

APPLICATION NOTE:

**Establishing I/O communication between AnyBus-S DeviceNet
using RsNetWorx for DeviceNet**

Revision Notes

Date:	Revision:	Notes:
2002-04-16	0.10	Document created
2003-08-04	0.20	Updated layout
2003-08-16	1.00	Updated text

Abbreviations

ABS	AnyBus-S DeviceNet
PLC	ControlLogix5000

1. System configuration overview

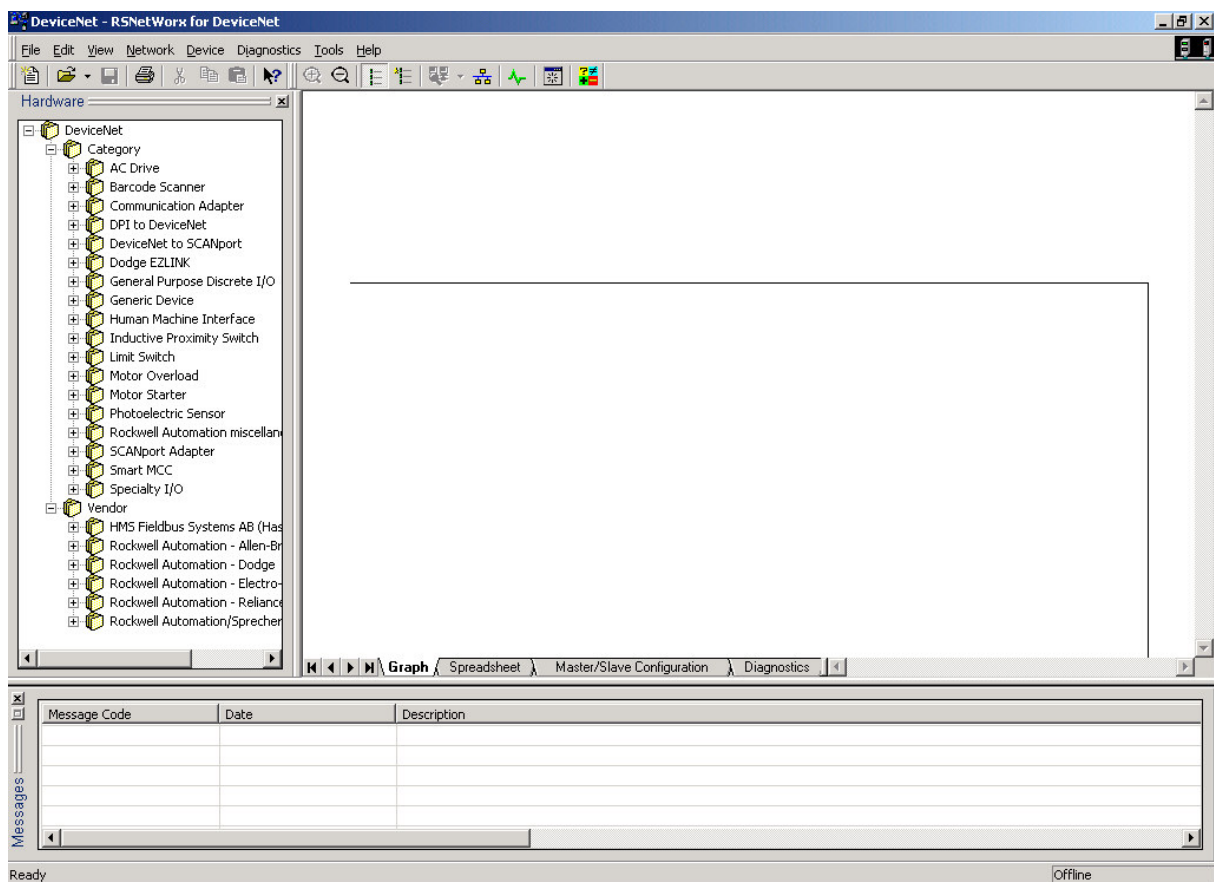
This is an example on how to configure the ABS module to connect with ControlLogix5000. It should however be possible to use this document as a guide on how to set up any “generic” DeviceNet module, for example the AnyBus-Communicator, under RsNetWorx.

This application note assumes that RSLogix5000, RsNetworx for DeviceNet and ControlLogix5000 with a DeviceNet module are set up and working correct.

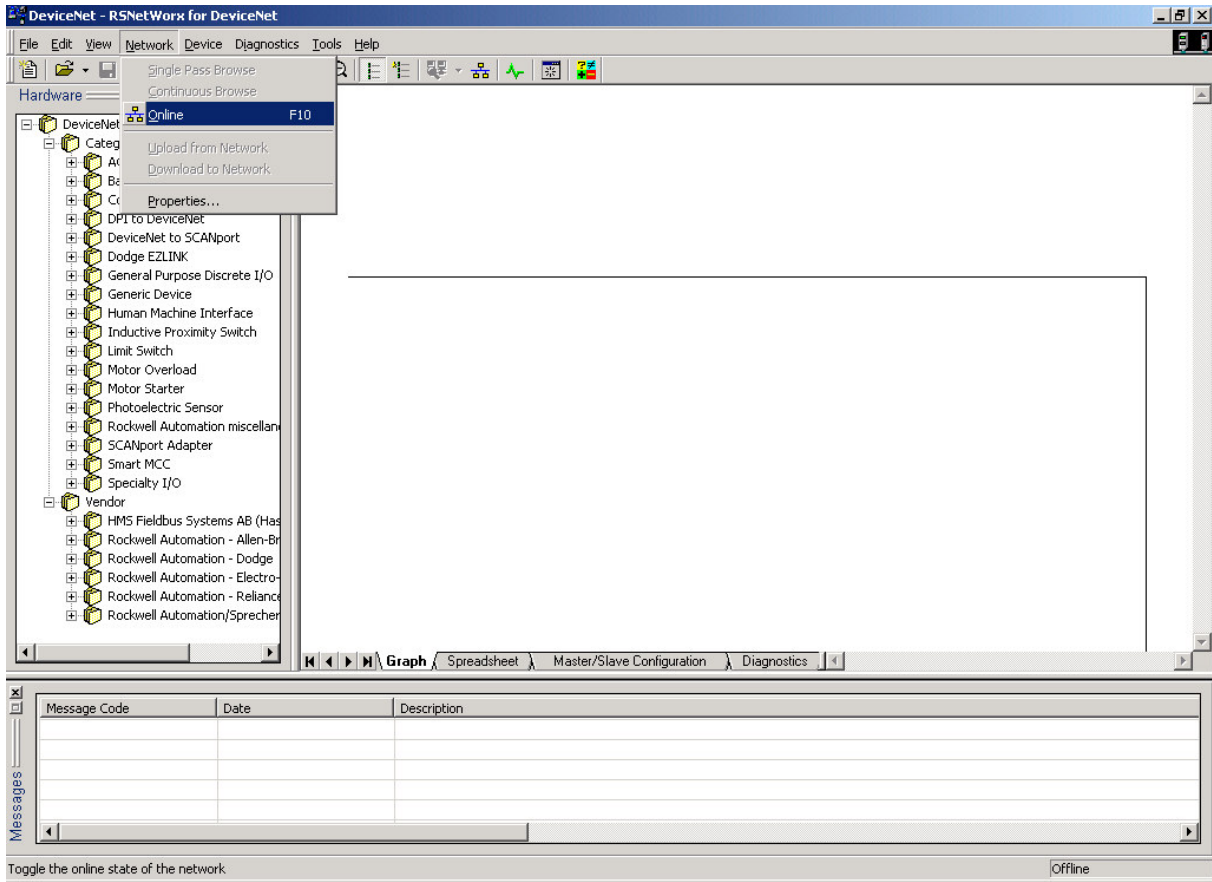
The PLC is set up to read 4 bytes data + write 4 bytes of I/O data to/from the ABS.

2. Configure the IO connection using RsNetWorx for DeviceNet

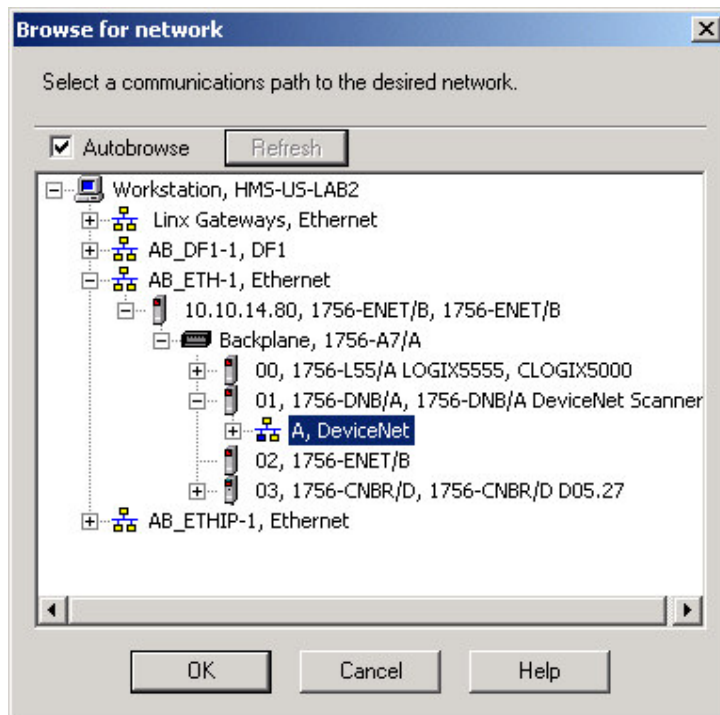
Start RSNetworx.



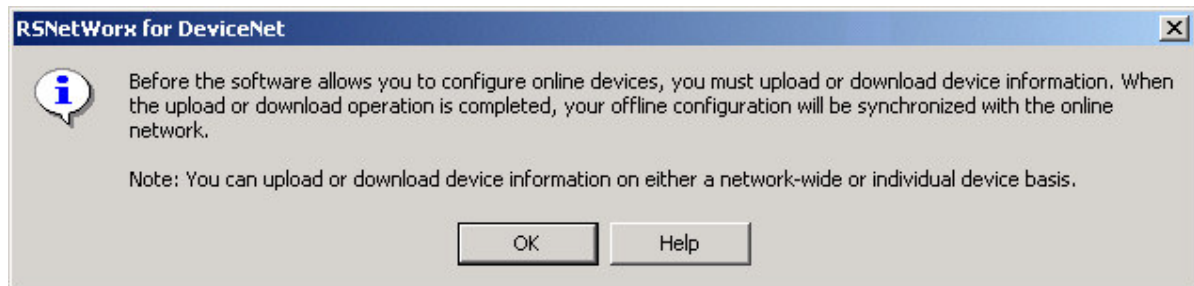
Select Online from the Network menu.



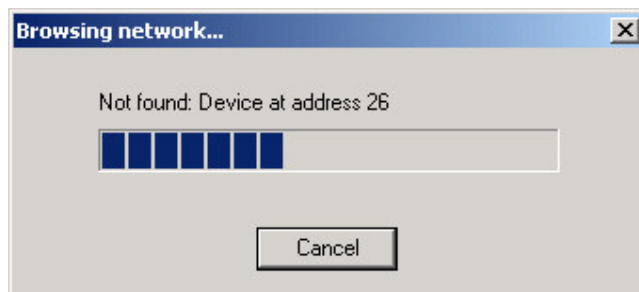
Verify that the Online connection for RSNetworx has been properly configured.



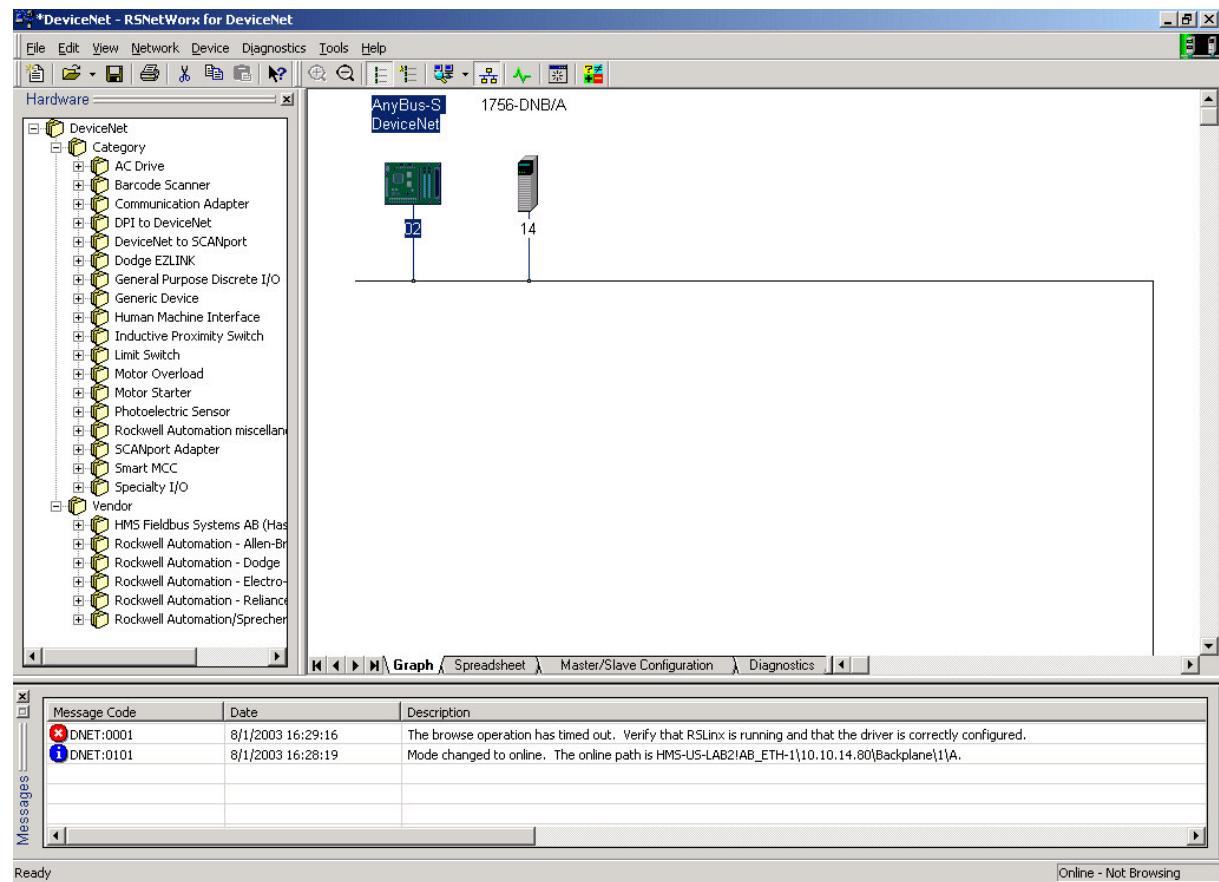
RsNetWorx will now show this message, just hit the OK button.



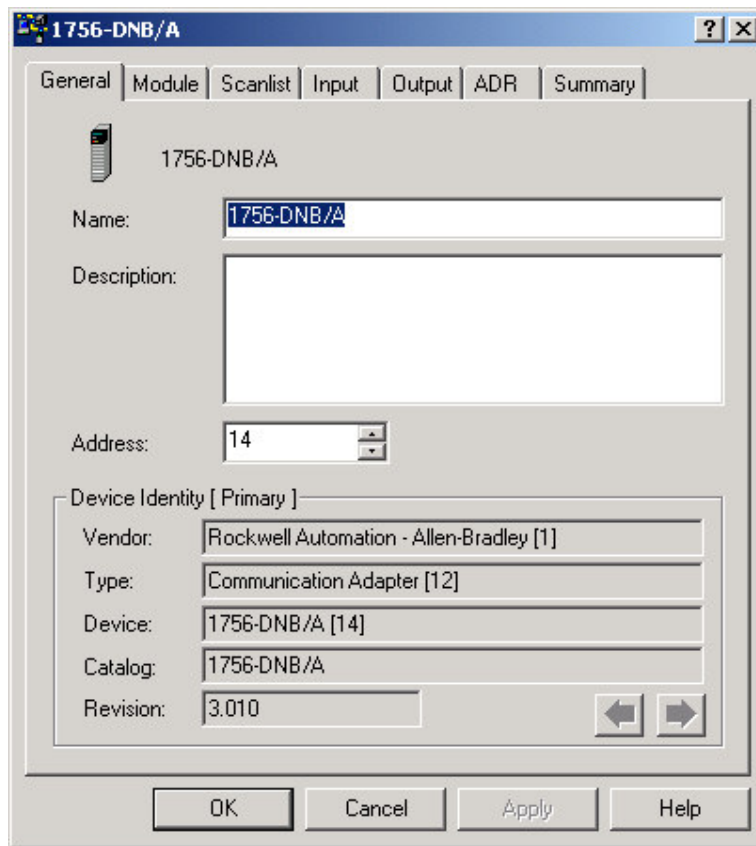
When RsNetWorx goes online, it will automatically scan the network for DeviceNet nodes.



When the browse is finished, the network will have found the ABS module for DeviceNet. If the ABS module is identified as generic or unknown, verify that the EDS file has been installed. That is done with the EDS Wizard in the Tools menu.

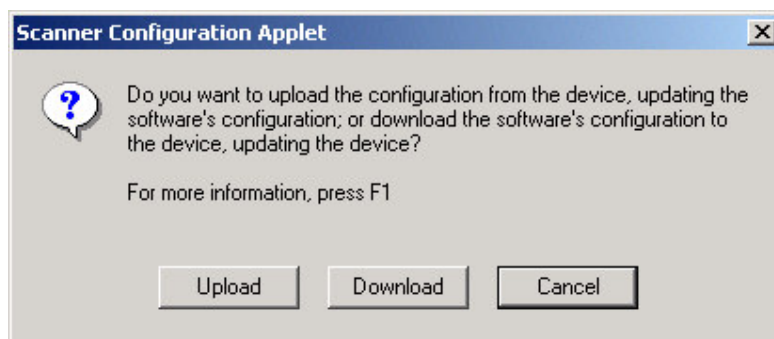


Now we shall add the ABS module to the DeviceNet scanner. Our DeviceNet scanner is the 1756-DNB/A module. To add the node to the scanners Scanlist, double-click the scanner. Now the window shown below shall appear.



The screenshot shows a configuration window titled "1756-DNB/A". It has several tabs: General, Module, Scanlist, Input, Output, ADR, and Summary. The "General" tab is selected. Inside the window, there is a section for "1756-DNB/A" with a Name field containing "1756-DNB/A", a Description field, and an Address field containing "14". Below these is a "Device Identity [Primary]" section with fields for Vendor ("Rockwell Automation - Allen-Bradley [1]"), Type ("Communication Adapter [12]"), Device ("1756-DNB/A [14]"), Catalog ("1756-DNB/A"), and Revision ("3.010"). At the bottom are buttons for OK, Cancel, Apply, and Help.

Select the Module tab at the top of the window. Since RsNetWorx have not verified its data with the scanner yet, we will be asked whether to upload or download a configuration. If we already have a configuration in the scanner, we can retrieve that by selecting upload, but if we do not have a configuration in the scanner, we can select either upload or download.



The screenshot shows a dialog box titled "Scanner Configuration Applet". It contains a question mark icon and the text: "Do you want to upload the configuration from the device, updating the software's configuration; or download the software's configuration to the device, updating the device?". Below this is the text "For more information, press F1". At the bottom are three buttons: Upload, Download, and Cancel.

When the configuration has been uploaded or downloaded, the configuration will appear under the module tab. The Interscan Delay is the time the scanner shall wait between each scan cycle. A module can also be configured to be either background or foreground. In this example, we will use the default values.

The screenshot shows a configuration window titled "1756-DNB/A" with a standard Windows-style title bar (minimize, maximize, close buttons). The window has several tabs: "General", "Module" (which is selected), "Scanlist", "Input", "Output", "ADR", and "Summary".

Under the "Module" tab, there are two spinners for configuration:

- "Interscan Delay:" with a value of "10" and a unit of "msec".
- "Foreground to Background Poll Ratio:" with a value of "2".

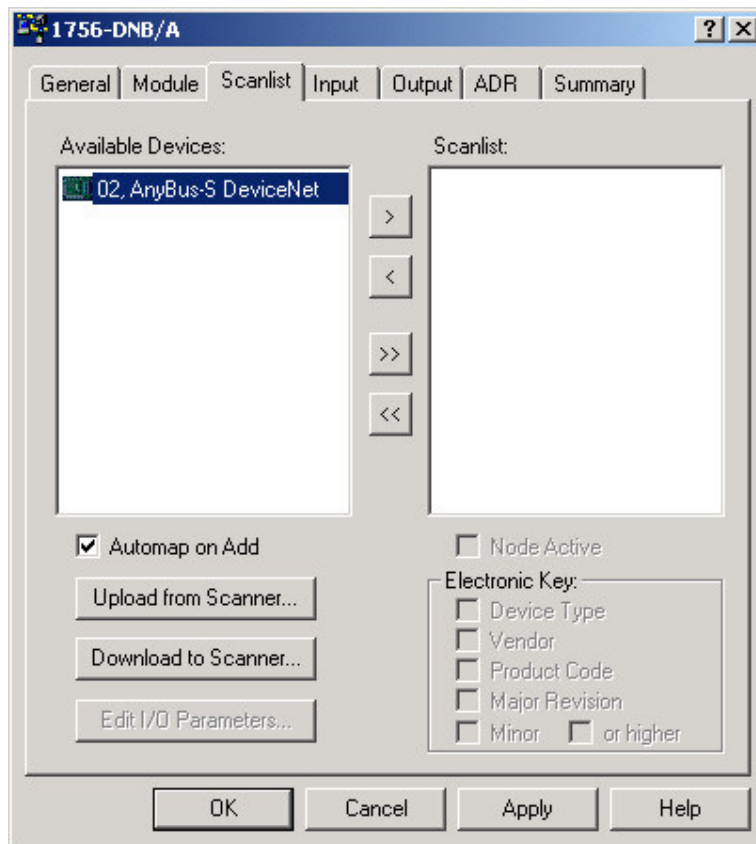
To the right of these spinners are five buttons stacked vertically:

- "Upload from Scanner"
- "Download to Scanner"
- "Module Defaults"
- "Slave Mode..."
- "Advanced..."

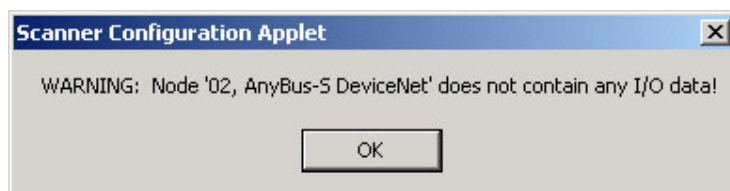
At the bottom of the main configuration area, there is a section labeled "1756-DNB:" containing a "Slot:" spinner with the value "1".

At the very bottom of the window are four buttons: "OK", "Cancel", "Apply", and "Help".

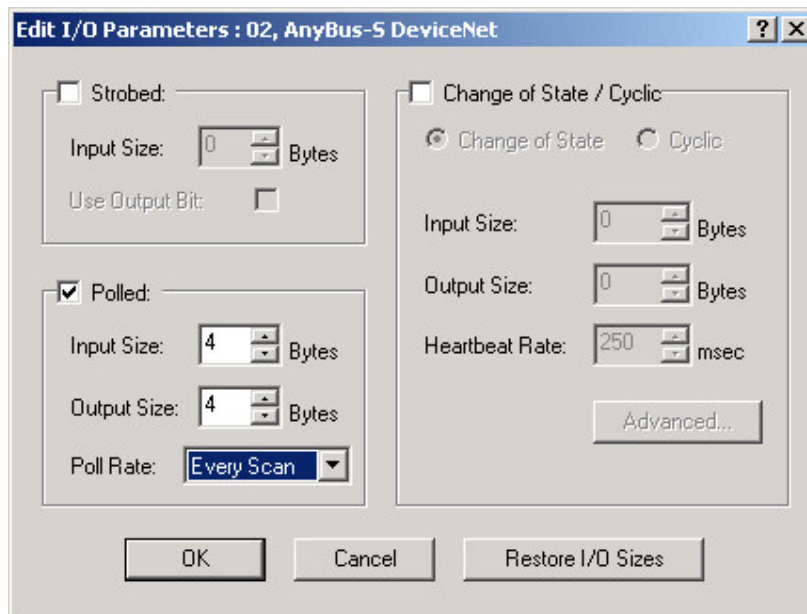
Now press the Scanlist tab. This will show the slave modules available, as well as any nodes that were in the Scanlist earlier.



Select the ABS module, and press the “>”-button to add the ABS to the Scanlist of the scanner. RSNetWorx will now show a warning prompt saying that the module does not have any I/O data set by default. To set the correct data sizes, press the “Edit I/O Parameters” button, which shall be enabled after the module has been added to the Scanlist. Note that the ABS has to be selected in the Scanlist to be able to do this.

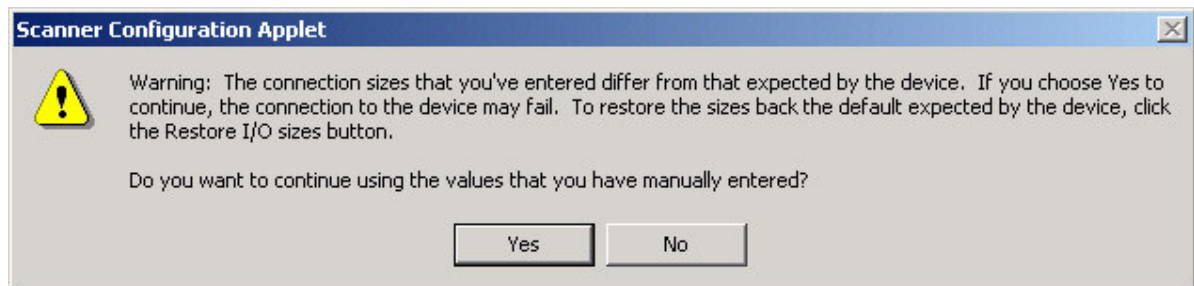


The data configured in the AnyBus module is automatically mapped to the Polled I/O connection on DeviceNet. Set the polled I/O connection data sizes to the same data sizes that the ABS module is configured for. In our case we have 4 bytes input and 4 bytes output.



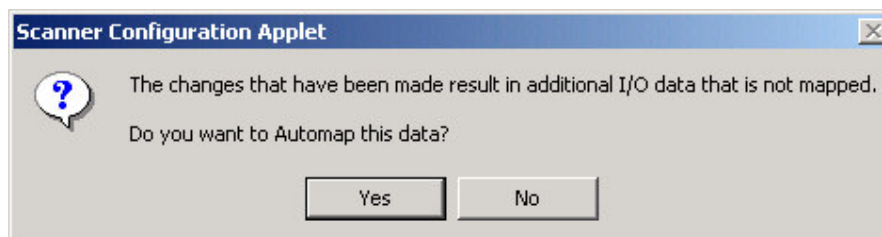
The dialog box is titled "Edit I/O Parameters : 02, AnyBus-S DeviceNet". It contains two main sections. The left section has a "Strobed:" group box with "Input Size:" set to 0 Bytes and a "Use Output Bit:" checkbox. Below it is a "Polled:" group box with "Input Size:" set to 4 Bytes, "Output Size:" set to 4 Bytes, and a "Poll Rate:" dropdown menu set to "Every Scan". The right section has a "Change of State / Cyclic:" group box with radio buttons for "Change of State" (selected) and "Cyclic". Below these are "Input Size:" set to 0 Bytes, "Output Size:" set to 0 Bytes, and "Heartbeat Rate:" set to 250 msec. At the bottom are "OK", "Cancel", and "Restore I/O Sizes" buttons.

When we press OK, RsNetWorx will show this message telling us that the I/O sizes don't match the default I/O sizes, the reason for this is the missing I/O data message that we did get earlier.



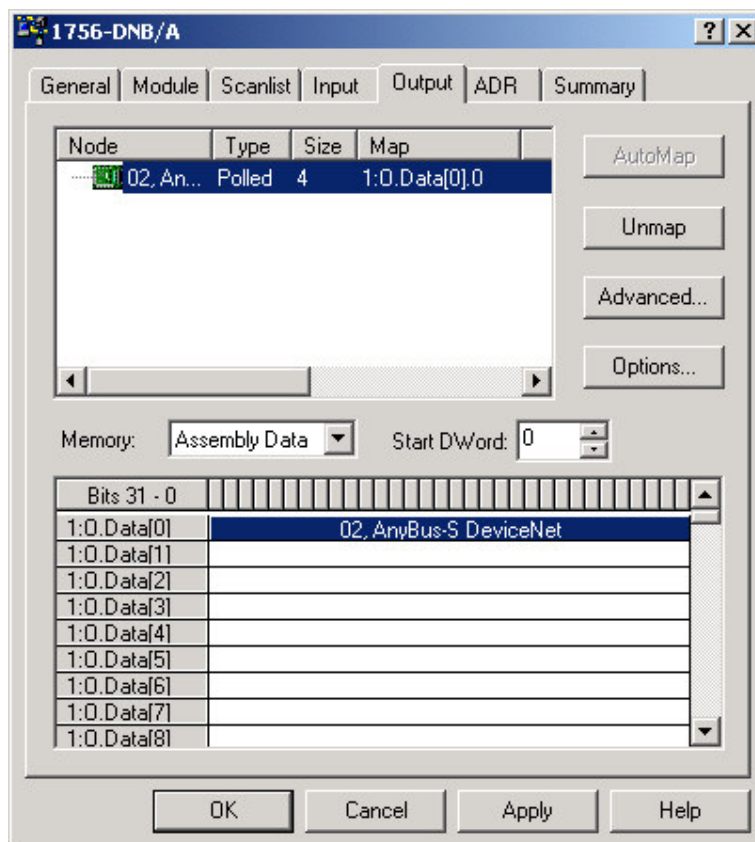
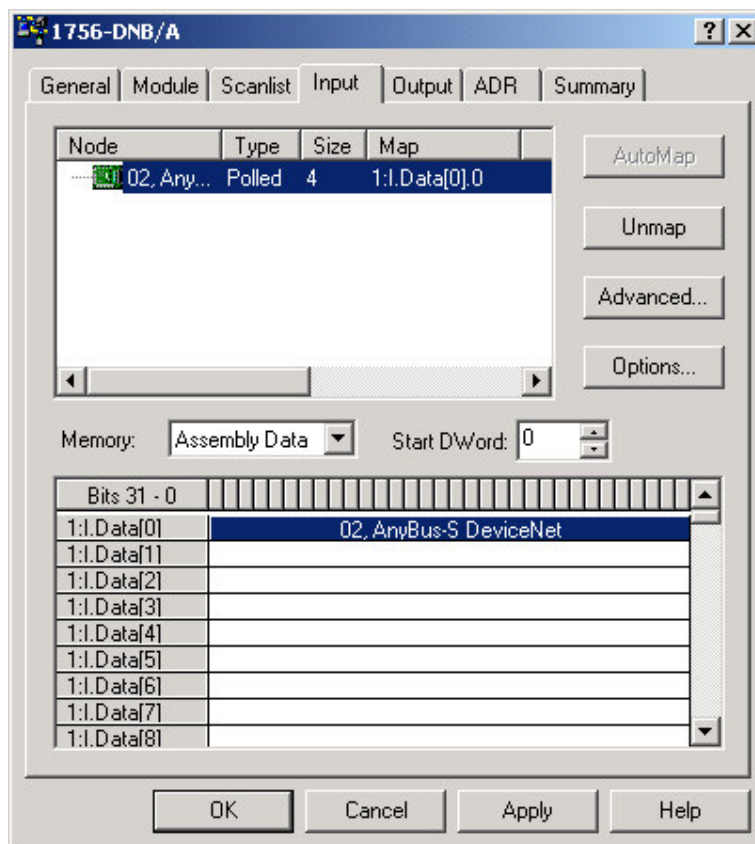
The dialog box is titled "Scanner Configuration Applet" and features a yellow warning icon. The text reads: "Warning: The connection sizes that you've entered differ from that expected by the device. If you choose Yes to continue, the connection to the device may fail. To restore the sizes back the default expected by the device, click the Restore I/O sizes button." Below this is the question "Do you want to continue using the values that you have manually entered?" and two buttons: "Yes" and "No".

RsNetWorx will ask us if we want to auto map the data to first available memory location in the DeviceNet scanners memory.

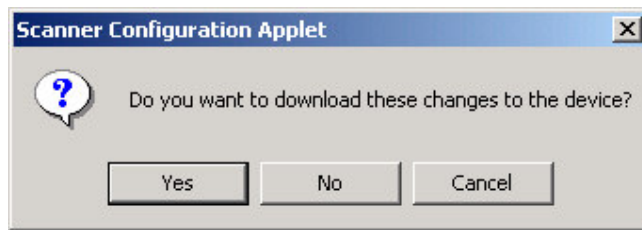


The dialog box is titled "Scanner Configuration Applet" and features a question mark icon. The text reads: "The changes that have been made result in additional I/O data that is not mapped. Do you want to Automap this data?" Below this are two buttons: "Yes" and "No".

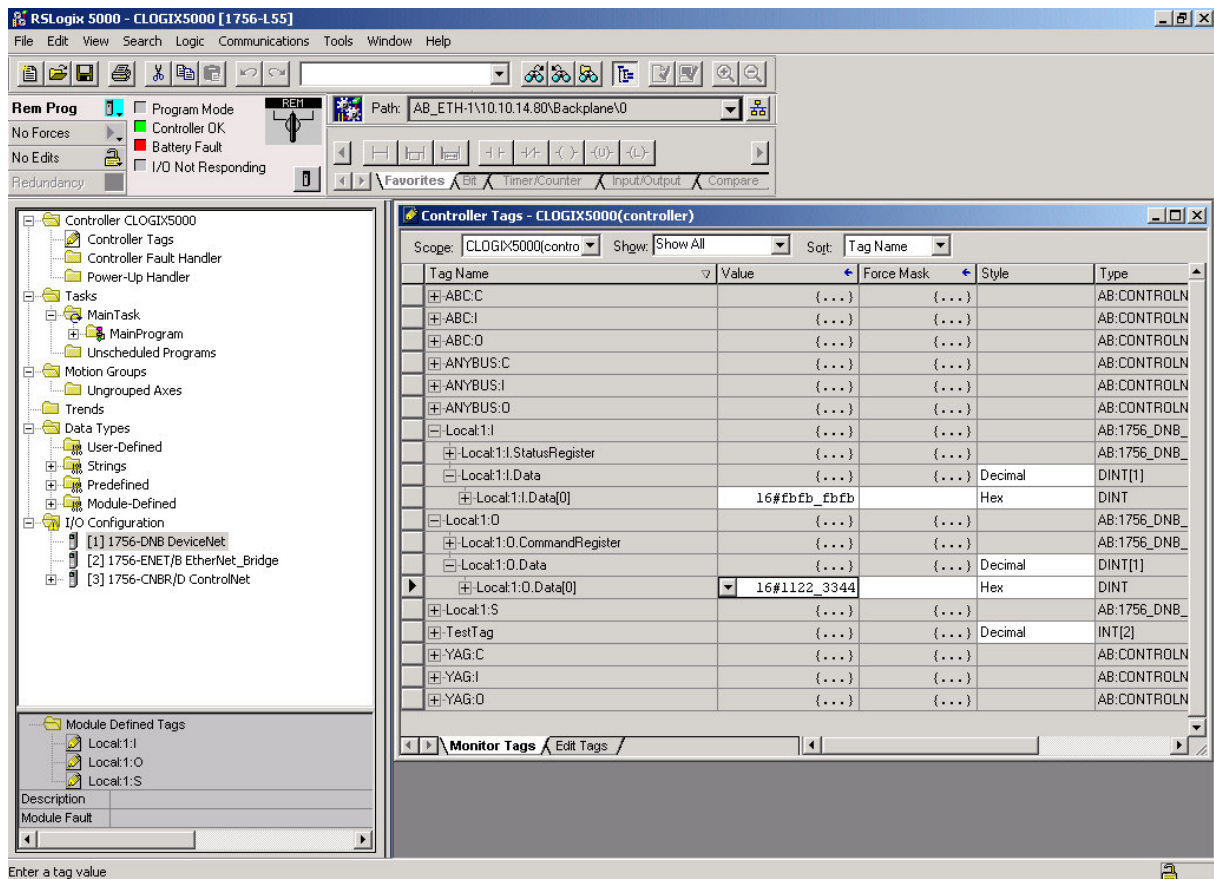
If we select the Input and Output tabs at the scanner configuration, we can now see how the data has been mapped to the DeviceNet scanners memory.



If we accept this configuration by clicking on OK or Apply, RsNetWorx will ask us if we want to download this configuration. Select Yes to download the configuration. Make sure the PLC is in programming mode when this is done, since it will not accept a new configuration in Run mode.



Now the scanner shall be correctly configured. Start RsLogix5000 and go online, under controller tags it's now possible to access the data that we did configure.



3. Links to information about networks and products

- The latest for the ABS module can be found on the HMS homepage <http://www.hms-networks.com/downloads/absdownloads.shtml>.
- The Open DeviceNet Vendor Organization has a homepage, <http://www.odva.org/>, with more information DeviceNet.
- For information concerning the PLC and DeviceNet scanner refer to the Allen-Bradley's homepage <http://www.ab.com/catalogs/b113/controllogix/overview.html>.

4. Support

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