

PLC220 Lab Exercise 14

Devicenet 1756- DNB Properties

1756-DNB Properties

Lesson Objective

By the end of this session, students should be able to:

1. Understand 1756-DNB Properties Information

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Introduction:

This Lab Exercise will view Properties information for the 1756-DNB Scanner Module.

Note: This Lab Exercise can be done Online or Offline.

If working Online:

Equipment Required:

Computer with RSLogix 5000 / Studio 5000 software
RSLinx software
RSNetWorx for DeviceNet software
Ethernet Port

ControlLogix Demo board with 1756-DNB module, 1756-processor
1756-Ethernet Communication Module
Discrete Input / Output Modules

DeviceNet Demo Board with 871TM Prox switch
RightSight Standand Diffuse Photoelectric Sensor
855T – Stack Light
1791D 8B8P Compact Block I/O
PowerFlex 4 VFD

Note: Other components are also installed on DeviceNet Demo Board

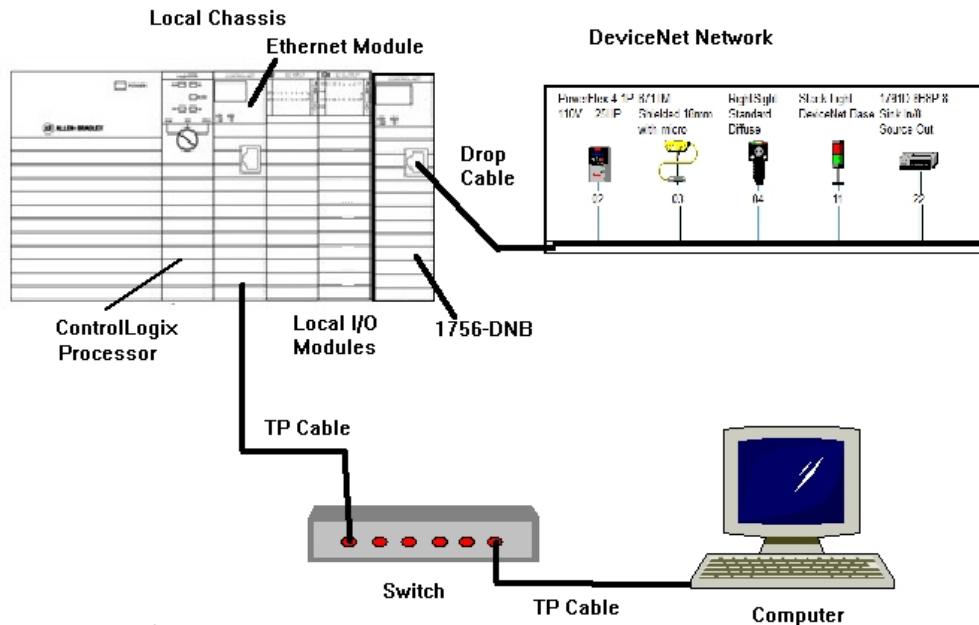


Figure 1-A. The hardware configuration for this lab exercise.

Ensure all the DeviceNet component's cables are connected to the IDC taps on the bottom of the DeviceNet Demo Board

Twisted pair Ethernet cables from Computer Ethernet Port the 1756-EtherNet Module
Note: the cable may be directly connected - no Switch required

DeviceNet drop cable to connect the DeviceNet Demo Board to the front port on the 1756-DNB Module located on the ControlLogix Demo Board.

Power-up ControlLogix and DeviceNet Demo Boards

Note: If the display on the 1756-DNB Module shows - No Network Power – the 1756-DNB Module is not receiving power from the DeviceNet network (drop cable) cable.

In the Lab exercise a connection will be made from the computer's Ethernet Port thru RSNetWorx for DeviceNet using a RSLinx, EtherNet/IP Driver to connect to the DeviceNet network

Ensure the Computer can connect to the ControlLogix Demo board using the 1756 – Ethernet Communication Module with an EtherNet/IP driver.

Note: DeviceNet Scanner Module - 1756-DNB – located in slot 6.

Open RSNetWorx for DeviceNet.

Start a new RSNetWorx for DeviceNet file

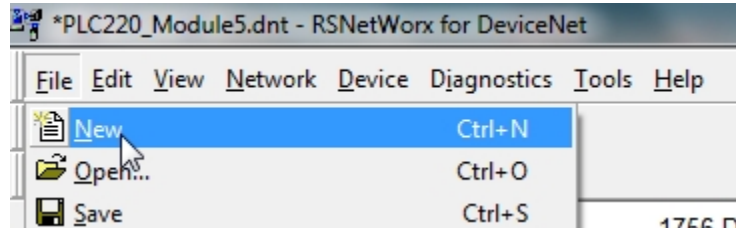


Figure 2-A. Creating a New DeviceNet file.

Go Online to the DeviceNet Demo Board

Browse the DeviceNet network

Note: If working Offline – Start a new Network Layout – See Figure 2-A
If working Offline select the DeviceNet Network file PLC220_Module5.dnt.
Open the Network file

1756-DNB Properties:

Ensure 1756-DNB module icon is shown on the Network Layout window.

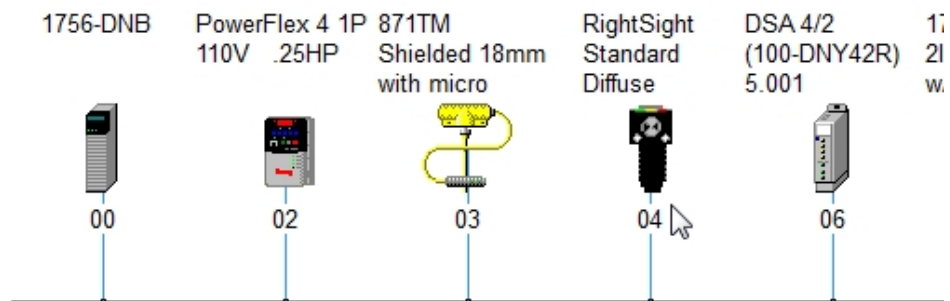


Figure 3-A
Network Layout

1. Right click the 1756-DNB icon – Choose Properties from the context menu

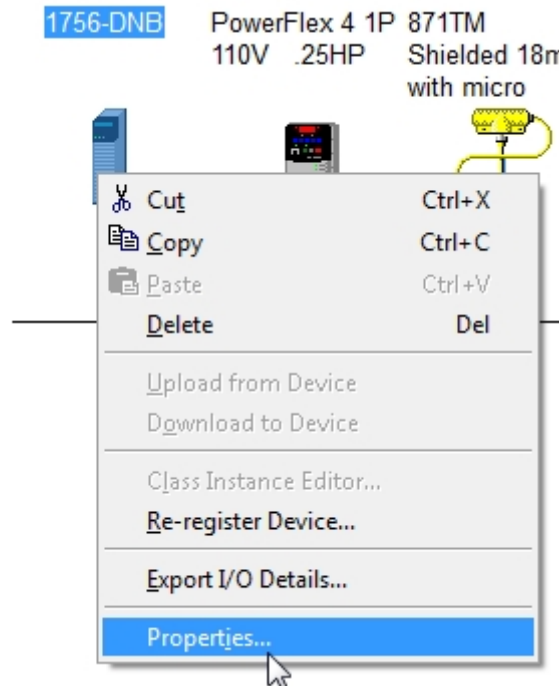


Figure 4-A
1756-DNB Scanner Properties

- 2. General Tab – Shows component information
 - Name:
 - Address: Default Address - 63
 - Catalog: device part number
 - Revision; device revision level
 - Type: Device Function

See Figure 5-A

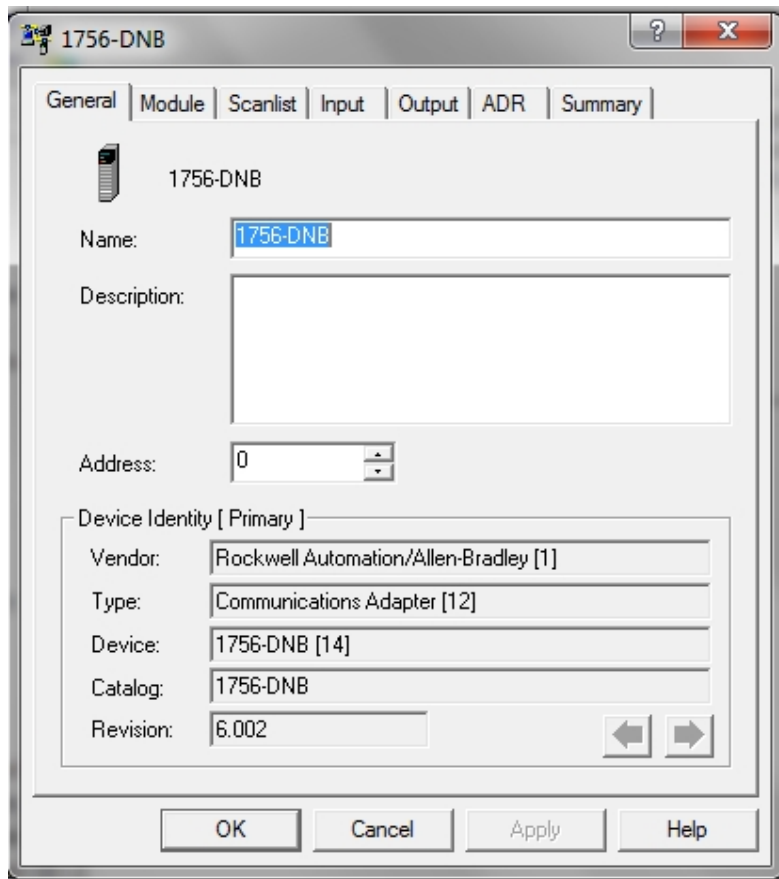


Figure 5-A
1756-DNB Scanner Module – General Tab

Note: Components with software settable Node Addresses (MAC ID), the Address selection (Spin) box can be used to change the components address (MAC ID).

Modifying the Address setting will use the Node Commission Tool to make the change.

RSNetWorx for DeviceNet will automatically run the Node Commission Tool. No user interaction with the Node Commission Tool is required.

If changes are made - click the Apply button to save settings

3. Click the Module Tab – Shows 1756-DNB communication timing settings

The Module Properties tab also shows a Slot setting

The slot number is used as part of the memory map element display on the Input and Output Properties tabs.

See Figure 6-A

Note: This setting is cosmetic only, in that it does not need to show the actual slot number of the 1756-DNB module in the actual ControlLogix chassis.

Example: Previous lab exercises worked even through the Module tab Slot setting was configured for 1.

ControlLogix Demo Board slot location for 1756-DNB – Slot 6

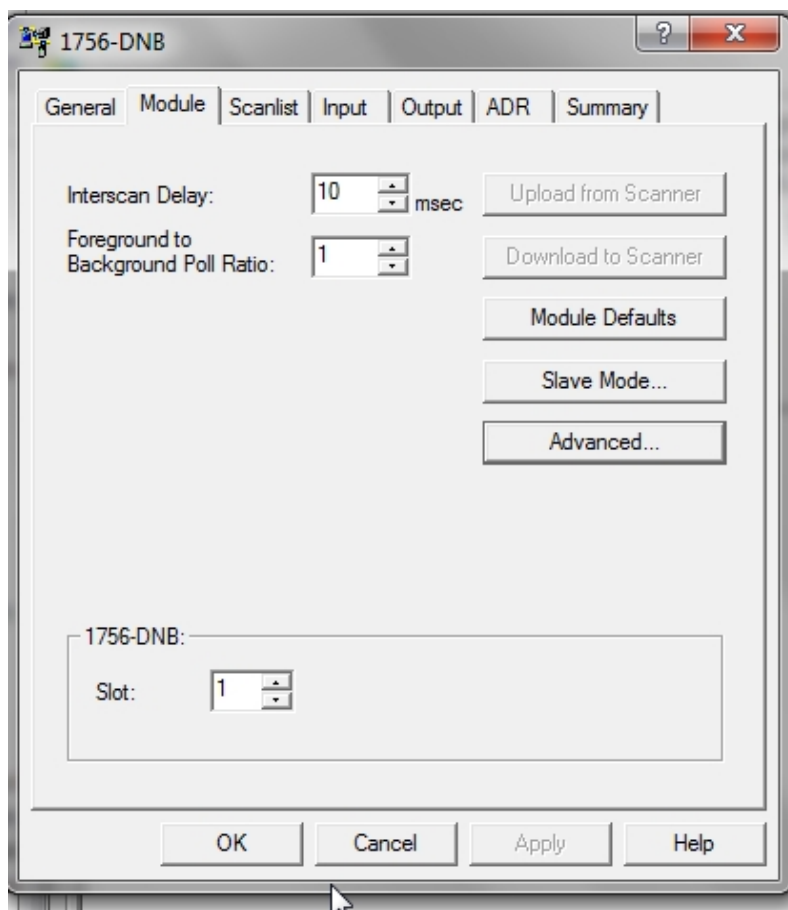


Figure 6-A
1756-DNB – Module Tab

4. Click the Scanlist Tab – Shows Network DeviceNet information

Available Devices: DeviceNet components that the 1756-DNB Scanner module finds on the DeviceNet Network. No communication configured between 1756- DNB Scanner and the component

Scanlist: DeviceNet components that the 1756-DNB Scanner module finds on the DeviceNet Network. Communication configured between 1756- DNB Scanner and the component

See Figure 7-A

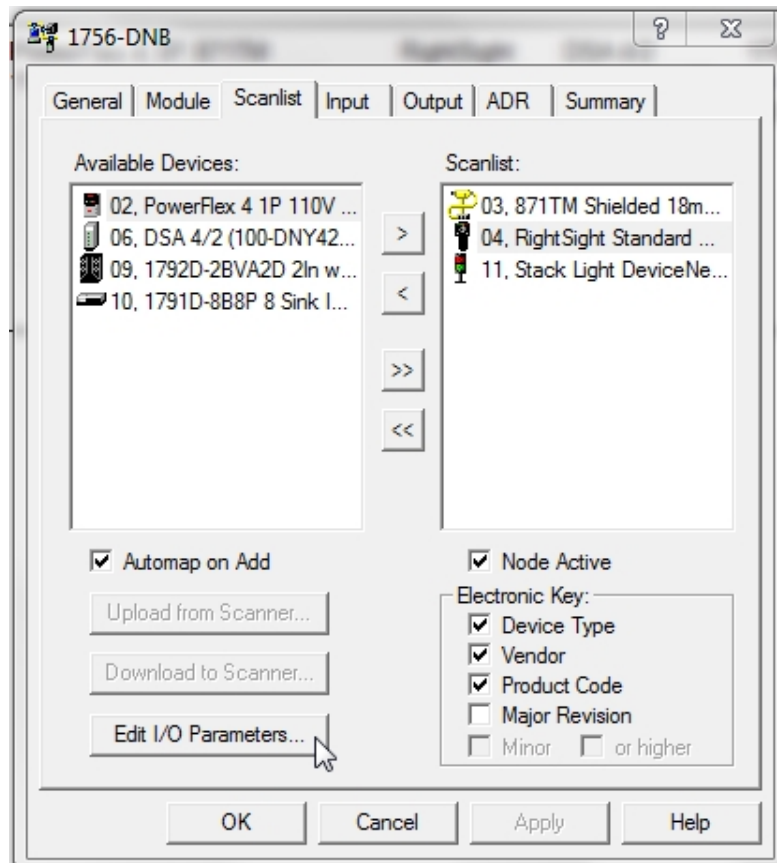


Figure 7-A
1756-DNB –Scanlist Tab

Automap on Add check box: Checked

Automatically configures component's Input and /or Output Data location(s) in the 1756-DNB modules Input and /or Output memory when the component is added to the 1756-DNB Module's Scanlist

Unchecked

Input and /or Output must be user configured

Node Active check box: Check

Selected component in Scanlist and the 1756-DNB module will exchange data

Unchecked

Even though the component is listed in the 1756-DNB Scanner Scanlist, Scanner module and selected component will not exchange data

Similar to Inhibit Module setting for a 1756 I/O Modules

Electronic Keying: Component information must match for the component to function on a DeviceNet Network

Similar to Electronic Keying setting for a 1756 I/O Modules

Edit I/O Parameters button – Determine the method of communication (Message Type) between a DeviceNet component and the 1756-DNB Scanner

To view the Message Type information, select a component in either the Available Devices or Scanlist box

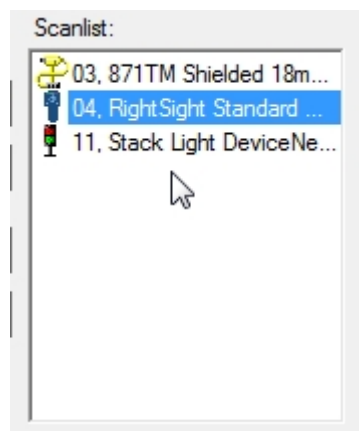


Figure 8-A
RightSight Standard Diffuse Selected - Scanlist box

Click the Edit I/O Parameters button

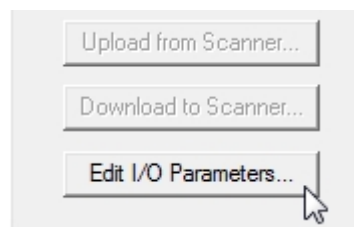


Figure 9-A

Edit I/O Parameters button - Scanlist Tab 1756-DNB Scanner

The Edit I/O Parameters for the selected component opens

See Figure 10-A

Check Boxes show Messaging Type between the selected component and the 1756-DNB Scanner

Change of State (COS) selected in Figure 10-A window

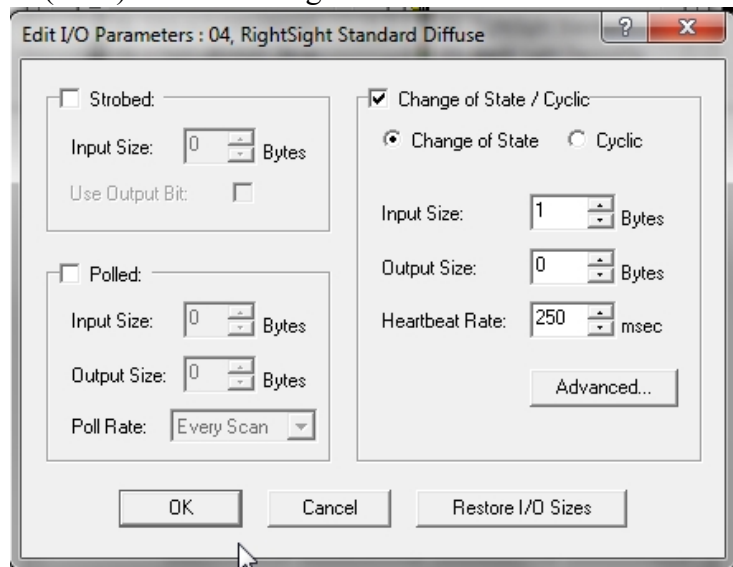


Figure 10-A
Edit I/O Parameters Window

Click OK button to save any changes to component I/O Parameters

5. Click the Input Tab – Shows Input Mapping of Scanlist devices

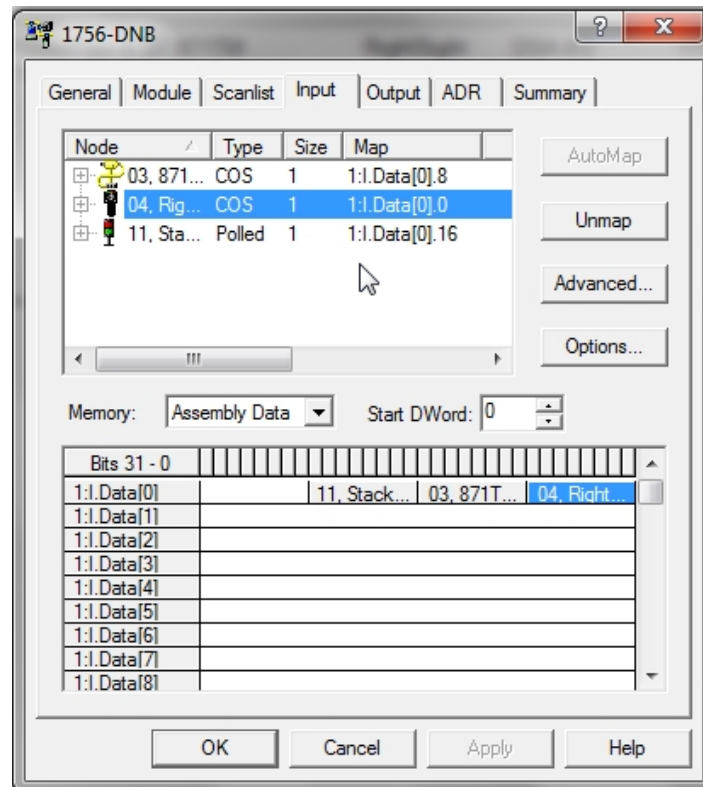


Figure 11-A
1756-DNB Input Mapping

Use the Scroll Bar on the side of the Data Elements region to determine total number of Input Elements for the 1756-DNB Scanner Module.

Total Number of Input Data Elements: _____

View mapping buttons to the right of the Scanlist Input components

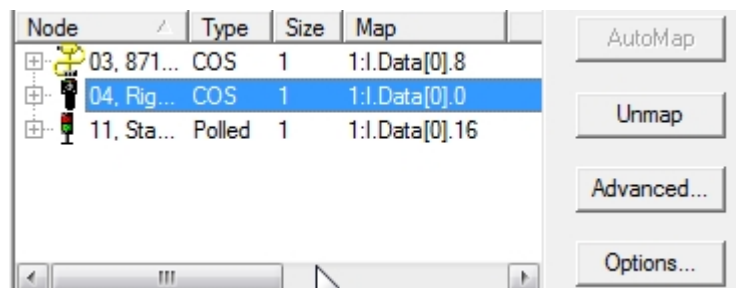


Figure 12-A
1756-DNB Input Mapping Buttons

AutoMap: Automap selected component (if not already Automapped)
If component is Automapped - AutoMap button is greyed-out

Unmap: Delete mapping information of selected component.

Advanced...: Manually map an unmapped component

Options...: Shows Automap data boundaries – See Automap Options window

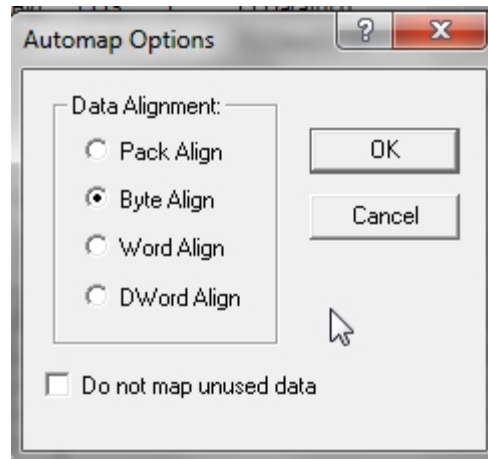


Figure 13-A
Data Boundaries used for Automapping

Note; Default Data Alignment - Byte Align

Data mapped based on Byte locations in the Input Mapping Table.

6. Click the Output Tab – Shows Output Mapping of Scanlist devices

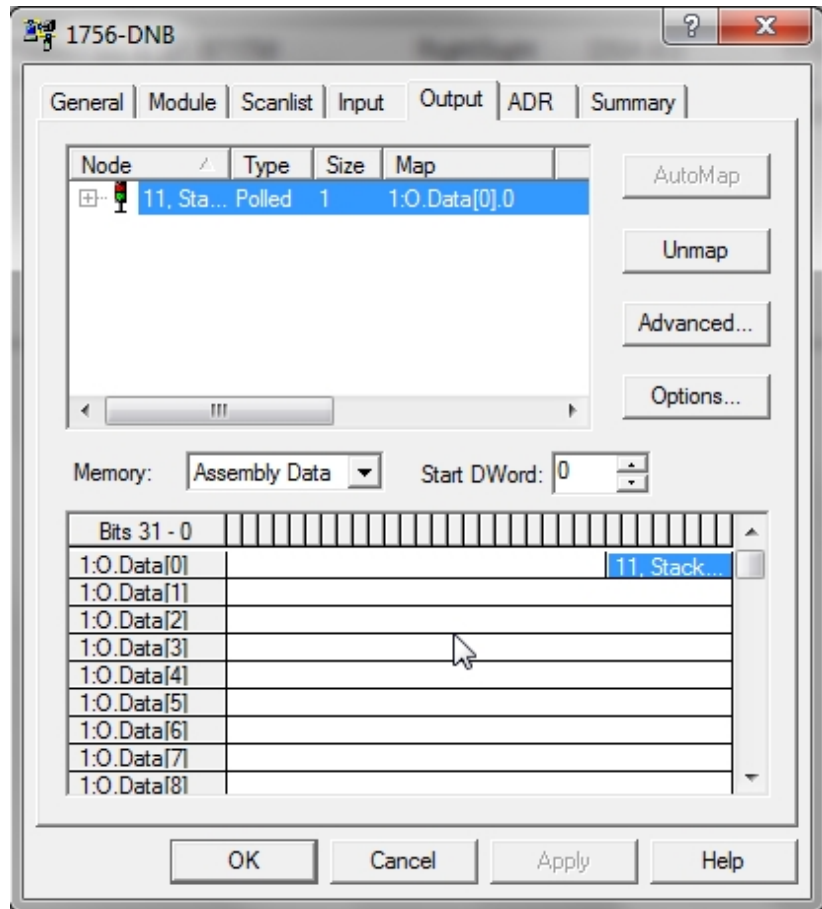


Figure 14-A
1756-DNB Output Mapping

Use the Scroll Bar on the side of the Data Elements region to determine total number of Output Elements for the 1756-DNB Scanner Module.

Total Number of Output Data Elements: _____

Information similar to Input tab data.

7. Click the ADR Tab – Shows Automatic Device Recovery (ADR) settings for the 1756-DNB Scanner Module

See Figure 15-A

Automatic Device Recovery (ADR) allows a replacement component to receive the configured Parameter settings of a failed DeviceNet component.

Note: For ADR to succeed the newly installed component must have a software

configurable Node Address (MAC ID) .

Before installation, the device to be installed must have a Node Address (MAC ID) of 63. Default Address of new DeviceNet components.

This is the reason it is recommended that Node 63 be left unoccupied on a DeviceNet Network.

ADR saves component Parameter settings to 1756-DNB Scanner memory

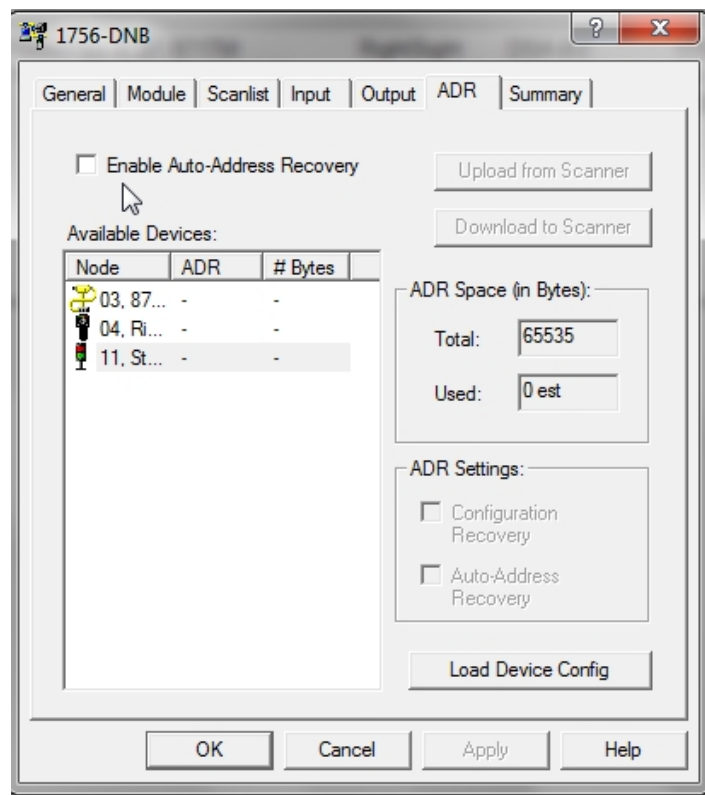


Figure 15-A
ADR Tab – 1756-DNB Scanner

To configure ADR – check the Enable Auto-Address Recovery Check Box

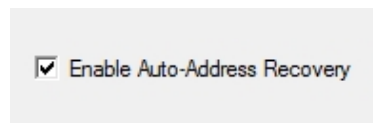


Figure 16-A
Enable Auto-Address Recovery Check Box

Click Yes button on Enable Auto-Address Recovery window to confirm

See Figure 17-A.

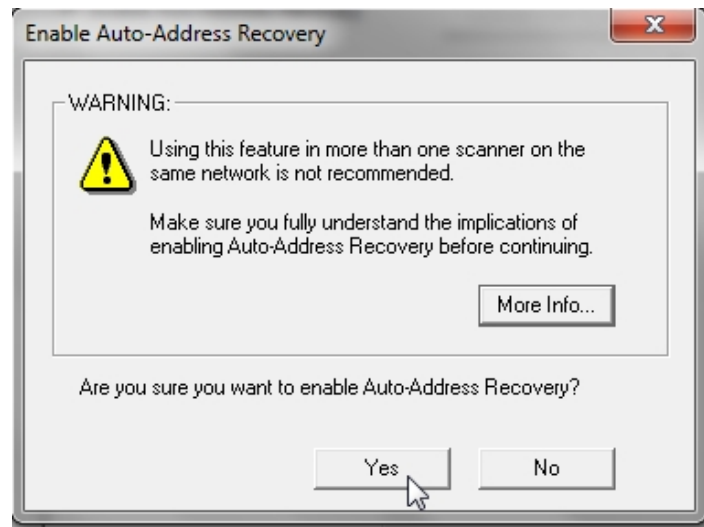


Figure 17-A
Enable Auto-Address Recovery

Highlight the Device for ADR Configuration in Available Devices box.

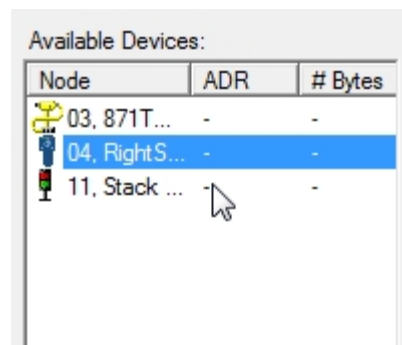


Figure 18-A
Device Selected for ADR – Available Devices

Click the Load Device Config button near the bottom right corner of the 1756-DNB window.

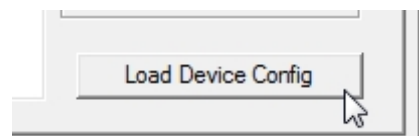


Figure 19-A
Load Device Config Button

Highlight - Device for ADR Configuration in Available Devices box.

Bytes value shows how much memory is required to save selected device's Parameter settings in the 1756-DNB Module.

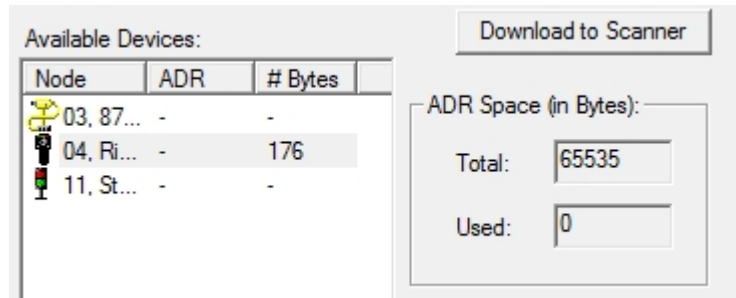


Figure 20-A
ADR Configuration Window

The ADR Space (in Bytes) region of the 1756-DNB window shows total available memory in the 1756-DNB Scanner for ADR– Total box

The ADR Space (in Bytes) region of the 1756-DNB window shows memory presently allocated for ADR in the 1756-DNB Scanner – Used box

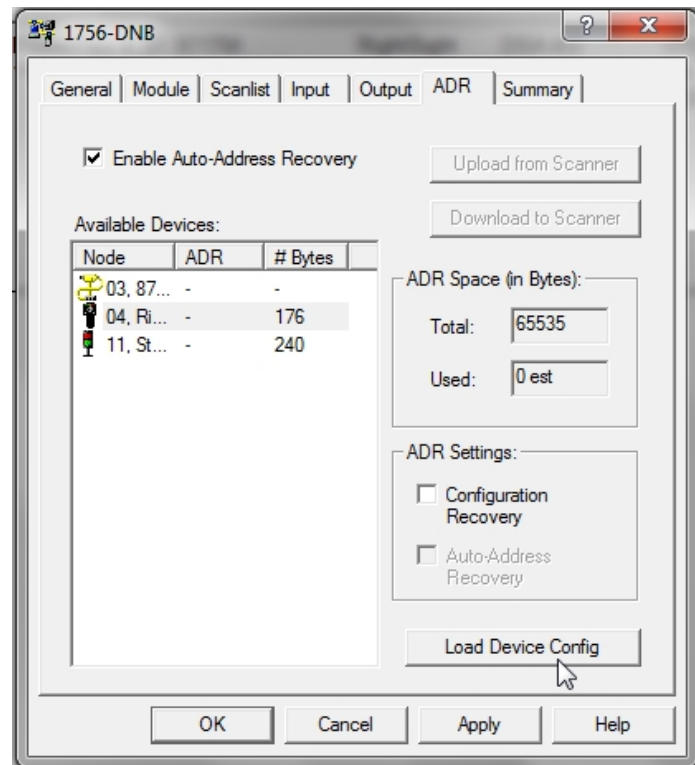


Figure 21-A
ADR Configuration Window

In the ADR Settings region of the 1756-DNB – check Configuration Recovery and Auto-Address Recovery Check Boxes.

See Figure 22-A

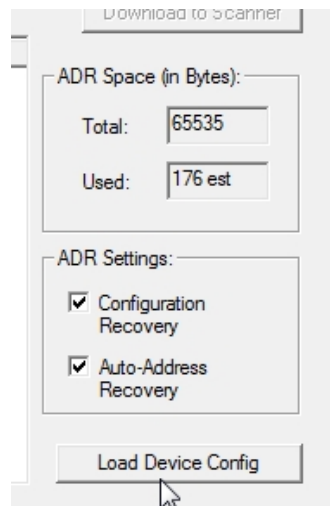


Figure 22-A

Configuration Recovery and Auto-Address Recovery Check Boxes.

The ADR Space (in Bytes) region of the 1756-DNB window updates presently allocated memory for ADR in the 1756-DNB Scanner – Used box

Click Apply button to save ADR settings



Figure 23-A

Apply Button – Save ADR Setting

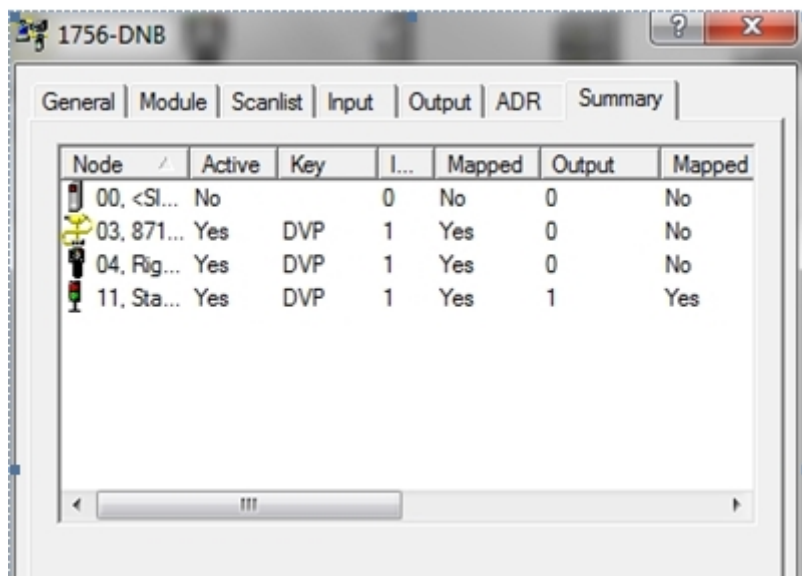
Note: Depending on the type and number of components on a DeviceNet Network and the Total memory limit in the 1756-DNB Scanner, ADR configurations for all devices may not be possible.

VFD devices will use more ADR memory than a RightSight Standard Diffuse Photoelectric Sensor – VFDs have more Parameters

Different Revisions of the 1756-DNB Scanner have different amounts of available

ADR memory

8. Click the Summary Tab – Shows Summary information for Scanlist devices



The screenshot shows a software window titled "1756-DNB" with a "Summary" tab selected. The window contains a table with the following data:

Node	Active	Key	I...	Mapped	Output	Mapped
00. <Sl...	No		0	No	0	No
03. 871...	Yes	DVP	1	Yes	0	No
04. Rig...	Yes	DVP	1	Yes	0	No
11. Sta...	Yes	DVP	1	Yes	1	Yes

Figure 24-A
1756-DNB Scanner – Summary Window

The Summary window has no configurable settings.

Review Questions

1. T F An available DeviceNet component must be mapped
2. The default node address a DeviceNet component is:
 - a) 00
 - b) 01

- c) 63
 - d) 64
3. Which are valid Message Types for a DeviceNet Component :
- a) Polled
 - b) Cyclic
 - c) Change of State
 - d) Strobed
4. T F All DeviceNet components must have ADR enabled
5. Default device mapping is based on which type of data :
- a) Bit
 - b) Word
 - c) DINT
 - d) INT
 - e) Byte
6. T F Total number of Input Elements for device mapping in a 1756-DNB module is 124:
7. T F Replacement devices used for ADR require a Node Address of 0.
8. T F Device Parametes used for ADR are stored in the ControLlogix processor

9. T F Scanlist devices must be Automapped
10. Total number of Output Elements for device mapping in a 1756-DNB module is:
 - a) 64
 - b) 123
 - c) 124
 - d) 32

Review Questions Answers

- 1) F
- 2) c
- 3) a, b, c,d
- 4) F
- 5) e
- 6) T
- 7) F
- 8) F
- 9) F
- 10) b

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