

PLC133 LAB 3.3: DEVICENET 1756-DNB PROPERTIES

Student Name: _____

Student ID: _____

LAB OUTCOMES:

1. Explain the properties information for 1756-DNB
2. Demonstrate how to display the properties for a 1756-DNB
3. Demonstrate how modify the address settings for a 1756-DNB

LAB PROCESS:

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

Part 1

EQUIPMENT REQUIRED:

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 Standard 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

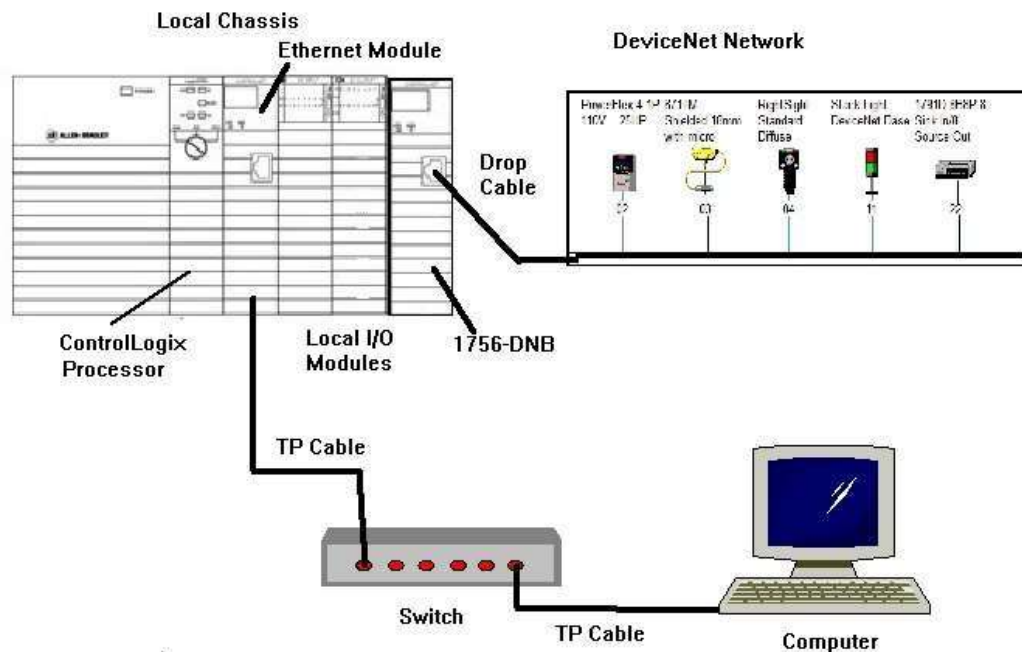


Figure 1-A

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

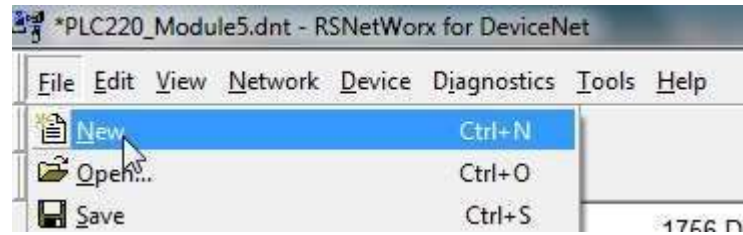


Figure 2-A

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.

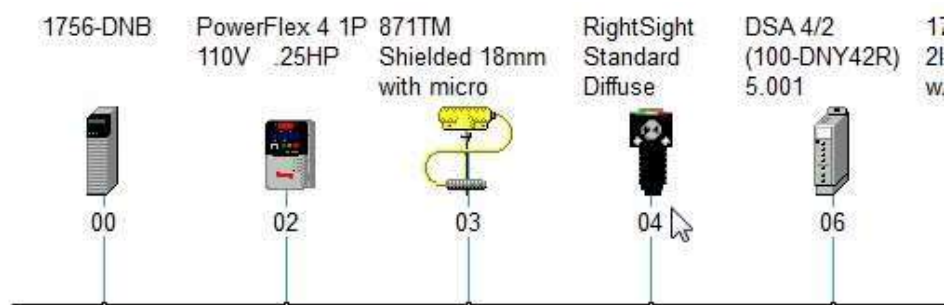


Figure 3-A
Network Layout

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

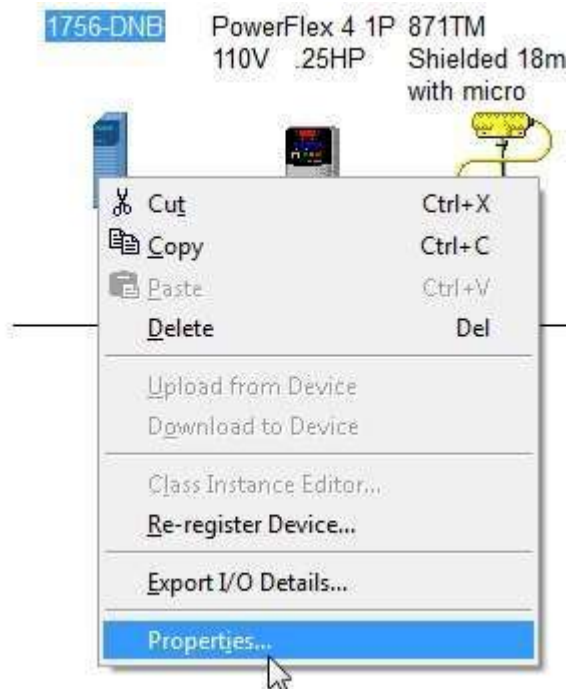


Figure 4-A
1756-DNB Scanner Properties

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

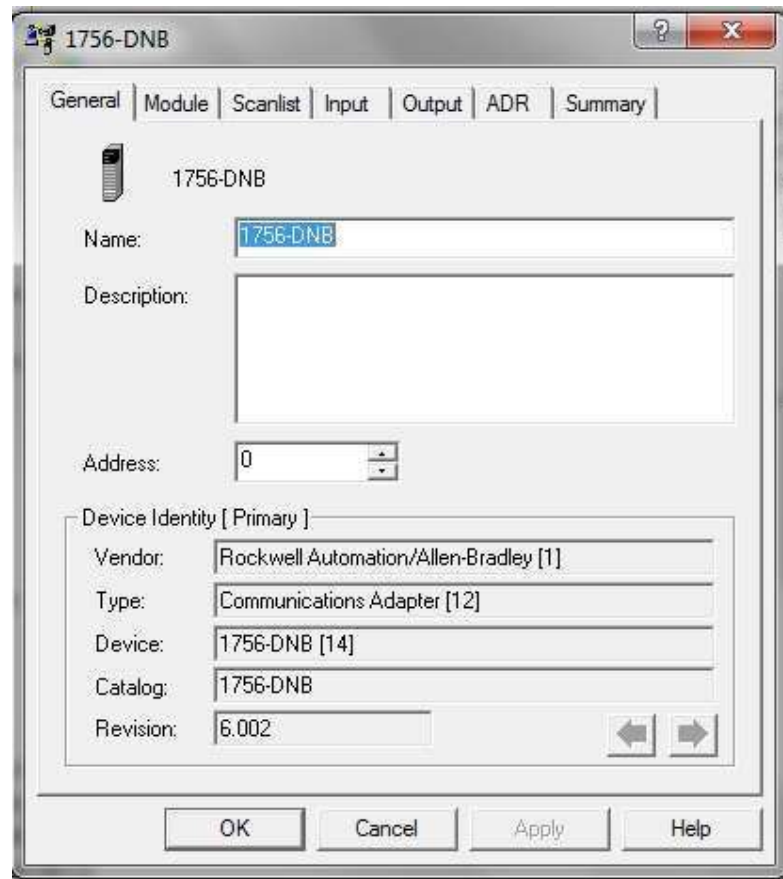


Figure 5-A
1756-DNB Scanner Module – General Tab

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 though the Module tab Slot setting was configured for 1.

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

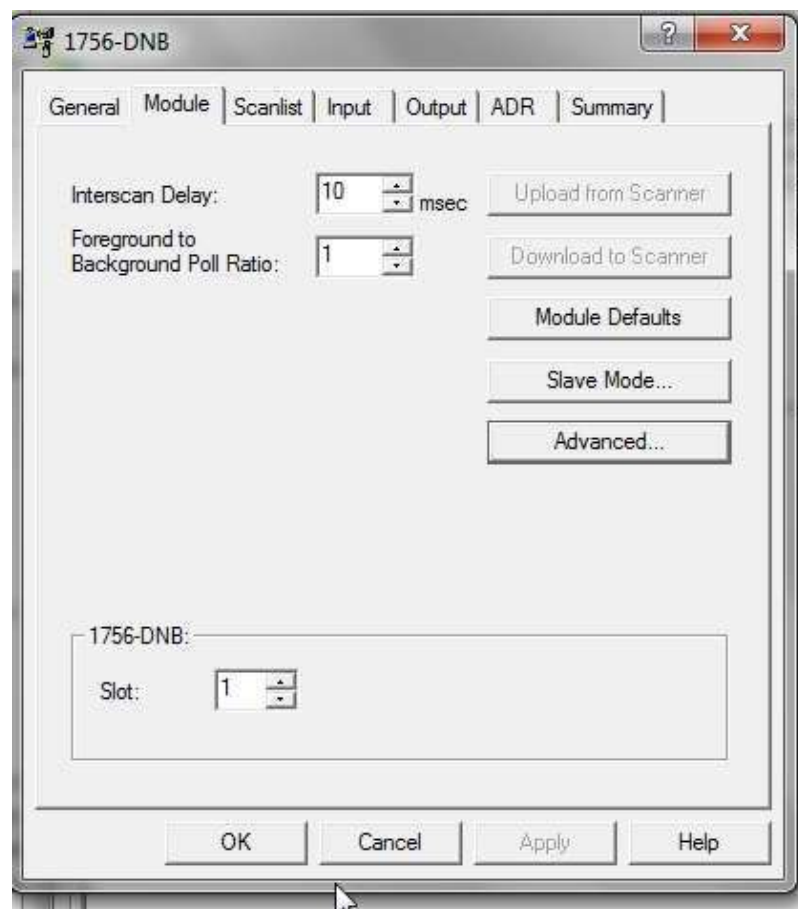


Figure 6-A
1756-DNB – Module Tab

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

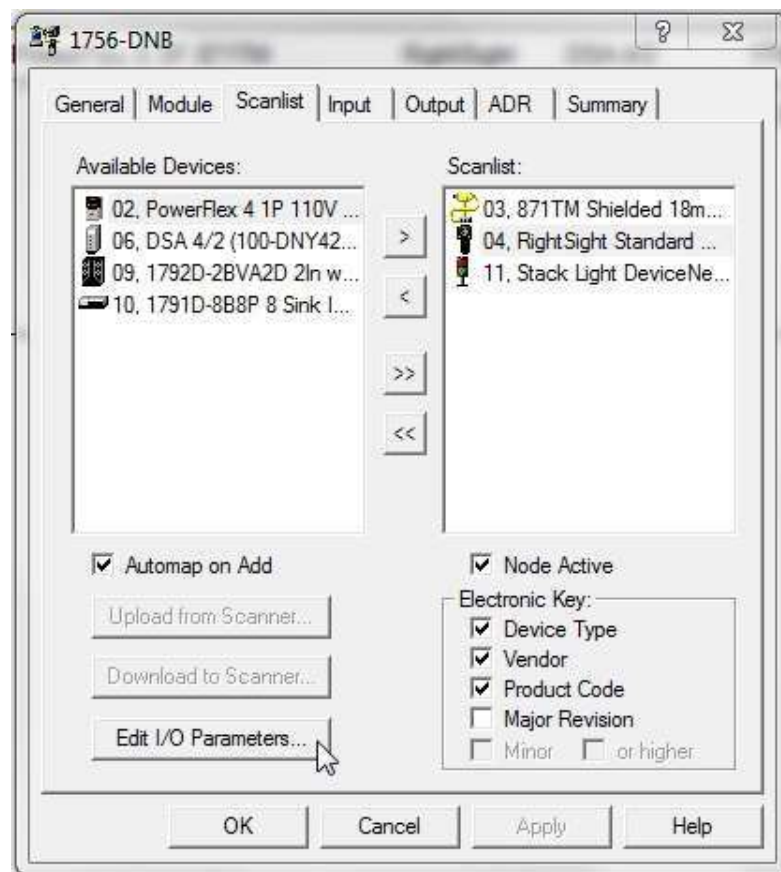


Figure 7-A
1756-DNB –Scanlist Tab

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

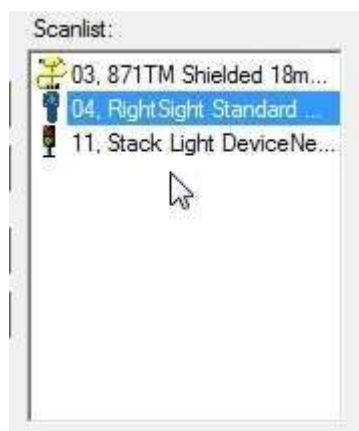


Figure 8-A
RightSight Standard Diffuse Selected - Scanlist box

Click the Edit I/O Parameters button

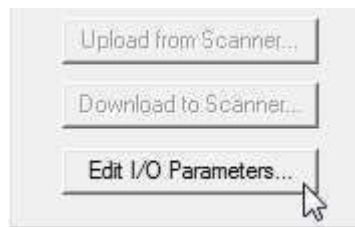


Figure 9-A

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

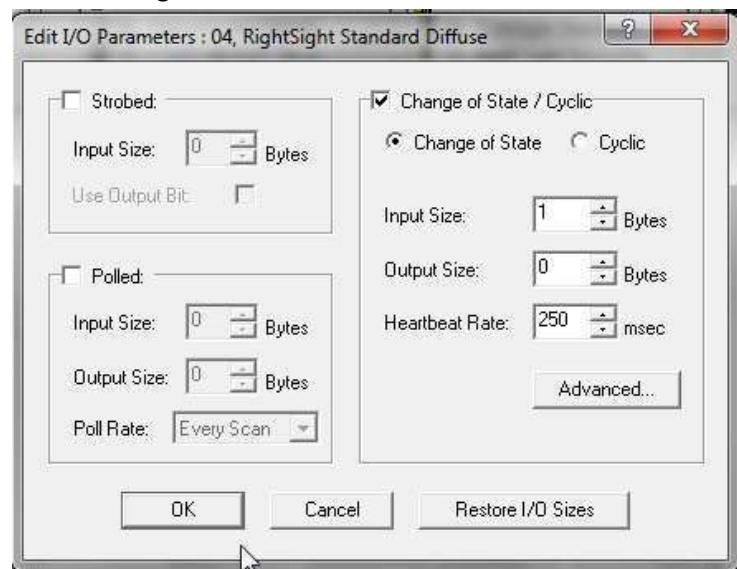


Figure 10-A

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

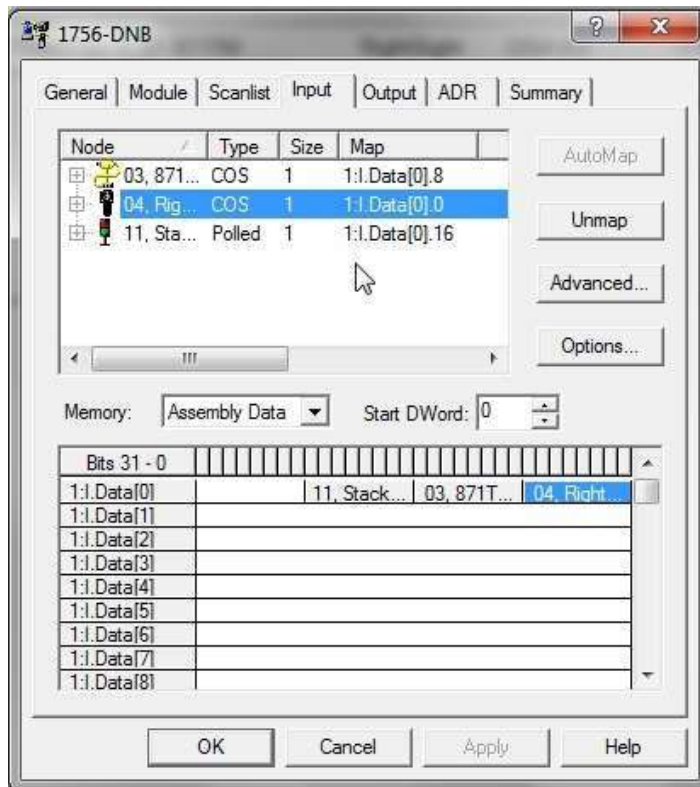


Figure 11-A
1756-DNB Input Mapping

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

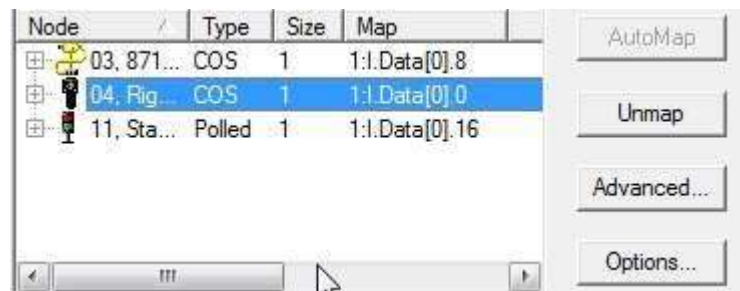


Figure 12-A
1756-DNB Input Mapping Buttons

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

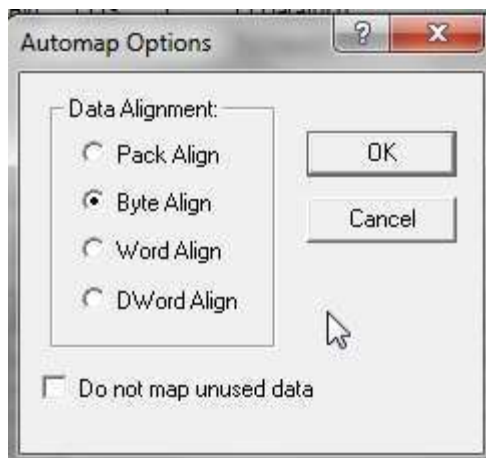


Figure 13-A
Data Boundaries used for Automapping

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

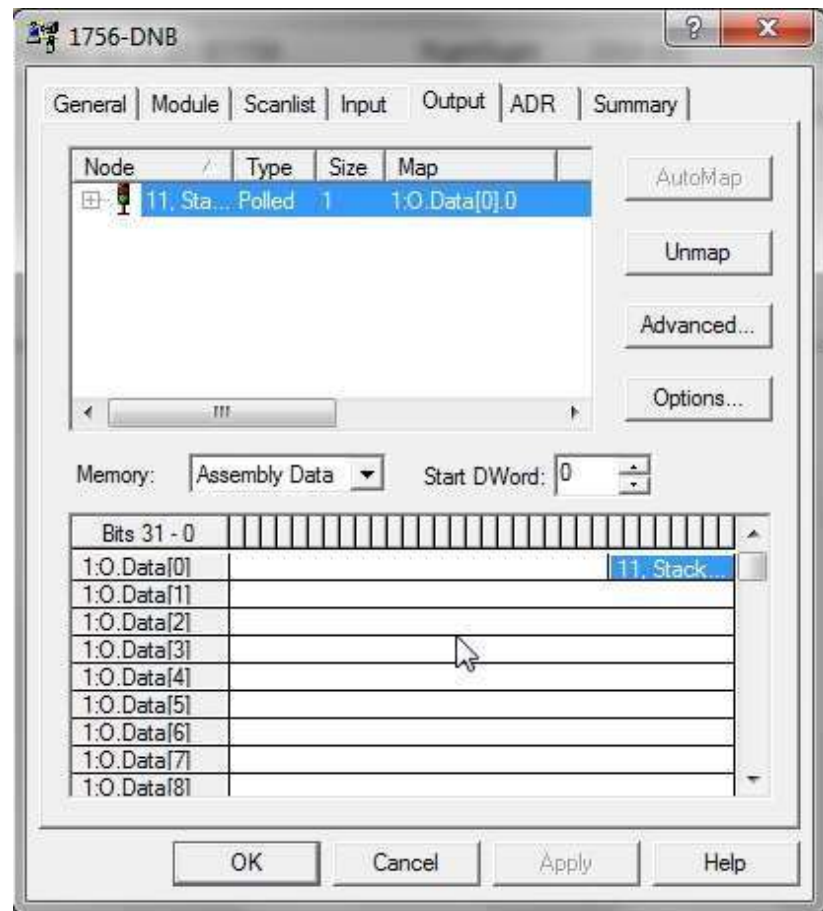


Figure 14-A
1756-DNB Output Mapping

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

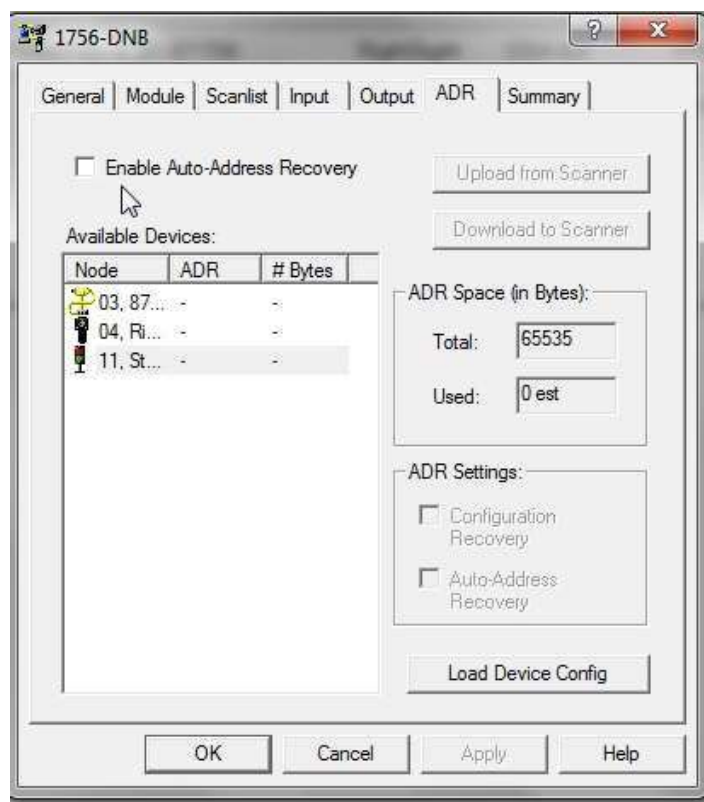


Figure 15-A
ADR Tab – 1756-DNB Scanner

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.

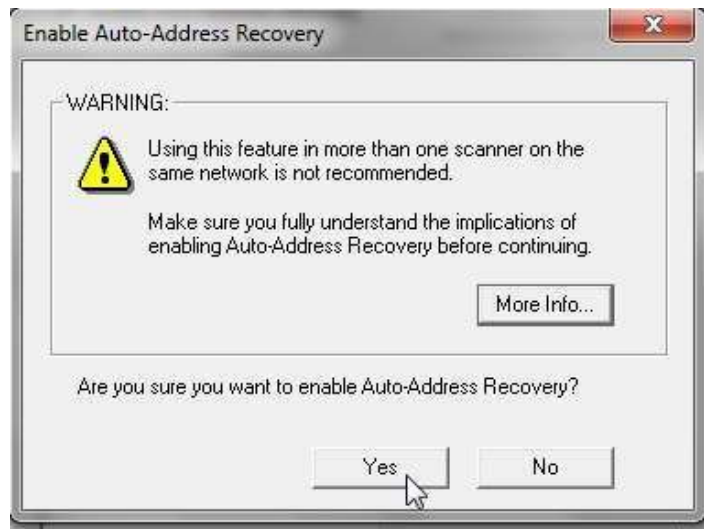


Figure 17-A
Enable Auto-Address Recovery

Highlight the Device for ADR Configuration in Available Devices box.

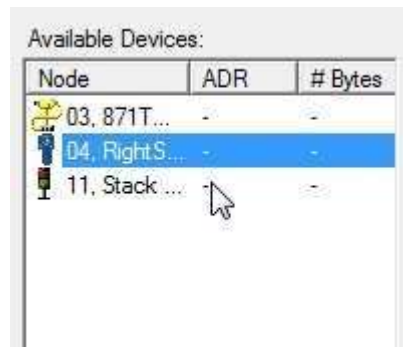


Figure 18-A

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.

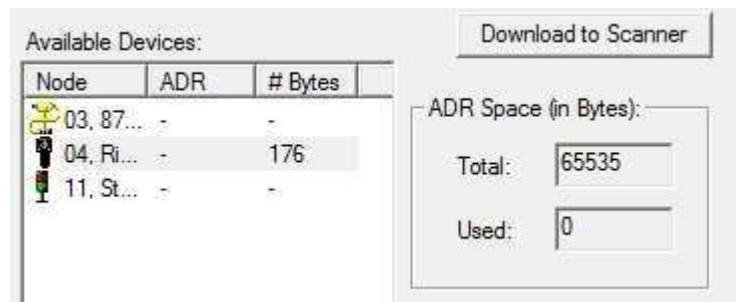


Figure 20-A
ADR Configuration Window

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

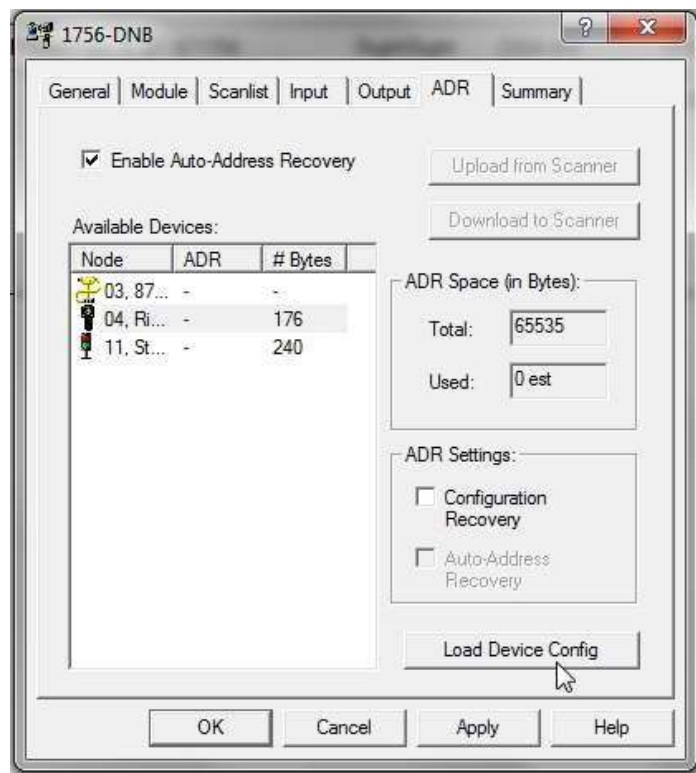


Figure 21-A
ADR Configuration Window

In the ADR Settings region of the 1756-DNB – check Configuration Recovery and AutoAddress 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

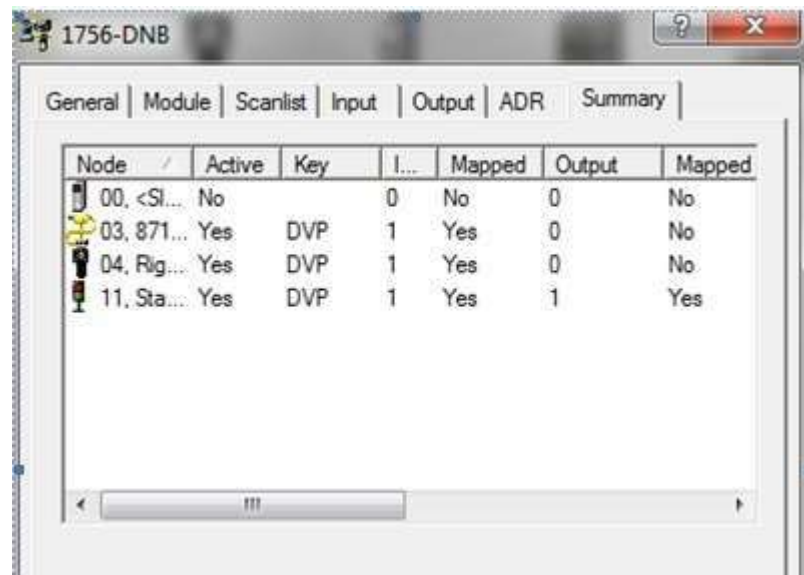


Figure 24-A
1756-DNB Scanner – Summary Window

The Summary window has no configurable settings.

Review Questions

1. True or False. 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. True or False. 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. True or False. Total number of Input Elements for device mapping in a 1756-DNB module is 124:
7. True or False. Replacement devices used for ADR require a Node Address of 0.
8. True or False. Device Parametes used for ADR are stored in the ControlLogix processor
9. True or False. 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

The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the

individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: _____

Faculty Signature: _____ Date: _____

DOL DISCLAIMER:

This product was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).