

RSLogix5000 Add-On Instructions: Acquisition Detect

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In-Sight Sensor Acquisition Detect (AcquisitionDetect)

The AcquisitionDetect instruction is used to detect when an acquisition has occurred and completed in an In-Sight camera from a ControlLogix or CompactLogix PLC using an Ethernet/IP implicit connection. For this instruction to function properly, it should be conditioned with any input logic on the rung of logic; this way it is run every scan of the PLC's logic scan. When the AcquisitionDetect instruction is enabled (scanned), it checks to see if the Acquisition Count has changed or if there was a missed acquisition. If the acquisition count has changed, an acquisition occurred and the DN bit is set for one program scan, and the AcqID parameter holds the Acquisition Count returned from the camera for the acquisition that was triggered. If there was a missed acquisition, the ER bit is set. All of the handshaking between the PLC and the camera is handled inside the instruction. The user only needs to enable the instruction 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 InSightResultsReady instruction, to easily read the inspection results for the triggered acquisition detected.

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
AcquisitionDetect	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 camera triggered acquisition

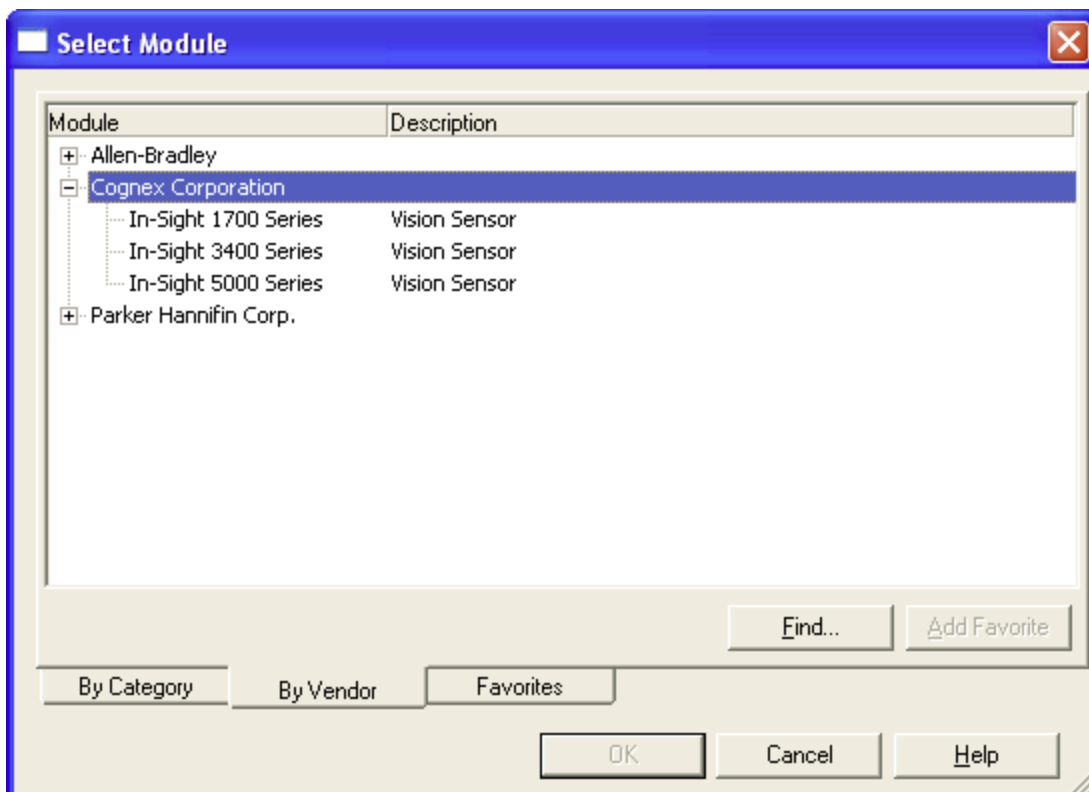
Using the AcquisitionDetect Add-On Instruction in RSLogix5000 (requires v16.00+)

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 in which you require the Acquisition Count (AcqID) after the acquisition has completed.

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As a guideline, set the Requested Packet Interval (RPI) to at most 1/4 of the acquisition triggering period. For example, if you trigger acquisitions at a rate of 1500 PPM (25 PPS) which is an acquisition triggered every 40 ms then set the RPI to at most 10 ms to detect acquisitions correctly. Click OK and you will see the camera in the I/O tree under the Ethernet node.

7. Right click the Add-On Instructions node and select Import Add-On instruction... from the context menu and browse to the AcquisitionDetect.L5X file. Click the Import button. The AcquisitionDetect 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:



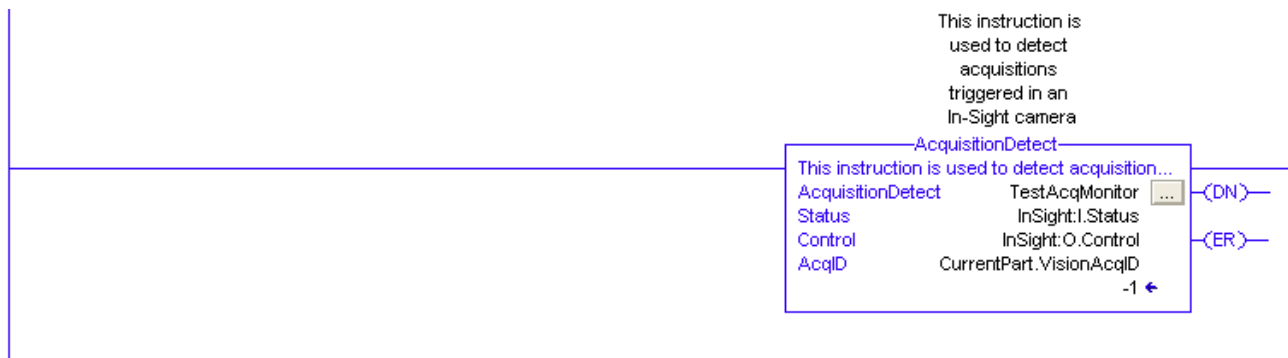
then click the Acquisition button to insert the instruction on the rung.

9. After it is inserted, edit the instruction's operands similar to the following:
 - a. AcquisitionDetect is the control structure for the instruction, type in a tag name, right click on the name and create a new tag of the AcquisitionDetect 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 an output tag used to hold the Acquisition Count for the completed acquisition (DN is set). It is a DINT and its value will range from 0 to 65535.

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10. 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 or create a new job as noted.
12. Trigger acquisitions in the In-Sight camera and monitor the rung with the AcquisitionDetect instruction. Note that the DN bit will be set for one program scan and the tag in the AcqID field will be incrementing from -1 to a value between 0 and 65535.

Sample Usage



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.