquisition is the correct by comparing this value to the previous count.
10. Put some input logic on the rung to trigger an acquisition. Download the project to the PLC and change to Run mode.
11. Connect to the camera in the PLC's I/O configuration using In-Sight Explorer. Load a job that uses ReadEIPBuffer and/or WriteEIPBuffer functions and make sure the Image function's Acquisition trigger is set to Network or create a new job as noted.
12. Toggle the input bit on then off on the rung with the InSightNetworkTrigAcq instruction. Note that the DN bit should be set and the tag in the AcqID field should have changed

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from -1 to a value between 0 and 65535. Toggle the bit on then off again, the value should increment again.

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Notes:

With high speed acquisition triggering applications, care must be taken to not trigger beyond the limits of the camera or else acquisitions and associated inspection results may be missed. Setting the RPI too large may result in missed acquisition triggers from the PLC or missed Acquisition Counts returned from the camera. Setting the RPI too small may have a performance impact on your network and with the In-Sight camera.