

## How to connect the HMS AnyBus Communicator to a DeviceNet network on the Controllogix 5000 PLC

### Application summary

This document explains the procedure for connecting the HMS AnyBus Communicator DeviceNet to Serial Gateway with an existing serial application to a DeviceNet Network on the Allen Bradley Controllogix 5000 PLC platform.

### Application Equipment and Materials

Materials used in the development of this application are as follows:

- Hardware used in test: Allen Bradley Controllogix 5000 PLC with 1756-DNB DeviceNet Scanner card, HMS AB7001 AnyBus Communicator DeviceNet to Serial Gateway.
- Software used in the test: HMS ABC Configurator Software Version 1.81, Rockwell Software RSNetWorx for DeviceNet, Rockwell Software RSLogix 5000.
- Documentation consulted: AnyBus Communicator Manual ver. 1.60 (Doc ID SDN-7061-059), AnyBus-S DeviceNet Appendix.
- Standard DeviceNet Cabling
- Appropriate Programming Cables.

### AnyBus Communicator Serial Interface Note

The AnyBus Communicator should already have a configured serial application loaded. This will help determine how much I/O the Communicator takes up on the DeviceNet network. Different applications will take up different amounts of I/O based on the number of serial transactions that are configured.

### Configuring the DeviceNet Network Interface to the Communicator

The last step is to set up the Controllogix's DeviceNet network to send and receive data from the AnyBus Communicator which involves three distinct steps, setting the MAC ID and Baud Rate of the Communicator, adding the Communicator to the DeviceNet Scanner's module list via RSNetWorx and configuring the I/O size.

#### *Setting Up the Communicator's MAC ID and Baud Rate*

1. The MAC ID and the Baud Rate are set by DIP switches. DIP switches 1-3 set the Baud Rate of the Communicator and DIP switches 4-8 set the MAC ID. Consult the AnyBus Communicator DeviceNet Manual for switch arrangement.

#### *Adding the Communicator to the Scan List of the 1756-DNB*

1. Start RSNetWorx for DeviceNet and verify that the EDS file for the AnyBus Communicator has been installed.
2. The next step is to scan the network for any attached nodes that can then be added to the Scanner's scanlist. From the Network menu select Online. This will scan the entire network at the Baud Rate set up in the scanner and find any attached nodes. You should end up with a diagram of all devices as indicated in Figure 1.

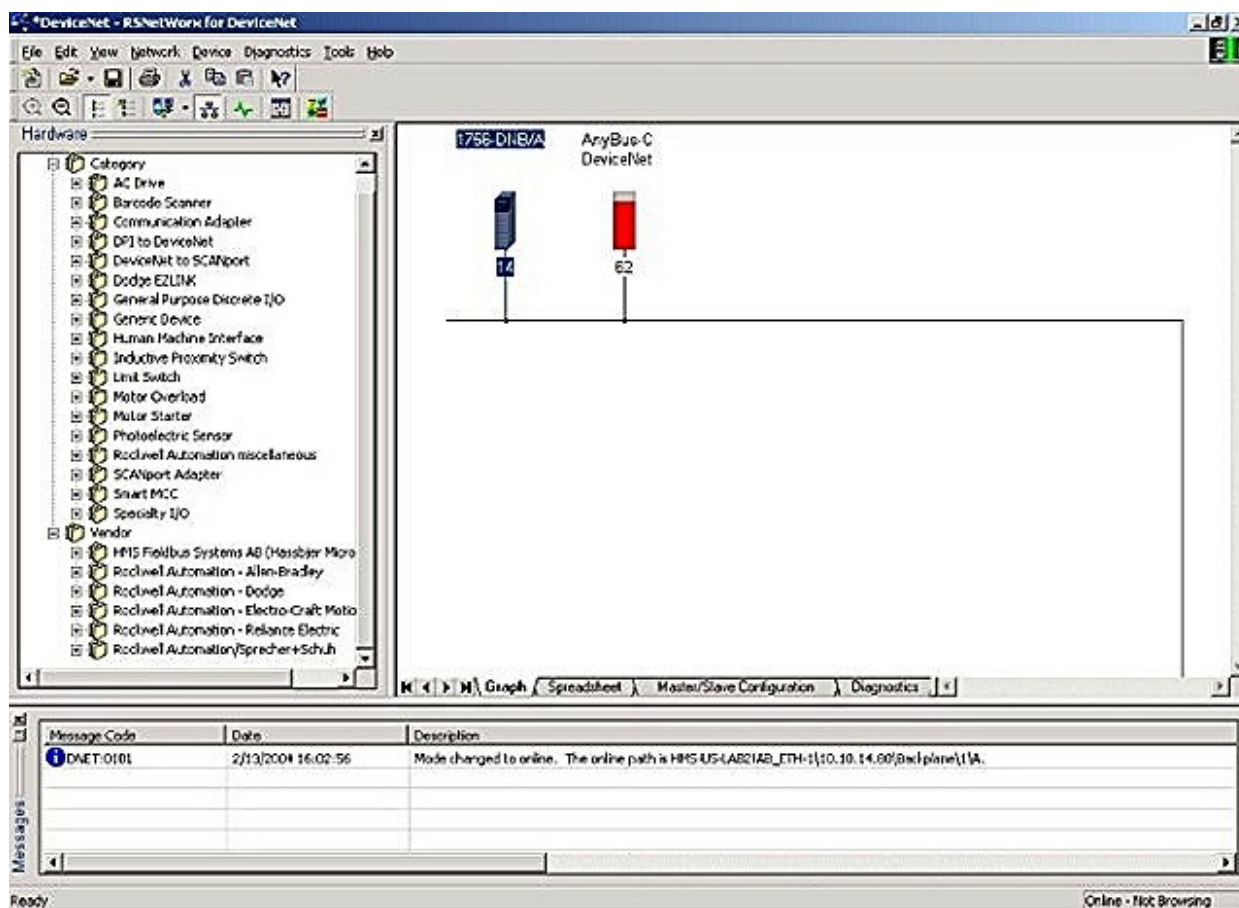


Figure 1

3. Next step is to configure the Scanner. Double-click on the 1756-DNB/A icon. This will bring up a window with the Scanner's configuration.
4. Select the Scanlist Tab, you will be prompted whether to download the offline configuration to the Scanner or upload the Scanner's current configuration. Choose upload. After uploading you should have a graphic showing the list of available devices to be added and a list of devices already loaded in the scanner as shown in Figure 2 on the following page.

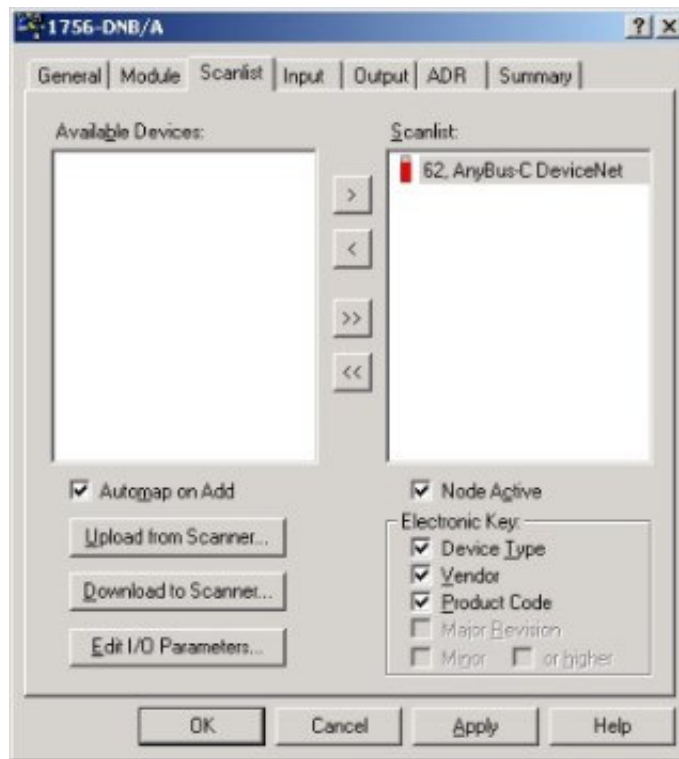


Figure 2

5. To add the Communicator to the scanlist, highlight the Communicator in the list of available devices and click on the right-hand arrow to add to the scanlist. The Communicator has been added and now the I/O size needs to be configured.

### *Configuring the I/O size and Mapping*

1. From the Scanlist window, select Edit I/O Parameters. A window will appear for configuring the I/O type and size. Select Polled for the I/O type and set the size for Inputs and Outputs based on the data returned by the serial application. Figure 3 gives an example.

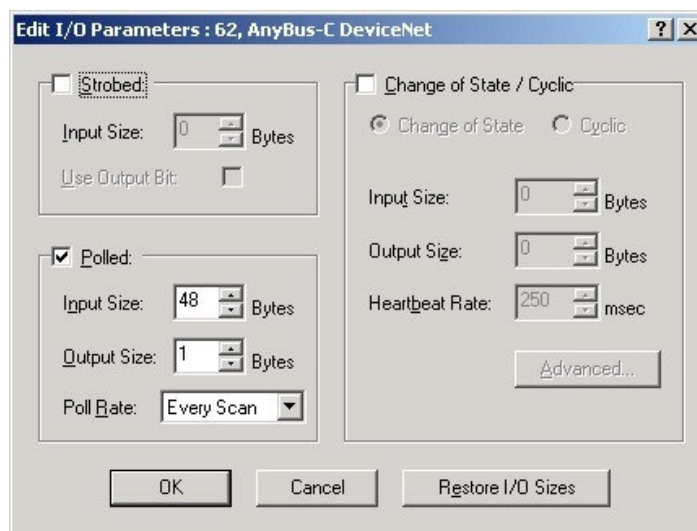


Figure 3

2. After setting the I/O size and selecting OK, you will get a warning message as shown in Figure 4. This means that the I/O size configured is different than what is designated in the device's EDS file. In the case of the Communicator whose I/O size will vary based on the amount of data transmitted by the serial interface, this warning should be ignored and the values accepted if correct.

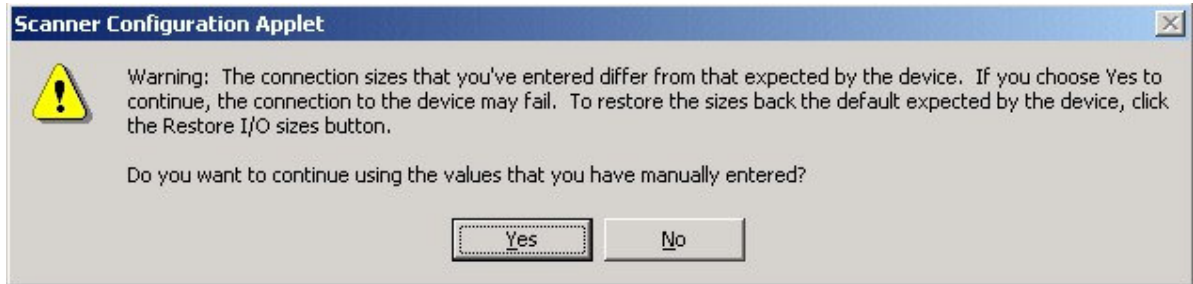


Figure 4

3. Next step is to verify the I/O mapping. Data is normally auto-mapped into contiguous 32-bit registers in the Controllogix's designated memory for the 1756-DNB module. To verify the Inputs, select the tab Input in the Scanner's configuration window. You should get a window as shown in Figure 5. Verify that this is the correct memory mapping to be used by the PLC program.

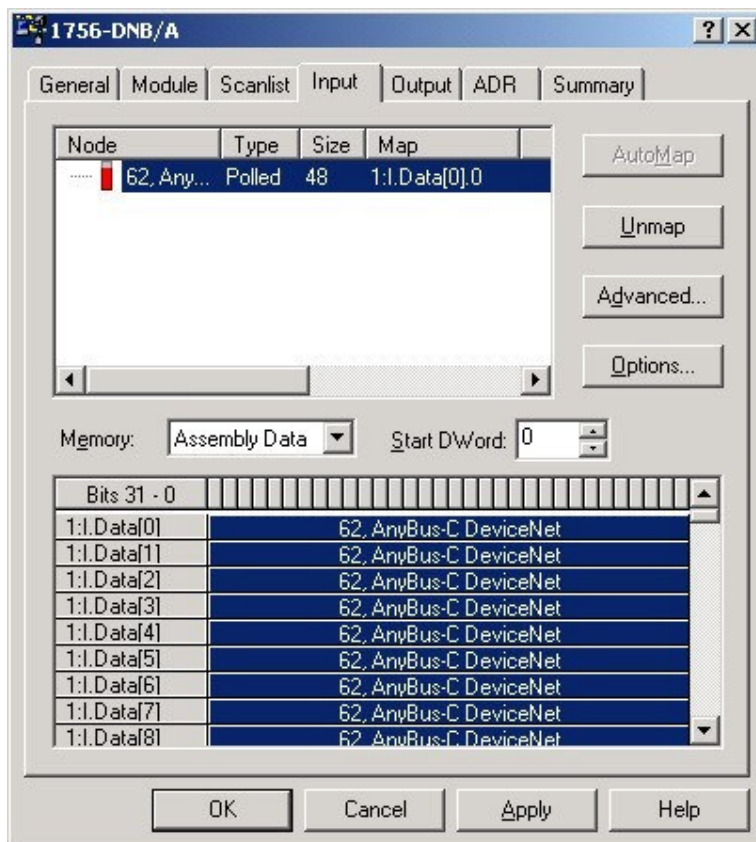


Figure 5

4. Verify the mapping of the Outputs by selecting the Output tab in the scanner's configuration window. Figure 6 gives an example mapping.

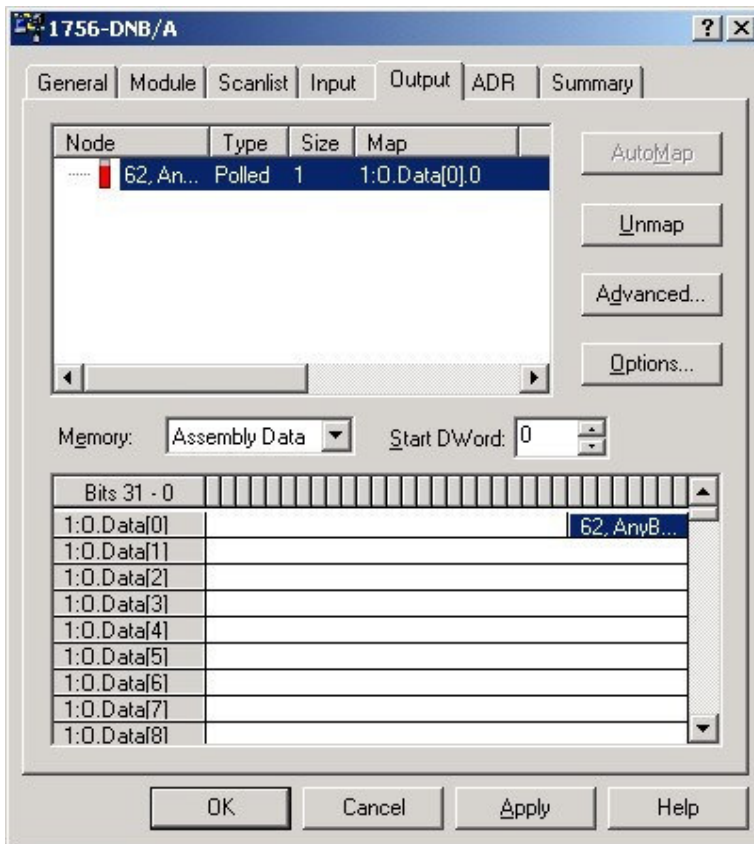


Figure 6

5. Once the mapping has been verified and the I/O sizes set, the configuration needs to be downloaded to the scanner. Return to the Scanlist tab in the scanner's configuration window and select Download to Scanner. This will save the configuration to the scanner. Once the scanner is in Run mode, data should be exchanged.

Now all of the network elements should be configured and the PLC and AnyBus Communicator should be exchanging I/O data. If problems exist, verify that the I/O configuration matches between the AnyBus Communicator Configuration Software and RSNetWorx. Also verify that the Baud Rate settings on the Communicator match the Scanner's configuration and that the MAC ID set on the Communicator doesn't conflict with another device's MAC ID. If problems persist, call (773) 404-3486 for technical assistance.

#### Web References:

- [www.hms-networks.com](http://www.hms-networks.com), [www.ab.com](http://www.ab.com)