



This document will cover an Add on Instruction (AOI) for the Logix Designer software package from Rockwell Automation. This AOI handles gathers the data from a site survey from a Banner Wireless radio system. The AOI formats the information in Results Green, Results Yellow, Results Red, and Results Retries. The Banner wireless system continues to handle IO while a site survey is operational. The rest of the document will describe how to use the AOI and what it actually does. This AOI should be used as a starting point for site survey. Please adjust the AOI as necessary for your individual system. The default program is assumed to be installed in the DXM units.

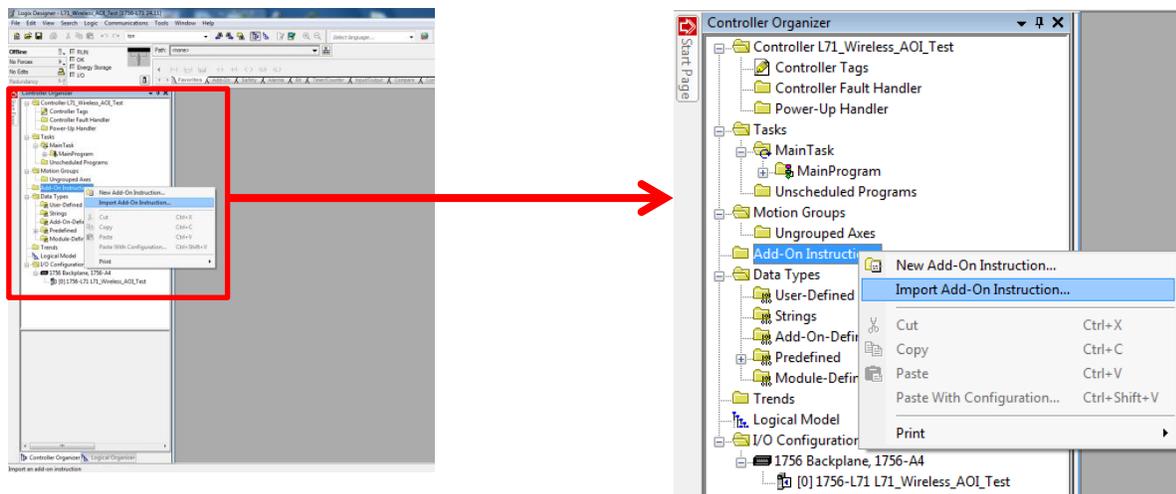
Components

Input AOI: Banner Wireless Site Survey v1_2

Installation Process

This section describes how to install the Input and Output AOIs into Logix Designer software.

1. Open up a project.
2. Right click on the Add-On Instruction folder in the Controller Organizer window. Select the Import Add-On Instruction option.



3. A standard windows selection box will appear. Navigate to the correct file location. Two L5X files should be present. One is for the Input and the other is the Output AOI. Select the Banner_Wireless_Site_Survey_v1_2.L5X file. Then click the Ok button. This is for the Input AOI.

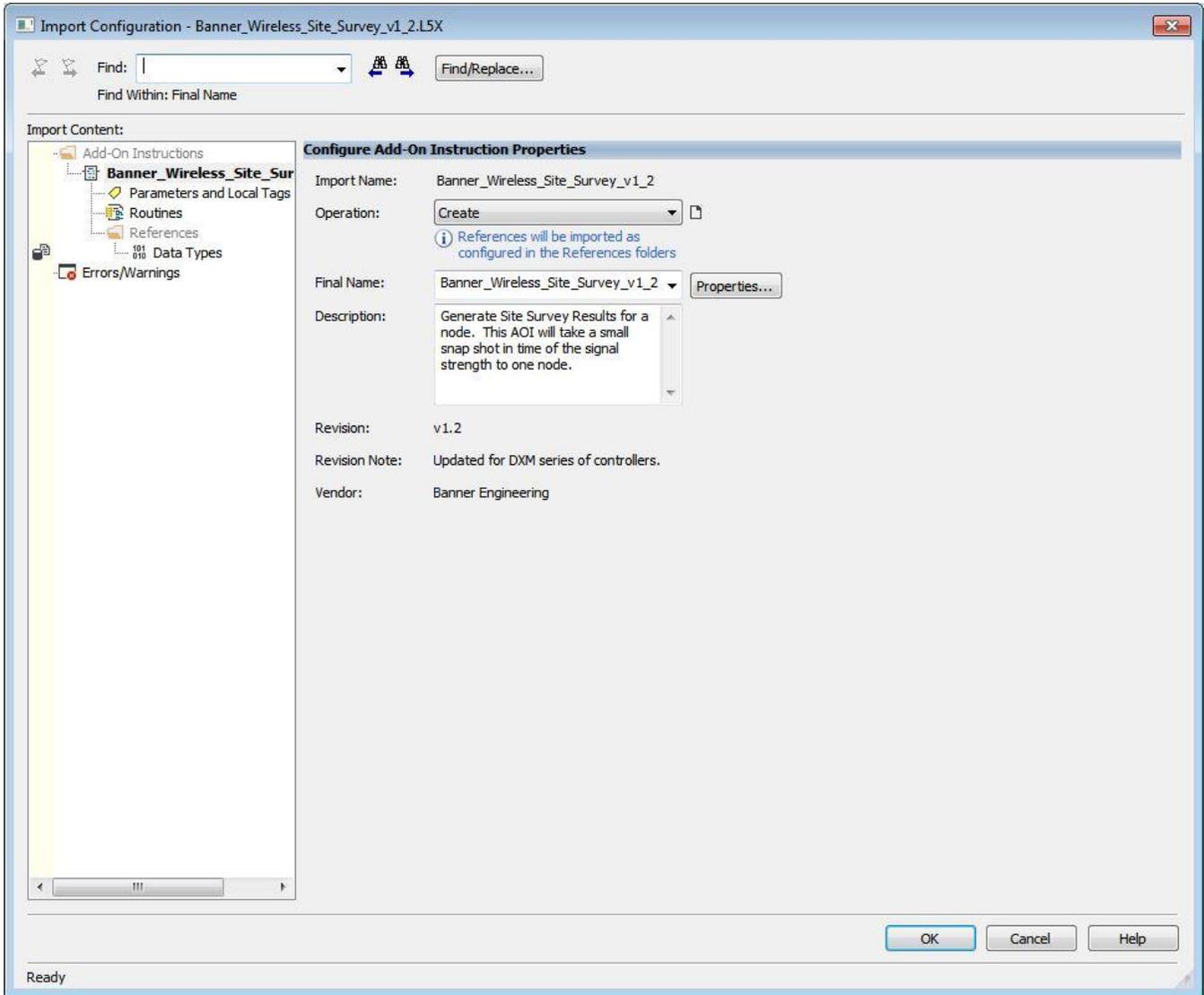
Name	Date modified	Type
Banner_Wireless_Site_Survey_v1_2.L5X	8/7/2020 2:09 PM	Logix Designer X...

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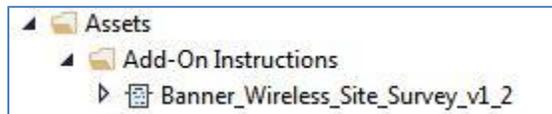
9714 Tenth Avenue North • Minneapolis, MN 55441 • Phone 763.544.3164 • Fax 763.544.3213 • www.bannerengineering.com



4. The Import Configuration window will pop up. The default selection will create all of the necessary items for the AOI. Press the OK button to complete the import process.



5. The following items should appear in the associated areas. Example shows the location in Version 32 of Logix.



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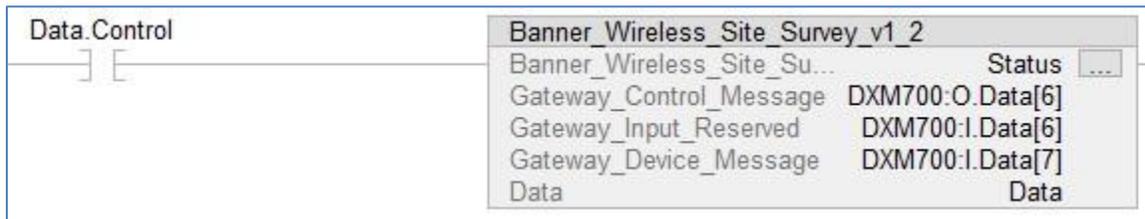


Site Survey AOI – How to Install

1. Create an Ethernet connection to a Banner Wireless device. In this example I have a connection to a DXM unit. I labeled the connection DXM700 in the PLC. If you look in the controller tags you should see an input and output data array associated to DXM700.

Name	Value	Force Mask	Style	Data Type
▶ DXM700:I		{...}	{...}	_000C:DXM_6E42DE20:I:0
▶ DXM700:O		{...}	{...}	_000C:DXM_4FD940B9:O:0

2. Next add an AOI to your ladder logic program. Optionally create logic to control when the AOI should be activated. The variable Activate_Site_Survey needs to be turned on to activate the site survey AOI in this example. The AOI turns the variable off after the survey is complete. This structure can be adjusted as necessary by the programmer.



3. The AOI has five links that need to be connected to controller tags.
 - a. Banner_Wireless_Site_Survey is linked to a variable that will store the status of the AOI. In this example the tag is called Status.
 - b. Gateway_Control_Message is linked to the EIP Output Assembly that is associated with the Gateway's Control Message Register (DXM700:O.Data[6]).
 - c. Gateway_Input_Reserved is linked to the EIP Input Assembly that is associated with the Gateway's Reserved Register (DXM700:I.Data[6]). Red and Retry totals are stored in this location.
 - d. Gateway_Device_Message is linked to the EIP Input Assembly that is associated with the Gateway's Device Message Register (DXM700:I.Data[7]). Green and Yellow totals are stored in this location.
 - e. Data should have a new tag generated for it. This tag will create a UDT with the results in it along with some control tags for the AOI.
4. Add an Examine On element in front of the AOI. Link this to the Tag located inside of the Data element. In this case this is Data.Control. This is activated when the AOI should be ran. After the data is collected the AOI will turn the tag off automatically.
5. AOI install overview complete.



Site Survey AOI – How to Use

1. The AOI is controlled via the tag that was created and linked to the Data element of the AOI.
2. Go to tag database that was this element in it and expand the tag (Gateway01 for this example).

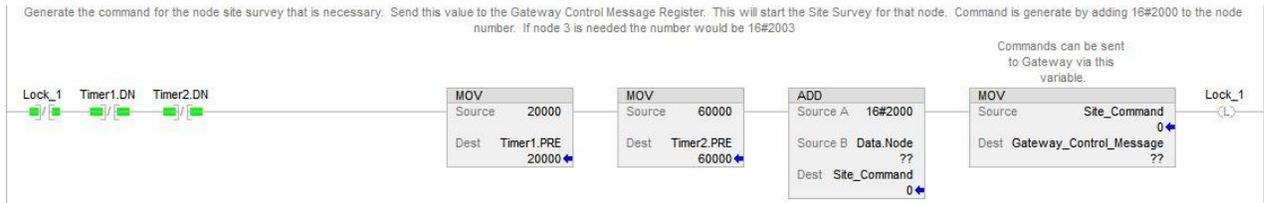
Name	Value	Style	Data Type
▲ Data		{...}	Banner_Site_UDT
▶ Data.Node		0 Decimal	INT
▶ Data.Node_Type		0 Decimal	INT
▶ Data.Result_Green		0 Decimal	INT
▶ Data.Result_Yellow		0 Decimal	INT
▶ Data.Result_Red		0 Decimal	INT
▶ Data.Result_Retry		0 Decimal	INT
Data.Control		0 Decimal	BOOL

3. Enter in the Node number (1 through 47) that data should be received from. The Node Type also needs to be entered. Node Type has two possible values: 0 for a line powered unit and 1 for a battery powered unit.
4. Set the Control tag to a 1 to activate the routine. After the routine is complete the Control tag will automatically be set to 0.
5. Check out the Result tags.
6. Repeat for all nodes, as necessary.



Appendix A

1. This section will go over the AOI one rung at a time.
 - a. Rung 0 calculates the number needed to activate the site survey result for a particular node. This is moved into the Gateway's Control Message register. As soon as this happens the gateway will start doing a site survey to the requested node.



- b. The next run starts a timer. This timer is used to delay the rest of the routine 10 or 60 seconds. It 10 second timer is for line powered units, while the 60 seconds is for battery powered units.



- c. This rung waits until 10 or 60 seconds have expired. Next all of the data is converted from the Gateway Reserved and Device Message registers. This information is then stored in the Results tags.





- d. The last rung resets the variables used for the routine and turns off the completed tag. This is an optional tag to control when the routine is active.



- e. Explanation of AOI complete.