Technical Note



Gathering Data from a Site Survey

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 describes how to use the AOI and what it actually does. This AOI should be used as a starting point for site survey. Adjust the AOI as necessary for your individual system.

Components

Input AOI: Banner Wireless Site Survey

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.
- 3. Select the Import Add-On Instruction option.



- 4. A standard windows selection box will appear.
- 5. Navigate to the correct file location. Two L5X files should be present. One is for the Input and the other is the Output AOI.
- 6. Select the Banner_Wireless_Site_Survey.L5X file, then click Ok. This is for the Input AOI.

Name	Date modified	Туре	Size	
Banner_Wireless_Site_Survey.L5X	9/26/2016 10:50 AM	Logix Designer X		9 KB

- 7. The Import Configuration window pops up. The default selection creates the necessary items for the AOI.
- 8. Press the OK button to complete the import process.

Find Within: Final Name	✓ do do	Find/Replace				
ort Content:						
Add-On Instructions Add-On Instructions Banner_Wireless_Site_Sur Parameters and Local Tags Routines Frors/Warnings	Configure Add-O Import Name: Operation: Final Name:	a Instruction Properties Banner_Wireless_Site_Survey Create Banner_Wireless_Site_Survey	•	Properties		
	Description:	Generate Site Survey Results for a node. This AOI will take a small snap shot in time of the signal strength to one node.	*			
	Revision: Revision Note:	v1.0				
[] →				ОК	Cancel	Help

9. The following items should appear in the associated areas.

🖃 🚔 Controller Comm_Lab_L71	
🖉 Controller Tags	
Controller Fault Handler	
Power-Up Handler	
🚊 😁 Tasks	
🚊 🚭 MainTask	
🚊 🕞 MainProgram	
Parameters and Local Tag	s
MainRoutine	
🔤 Unscheduled	
🖶 😁 Motion Groups	
Ungrouped Axes	
Add-On Instructions	1
Banner_Wireless_Site_Survey	
Logic	
🖻 🚔 Data Types	

Site Survey AOI - How to Use

The AOI is configured to do a site survey to a specified node.

 Create an Ethernet connection to a Banner Wireless device. In this example I have a connection to a DX80 Gateway Pro unit. I labeled the connection DX80P in the PLC. If you look in the controller tags you should see an input and output data array associated to DX80P.

Activate Site Survey	BOOL	Read/Write	Decimal
+ DX80P:I	_000C:DX80P_6E	Read/Write	
+ DX80P:0	_000C:DX80P_4F	Read/Write	
+ Local:2:C	AB:1756_DO:C:0	Read/Write	
+ Local:2:1	AB:1756_DO:1:0	Read/Write	
+ Local 2:0	AB:1756_DO:O:0	Read/Write	
+ Local:3:C	AB:1756_DI_AC	Read/Write	
+ Local:3:1	AB:1756_DI_AC	Read/Write	
	DINT	Read/Write	Decimal

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.

	Generate Site Survey
	Results for a node.
	This AOI will take a
	small snap shot in
	time of the signal
	strength to one
	node.
tivate Site Survey	Banner Wireless Site Survey
	Generate Site Survey Results for a node. This AQ.
	Banner Wireless Site Su. Site Results
	Node 1
	Results Green N1 Results Green
	0
	Results Yellow N1 Results Yellow
	04
	Results Red N1_Results Red
	0 ←
	Results_Retry N1_Results_Retry
	04
	Gateway_Control_Message_DX80P:0.Data[6]
	Gateway_Input_Reserved DX80P:I.Data[6]
	Gateway_Device_Message DX80PI.Data[7]
	Complete Activate_Site_Survey

- 3. The AOI has nine links that need to be connected to controller tags.
 - Link Node to the Node number a Site Survey should be conducted for. In the above example Node 1 will have complete a site survey.
 - Link the Results_Green to the location that stores Node 1's Green signal strength information.
 - Link the Results_Yellow to the location that stores Node 1's Yellow signal strength information.
 - Link the Results_Red to the location that stores Node 1's Red signal strength information.
 - Link the Results_Retry to the location that stores Node 1's number of communication retries.
 - Link the Gateway_Control_Message to the EIP Output Assembly associated with the Gateway's Control Message Register (DX80P:O.Data[6]).
 - Link the Gateway_Input_Reserved to the EIP Input Assembly associated with the Gateway's Reserved Register (DX80P:I.Data[6]).
 - Link the Gateway_Input_Reserved to the EIP Input Assembly associated with the Gateway's Reserved Register (DX80P:I.Data[6]). Red and Retry totals are stored in this location.

- Link the Gateway_Device_Message to the EIP Input Assembly associated with the Gateway's Device Message Register (DX80P:I.Data[7]). Green and Yellow totals are stored in this location.
- Link Complete with a variable used to control the operation of this AOI. The variable is turned off after the routine is completed.
- 4. Create one Site Survey AOI for each Node that requires a Site Survey. Only have one of these AOIs active at any time.

Appendix

This section will go over the AOI one rung at a time.

1. 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.

Generate the command for the node site survey that is necessary. Send this value to the Lock 1	he Gateway Control Message Register. This will start the Site Survey for that node. Command node 3 is needed the number would be 16#2003	I is generate by adding 16#2000 to the node n	Lock 1
, _ = 3 , E =	Add Source A 16#2000 Source B Node 0 ← Dest Site_Command	Move Source Site_Command Dest Gateway_Control_Message ??	_(L)_

2. The next run starts a timer. This timer is used to delay the rest of the routine 10 seconds. It takes roughly 10 seconds to gather the data for a site survey.



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

Lock_2 Timer.DN	AND
	Bitwise AND
	Source A THEFT
	Source B Gateway Input, Reserved
	??
	Dest Results_Retry
	Bitwise AND
	Source A 16#FF
	Source B Gateway_Device_Message
	Dest Results Yellow
	0 ←
	SWPB AND
	Swap Byte Bitwise AND
	Source Gateway_mput_Reserved Source A TempbyteSwap1
	Order Mode REVERSE Source B 16#FF
	Dest TempByteSwap1
	0 ← Dest Results_Red
	Swap Byte Bitwise AND
	Source Gateway_Device_Message Source A TempByteSwap2
	?? 04
	Urger Mode KEVERSE Source B 16#FF Dest TempVreSwan2
	0 c Dest Results Green

4. 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.

Lock_1	Lock_2	Lock_3	Complete	
	(0)	(0)	(0)	
_	Lock_1 (U)	Lock_1 Lock_2 	Lock_1 Lock_2 Lock_3	Lock_1 Lock_2 Lock_3 Complete

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