DEVICENET SEMINAR INSTALLATION INSTRUCTIONS

When to Use These Instructions

Use these installation instructions to set up the lab for the DeviceNet seminar.

Meeting the Computer Requirements

The DeviceNet seminar lab exercises require the following components.

- DeviceNetManager (1787-MGR) software, version 3.001 (or later)
- RSLogix 500 programming software, version 1.25 (or later)
- Microsoft Windows 3.1, Windows 95 or Windows NT
- Two unoccupied PC comm serial ports

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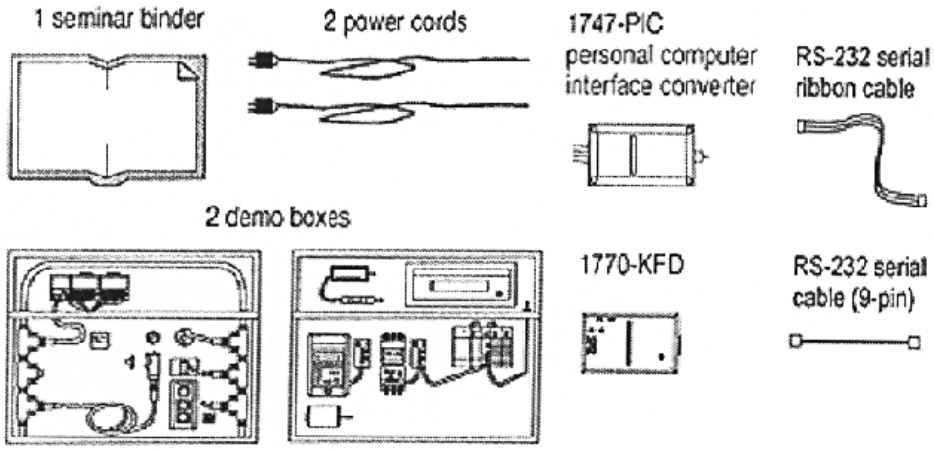
What You Should Receive with the DeviceNet Seminar

You should receive these items as part of the DeviceNet Seminar.2 Referring to



Related Publications

Refer to these publications for more information about the DeviceNet network.

DeviceNet Sales Literature

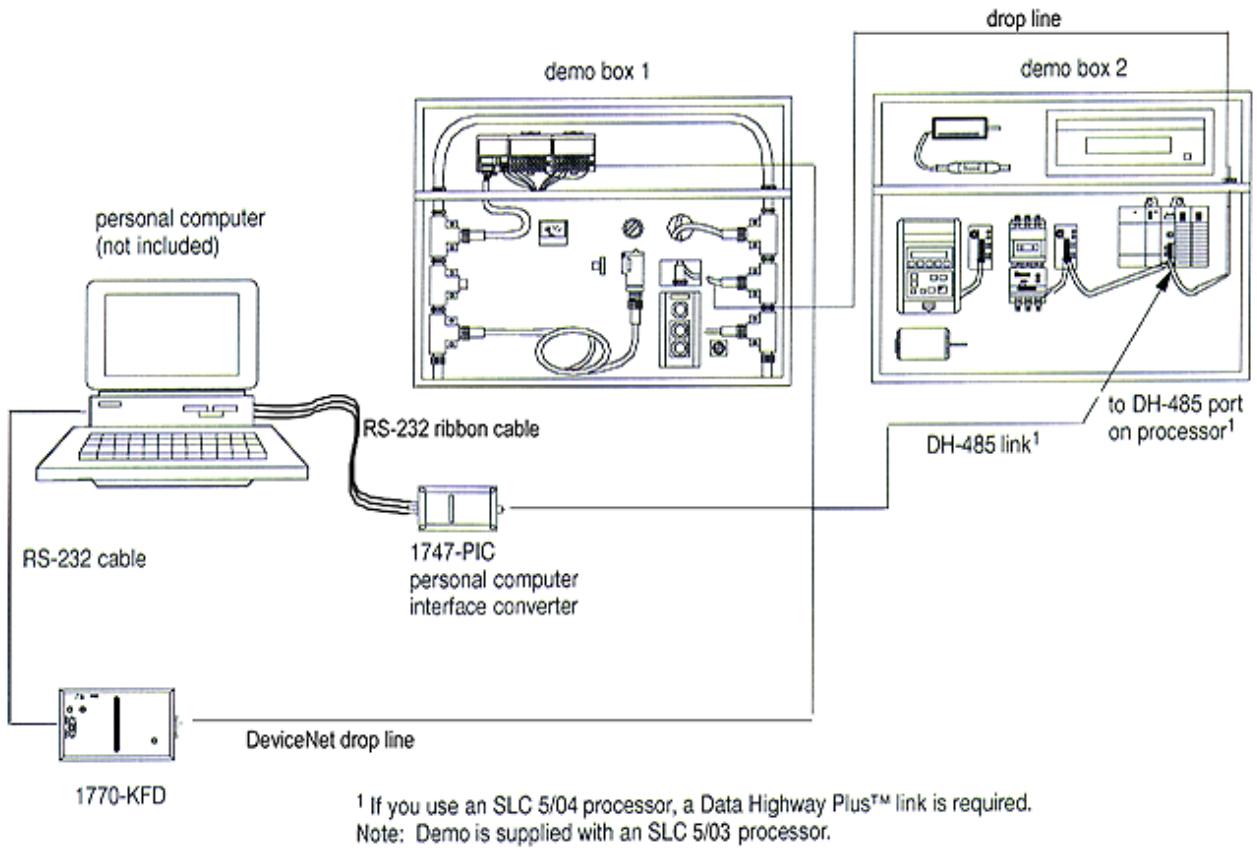
Title	Publication Number
Open DeviceNet Vendor Association Catalog	CSV-6.5.4
DeviceNet FLEX I/O Adapter Product Profile	DN-1.2
DeviceNet Scanner for the SLC Chassis Catalog No. 1747-SDN Product Profile	DN-1.3
DeviceNet Scanner for the PLC Chassis Catalog No. 1771-SDN Product Profile	DN-1.7
DeviceNet Sealed Physical Media Product Profile	DN-1.8
Open Device Network Offers Improved Communications and Flexibility Product Profile	DN-1.9
PHOTOSWITCH Series 9000 Photoelectric Sensors for the DeviceNet Network Product Profile	DN-1.11
SMP-3 Solid State Overload Relay for the DeviceNet Network Product Profile	DN-1.14
Brochure/DeviceLink I/O	DN-1.15
DeviceNet Communication Link Overview Product Profile	DN-1.18
DeviceNet Product Overview	DN-2.5

DeviceNet Reference Publications

Title	Publication Number
DeviceNet Cable System Planning and Installation Manual	1485-DN-6.7.2
Bulletin 1305 AC Drive	1305-1.0.1
1747-SDN Scanner Module Installation	1747-5.8
DeviceNet Scanner Configuration Manual	1747-6.5.2
DeviceNet RS-232 Interface Module Installation Instructions	1770-5.6
1771-SDN Scanner Module Installation	1771-5.14
DeviceNet Scanner Configuration Manual	1771-6.5.118
DeviceNet Manager Software User Manual	1787-6.5.3
FLEX I/O DeviceNet Adapter Installation Instructions	1794-5.14
DeviceNet Adapter Module User Manual	1794-6.5.5
RediSTATION User Manual	2705-804

What's in the Demo Boxes

The following diagram illustrates what's in the demo boxes for the lab exercises.



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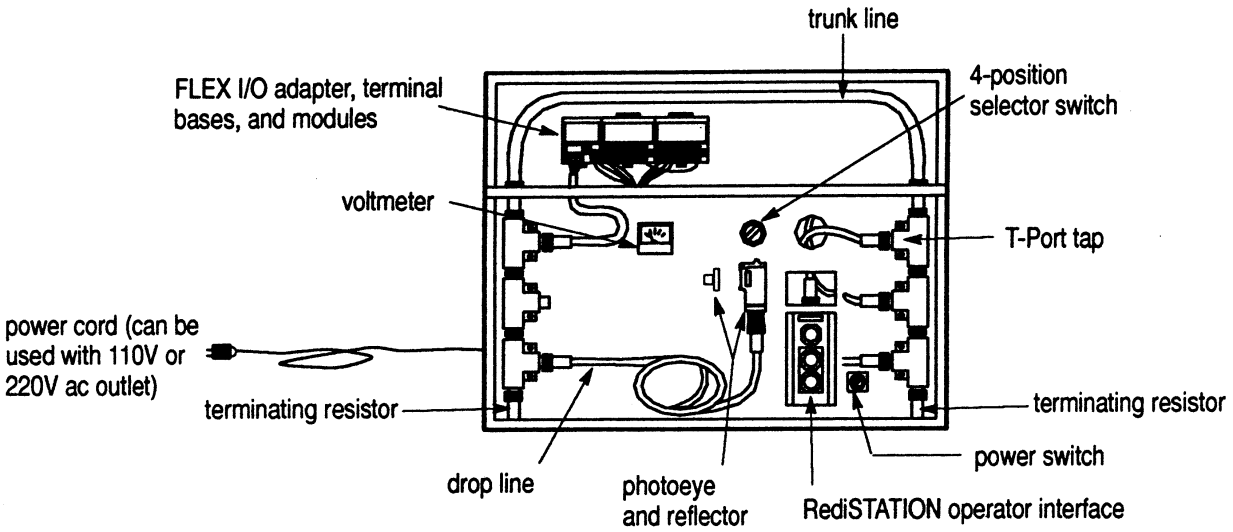
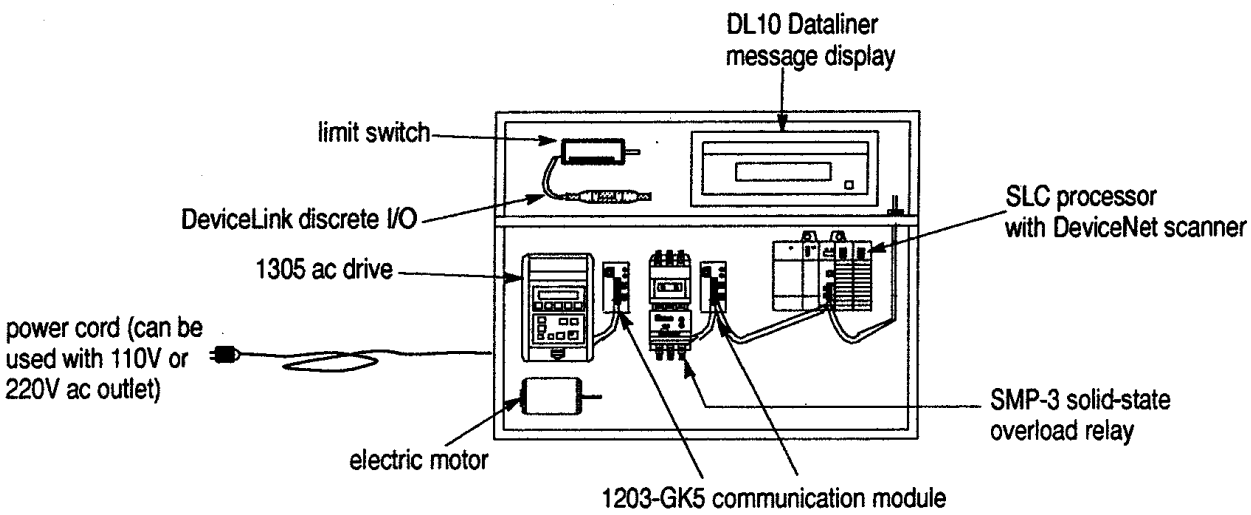
Demo Box 1 Description



Demo Box 1 includes the following components.

Component (clockwise on drawing)	Catalog number
Trunk line with female field-installable connector with male field-installable connector	1485R-P1M5-C 1485-P1T5-N5 1485-P1T5-M5
4-position selector switch	800T-N2KF4B
T-Port taps (right keyed)	1485P1N5-MN5R1
Terminating resistor (male)	1485-T1M5
Power switch	800A-H2BW
RediSTATION operator interface	2705-T3DN1A42A
Series 9000 photoeye retroflective	42GNP-9000-QD1
1” reflector	880-N1
Drop line	1485R-P1N5-M5
Terminating resistor (female)	1485-AT1N5
Power cord	
Sola SLS-24-024 24V regulated power supply	
0-10V dc voltmeter (type 1212 1.5”)	
FLEX I/O DeviceNet Adapter	1794-ADN
FLEX I/O Terminal Bases	1794-TB2
FLEX I/O Digital Input Module	1794-IB16
FLEX I/O Analog Output Module	1794-OE4

Demo Box 2 Description



Demo Box 2 includes the following components.

Component (clockwise on drawing)	Catalog number
DL10 Dataliner message display	2706-A11J
SLC processor with DeviceNet scanner	1747-SDN (scanner)
Communication module for power products	1203-GK5 (2 required)
SMP-3 solid-state overload relay	Bulletin 193
Parvalux electric motor	
Power cord	
1305 ac drive	1305
DeviceLink discrete I/O	1485D-A3C3-C
Oiltight limit switch	802T-WSP

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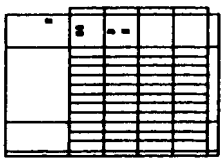
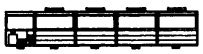
Describing the Hardware

Here are the descriptions and the node numbers of the devices contained in the demo boxes.

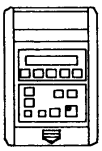


- An I/O chassis with an SLC™ 500 processor and a 1747-SDN scanner
  Scanner node number = 00
  The scanner is the DeviceNet master coordinating all control data to and from all devices on the DeviceNet network. This DeviceNet data is transferred to and from the SLC 500 processor viaM1/M0 and discrete I/O transfers. This data is then used in the SLC 500 ladder program to do the actual control logic.

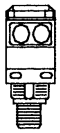


- A 1794-ADN FLEX I/O™ adapter connected to an analog output module and a discrete input module.
  Adapter node number = 02
  Analog output channel 0 is connected to a volt meter to easily display the voltage output. Also a 4-position selector switch is connected to bits 0-3 of the 1794-IB16 discrete input module.

- An SMP-3™ solid-state overload relay connected to the DeviceNet network via a 1203-GK5 communication module.
  SMP-3 solid state overload relay node number = 03
  The SMP-3 solid-state overload relay provides solid-state motor overcurrent protection in addition to ground fault protection, jam/stall protection, and protection against damage caused by phase loss conditions.

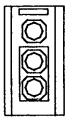


- A 1305 ac drive connected to the DeviceNet network via a 1203-GK5 communication module.
  1305 ac drive node number = 04
  The 1305 ac drive provides drive status and diagnostic data at the local panel using the part of the drive known as the Human Interface module or at a supervisory control station over DeviceNet.

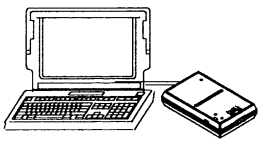


- A Series 9000 PHOTOSWITCH™ photoeye.
  Photoeye node number = 07
  The Series 9000 photoeye is designed to withstand harsh environments. The sensor for this lab is retroflective.

- A DeviceLink™ discrete I/O connected to a limit switch.
  DeviceLink discrete I/O node number = 10
  The DeviceLink discrete I/O connects single non-DeviceNet dc source devices to the DeviceNet network.



- A 2705T RediSTATION™ operator interface.
  2705T RediSTATION operator interface node number = 15
  The RediSTATION operator interface is a pushbutton station that has a start button, a stop button, and a red pilot light.



- 1787-MGR DeviceNetManager™ software, version 3.001 connected to the DeviceNet network via a 1770-KFD interface module.
  Software node number = 62
  DeviceNet Manager software configures software parameters of DeviceNet devices from multiple vendors and performs network diagnostics and troubleshooting.

Installing the Software

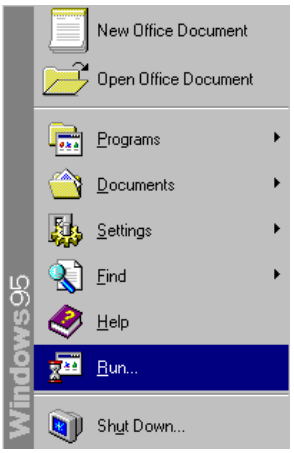
Follow these steps to install the 1787-MGR DeviceNet Manager software, version 3.001.

Note: Screen captures and directions for installing the software reflect Windows 95. Windows 3.1 and NT users' directions may be slightly different from those shown here.

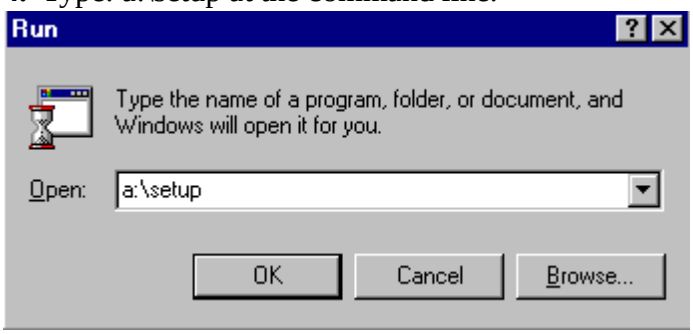
1. Start Windows 95.

2. Insert Disk 1 into the 3.5" floppy disk drive.

3. From the *Start Menu*, choose **Run.**



4. Type: a:\setup at the command line.



Note: Use the appropriate drive letter for your 3.5" disk drive.

5. Choose 

You see this screen while files are transferred to your hard drive.

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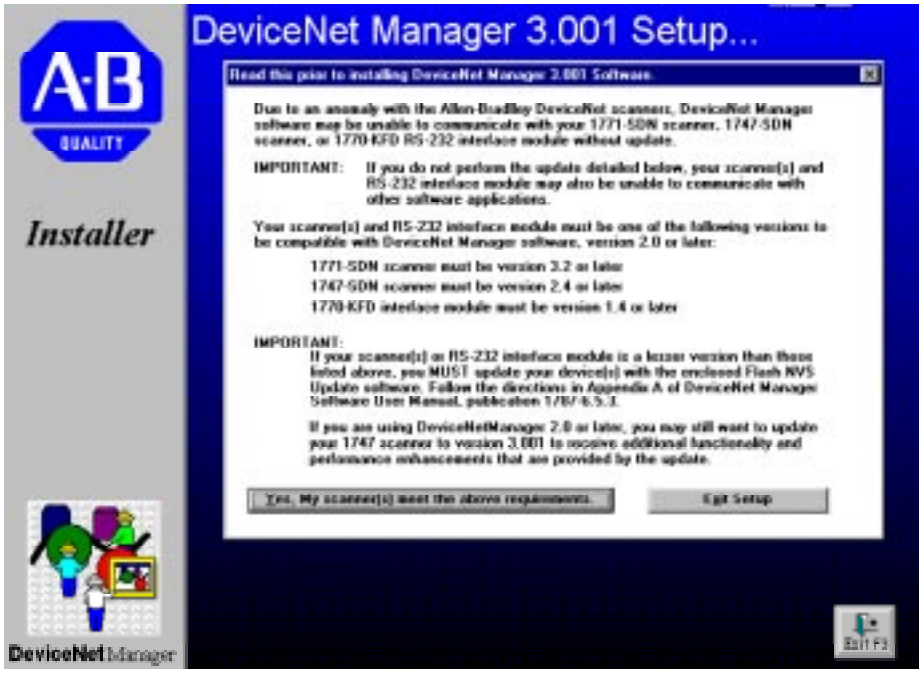
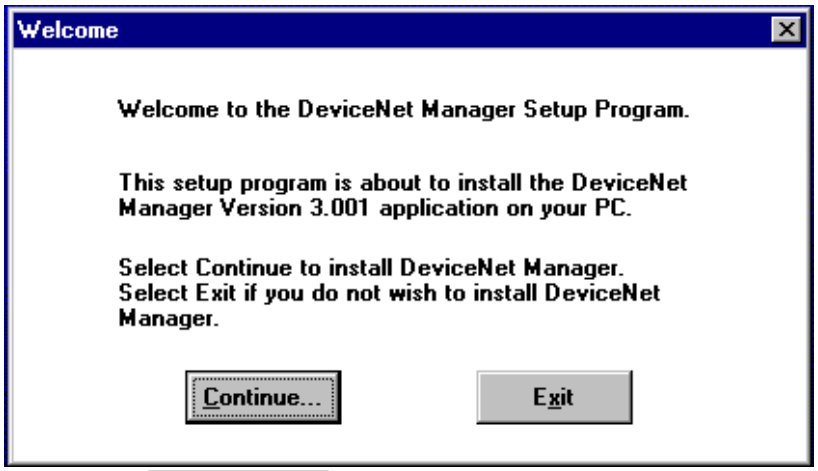


Confirm that the scanner being used for the seminar is compatible with DeviceNet Manager software, version 3.001.

6. Choose 

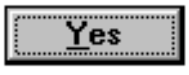
You see this screen.



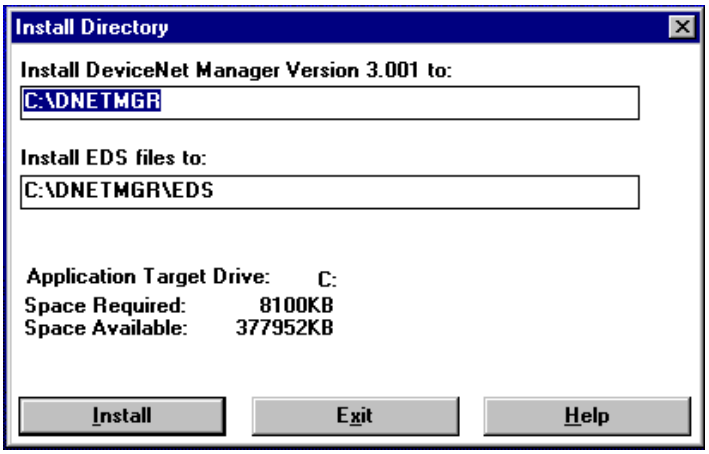
7. Choose 

Note: You do not need to enter registration information when installing DeviceNet Manager software, version 3.001.

At the **Registration** screen, choose 

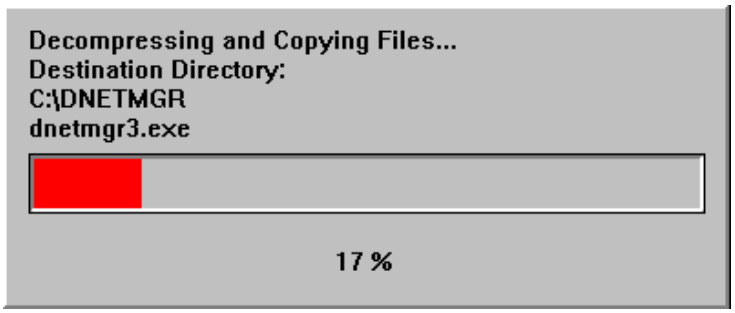
At the **Registration Confirmation** screen, choose 

The software creates a default directory on the host drive called c:\DNETMGR and a subdirectory for the EDS files called c:\DNETMGR\EDS.



8. Choose 

You see this screen as files are being decompressed and copied onto the hard drive.



9. Remove Disk 1 and insert Disk 2 when you see this screen.

10. Choose 

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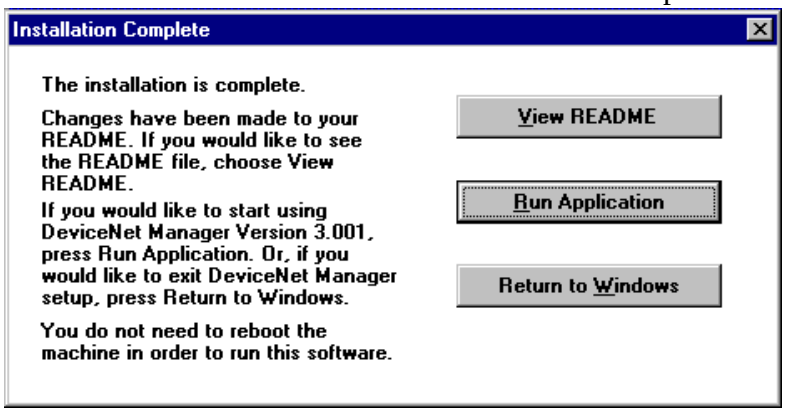
You see this screen when the installation is complete.



11. Choose 

A DeviceNet Manager 3.001 icon now appears in the Windows\Start box.

Tip: Drag and drop the icon onto your desktop.

Now you can just double-click the icon to start DeviceNet Manager the next time you access it.

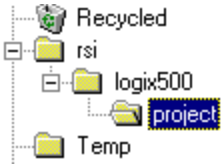
Copying the Seminar Files from the Allen-Bradley Network

You need to copy the seminar files from the Allen-Bradley server, MKESLAFS, to your hard drive.

1. To access the network, double-click **Network Neighborhood** icon (on your desktop or through Windows Explorer).
2. Double-click **Entire Network**.
3. Double-click the files listed A through G, in the order listed.
   - **A.** Mkeslafs
   - **B.** Vol1
   - **C.** Netfiles
   - **D.** Networks
   - **E.** DNet
   - **F.** Workshop
   - **G.** Software

4. Single-click **Dnetmgr.** Drag and drop it onto your desktop.
5. Single-click **logix500**. Drag and drop it onto your desktop.
6. Close all open windows.
7. Open **Windows Explorer**.
8. Drag and drop the contents of the Dnetmgr file to the **c:\Dnetmgr** folder.

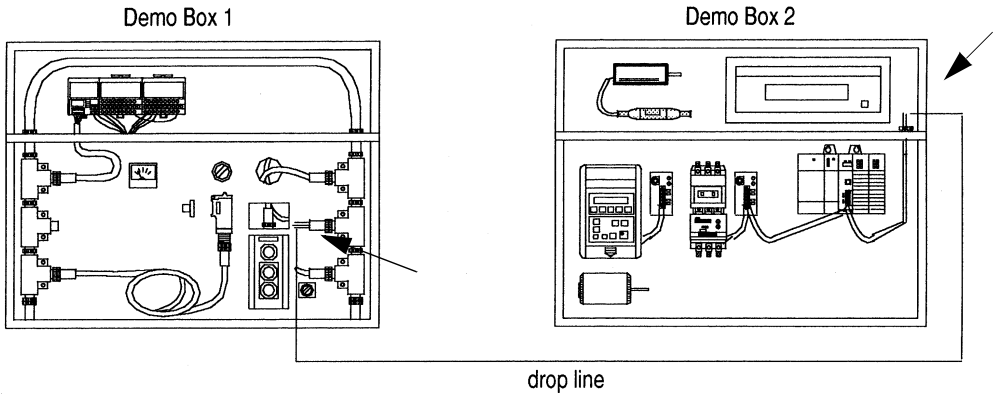
9. Drag and drop the contents of the logix500 file to the **c:\rsi\logix500\project** folder.



Connecting the Boxes

Follow these steps to connect your DeviceNet demo boxes together.

1. Connect the drop line from the top of box 2 into the second T-Port tap on the right of box 1.



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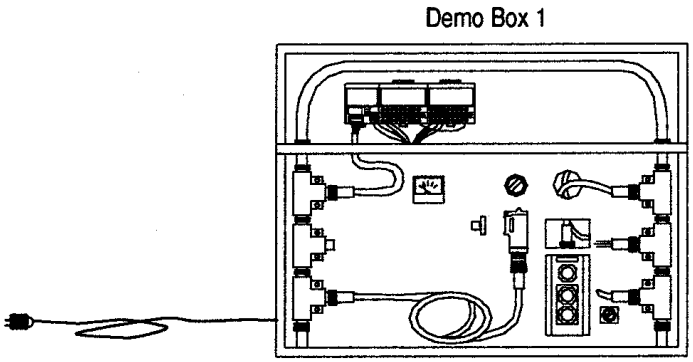
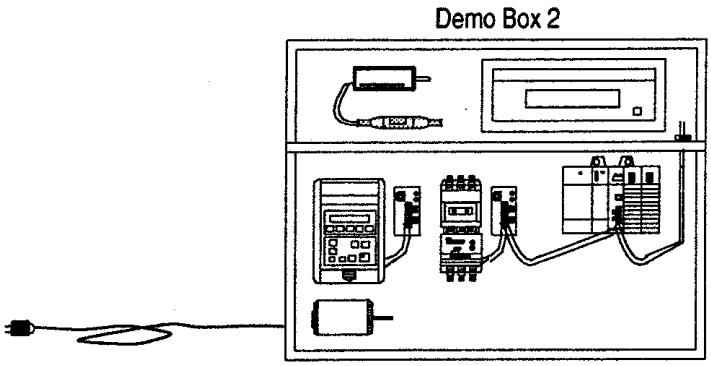
2. Plug one end of the power cord into the left side of box 1.



3. Plug the other end of the power cord into a 110V or 220V ac outlet.

4. Plug one end of the other power cord into the back of box 2.



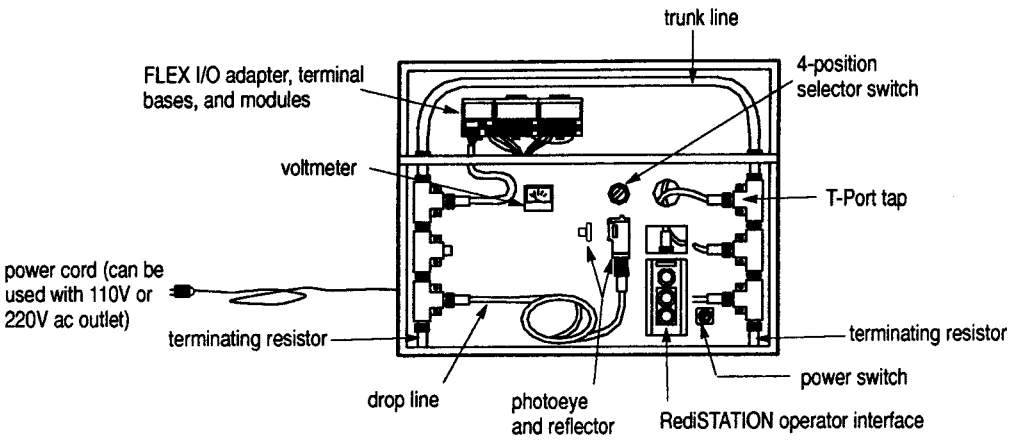
5. Plug the other end of the power cord into a 110V or 220V ac outlet.

Checking the Diagnostics

To verify that you have properly installed your DeviceNet demo, perform the following checks. If any of the items in the list are not true, refer to the DL10 Dataliner for diagnostics and check the associated connections.

Important: Make sure the SLC 5/03 processor is in **Run** mode.

Demo Box 1 Description



✓ **1794-ADN Flex I/O Rack**

- Adapter - both Mod/Net and I/O Status indicators are illuminated green
- 1794-OE Module - power indicator is illuminated green
- 1794-IB16 Module - one of the indicators (number 0 through 3) is illuminated amber

✓ **RediSTATION Operator Interface**

Adjust the demo selector switch so that the number 1 indicator on the 1794-IB16 module illuminates amber.

- The light on the RediSTATION flashes red each time the meter indicates either 0 or 10 volts.

✓ **Photoeye**

- All three indicators are illuminated (two green and one amber)

  If all three are not illuminated, adjust the position of the reflector until all three illuminate.

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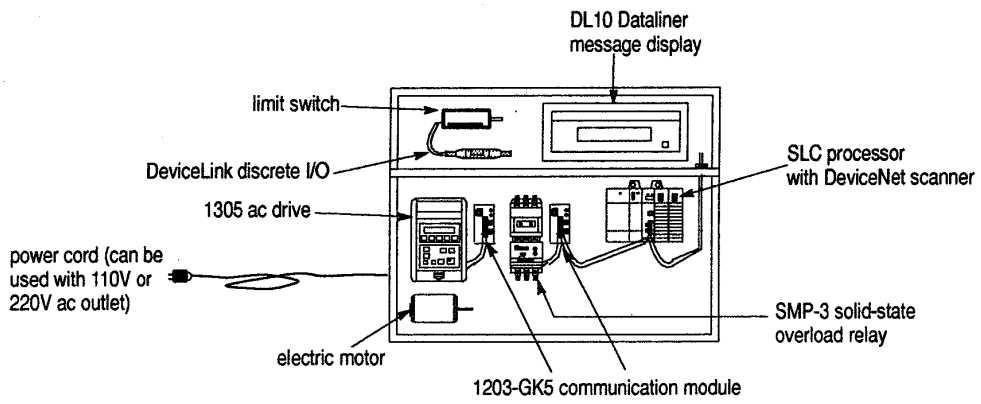
Demo Box 2 Description



✓ **DeviceLink Discrete I/O**

- Indicator is illuminated green

✓ **DL10 Dataliner**

- Indicates SYSTEM NORMAL or THANK YOU message

✓ **1747-SDN Scanner Module**

- Module Status and Network Status indicators are illuminated green
- Node Address/Error display indicates 00 (the SDN node address)

✓ **1203-GK5 Communication Adapter**

- Both indicators on the 1203-GK5 Communication Adapter are illuminated green

  If not, check the connections to the communication adapter and the ac drive or SMP-3 overload relay.

✓ **SMP-3 Overload Relay**

- Power Status indicator is illuminated green

✓ **1305 AC Drive**

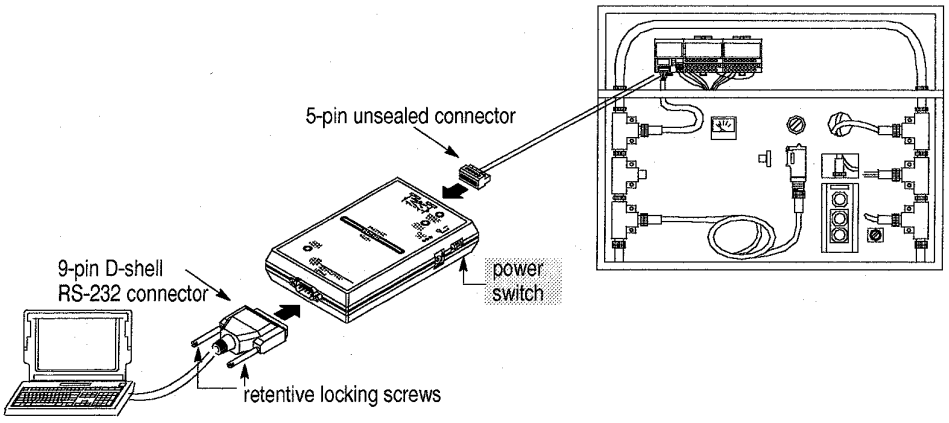
- Display reads **Stopped +0.00Hz**

Connecting the RS-232 Interface Module

You must have an RS-232 interface module connected and supplied with power to run the software. Follow the appropriate directions to power your RS-232 interface module from the network or a 9V dc power-supply adapter.

Power From Network

1. Set the power switch to 1.



2. Insert the 9-pin D-shell RS-232 connector into the bottom of the RS-232 interface module (1770-KFD).

3. Insert the other 9-pin D-shell RS-232 connector into a serial port of your computer.

4. Insert the network's 5-pin unsealed connector into the top of the RS-232 interface module. This connects the RS-232 interface module onto the trunk line enabling communication between devices on the network.

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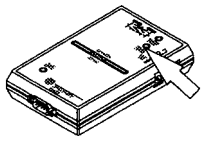
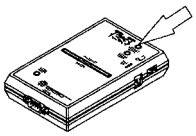
Checking the RS-232 Module Diagnostics

The three status indicators on the RS-232 module give you information about your network and its connections. Conditions for this lab should be as indicated in the **shaded** areas of the following tables.



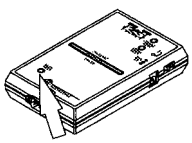
Module Status Indicator

If the indicator is	Then	Which indicates	Take this action
Off	There is no power being supplied to the module.	There is no power.	Apply power to the module.
Solid green	**The module is operating normally.**	**The module is online and a communication rate is detected.**	**Do nothing.**
Blinking green	The module is operating normally awaiting initialization from the host.	The module is in autobaud mode.	Initialize the module.
Solid red	There is an unrecoverable fault in the module.	The module has a critical fault.	Replace the module.
Blinking red	There is a recoverable fault in the module.	The module has a recoverable fault.	Reconfigure, reset, and perform the error recovery steps to the module.



Network Status Indicator

If the indicator is	Then	Which indicates	Take this action
Off	The module is offline.	The DeviceNet network is offline.	Go online
Solid green	The module is online and communicating over the DeviceNet network.	The DeviceNet network is online.	Do nothing.
Blinking green	**The module is online.**	**The DeviceNet network is online but not communicating,**	**Do nothing.**
Solid red	The link between the module and the DeviceNet network has failed	There is a critical error in the DeviceNet link.	Check your node addresses and network configurations for an error.



RS-232 Status Indicator

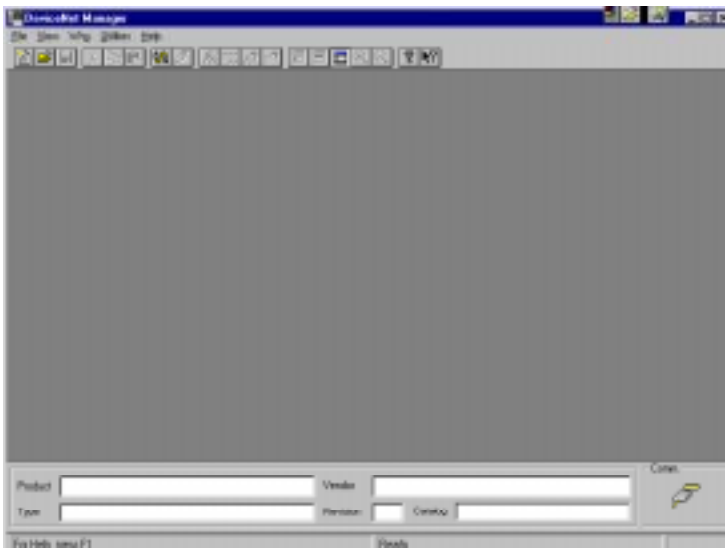
If the indicator is	Then	Which indicates	Take this action
Off	**There is no activity and the devicenet link is OK.**	**There is no communication over the DeviceNet network.**	**Do nothing.**
Blinking green	There is activity and the DeviceNet link is OK.	Data is being transmitted or received by the module.	Do nothing.
Solid red	There is a critical fault in the module.	The device is incapable of communicating on the DeviceNet network.	Attempt to go online again.
Blinking red	There is a recoverable fault in the module.	The module has detected a non-critical fault.	Check your communication rate and parity.

Going Online

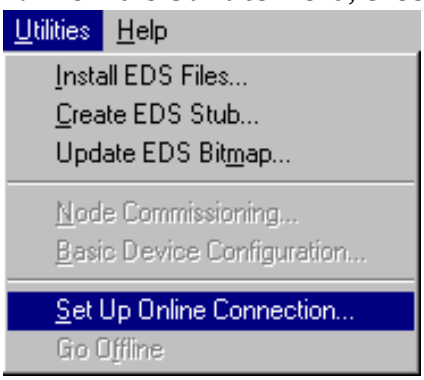
Follow these directions to go online with the DeviceNet network.

1. Open the software by double-clicking the DeviceNet Manager, version 3.001 icon on your desktop.

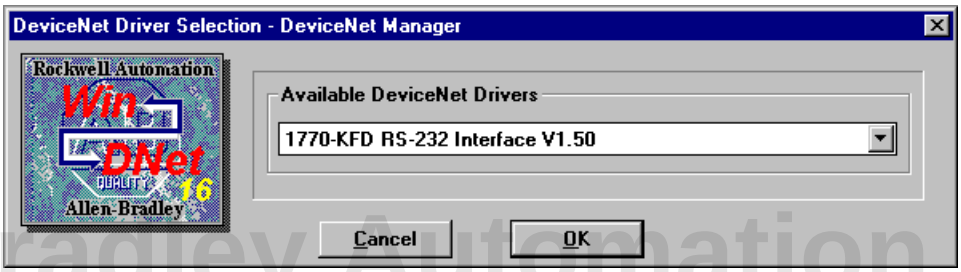
You see this screen.



2. From the *Utilities* menu, choose **Set Up Online Connection**.



You see this screen.



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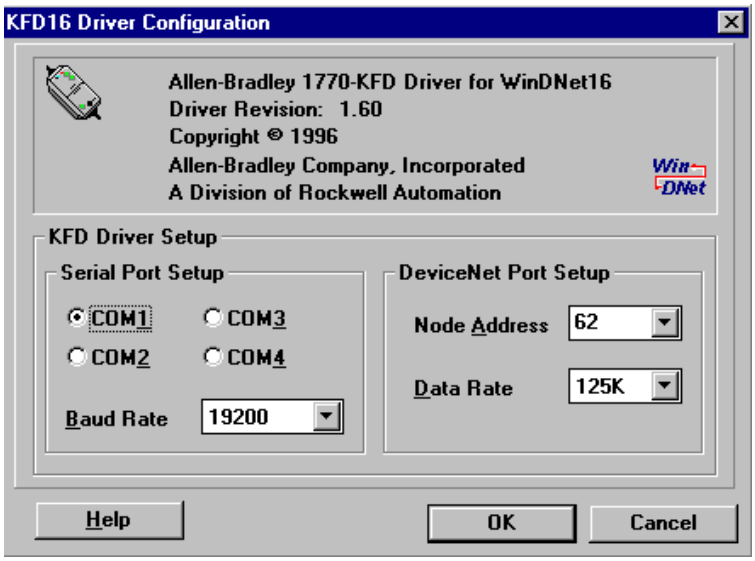
3. Choose OK

You see this screen.



Important: Your values should match those seen on this screen.

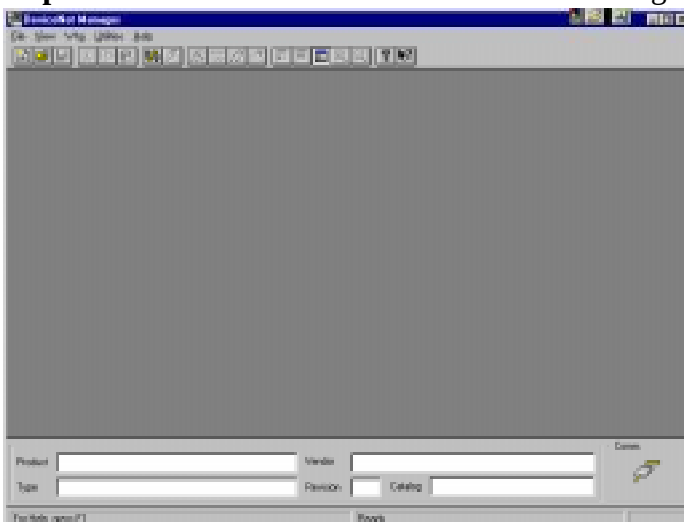
4. Choose OK

ATTENTION: In future uses, you need to make sure that all devices are set to the proper data rate. Attempting to go on-line at the wrong data rate may cause some or all devices on the network to fail.

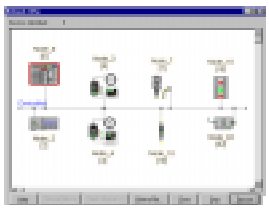
Testing the RS-232 Module

Follow these steps to test your online connection.

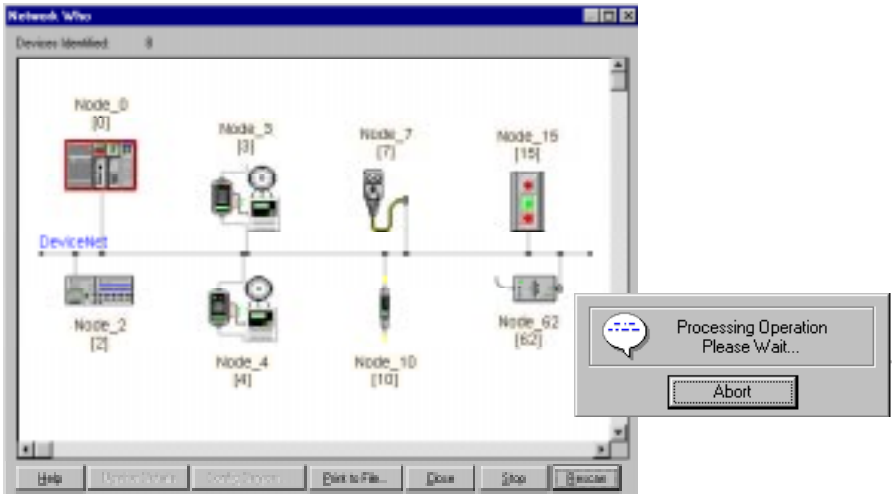
Important: You should be at the DeviceNet Manager opening screen.



1. From the *Who* menu, choose **Network Who**.



This screen appears while Network Who operates.



2. When nodes 0, 2, 3, 4, 7, 10, 15, and 62 are loaded onto the network, choose 

Uploading EDS Files

You now need to upload the EDS files for both the 1305 AC drive and the

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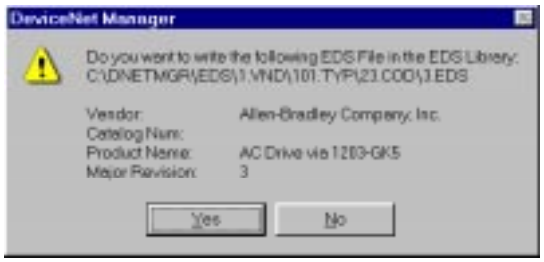
SMP-3 motor protector.

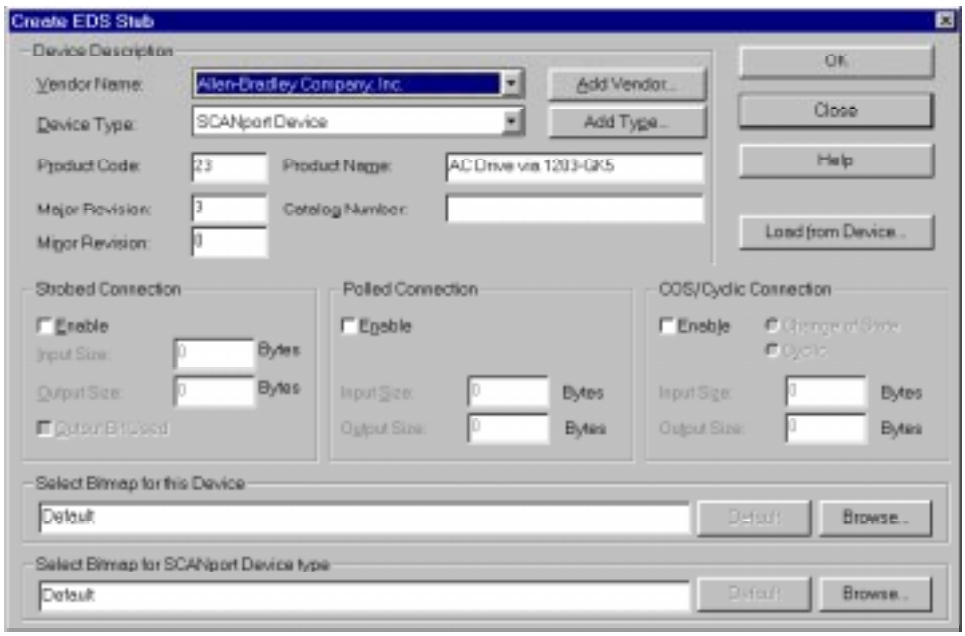
1. Double-click **node_4**.

You see this screen.

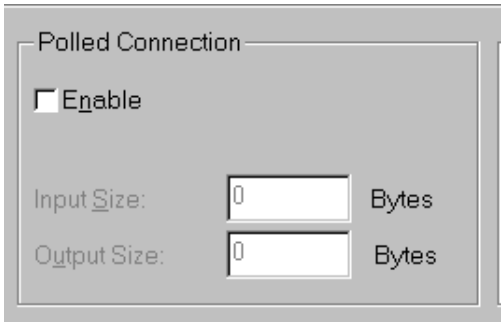


2. Choose **Yes**

You see this screen.



3. In the **Polled Connection** box, click **Enable.**

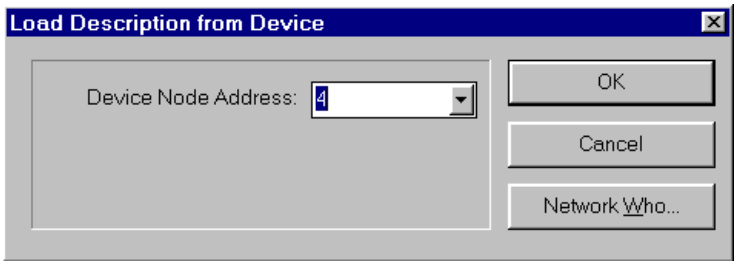


4. Enter the input size to **4** bytes.

5. Enter the output size to **4** bytes.

6. Choose Load from Device...

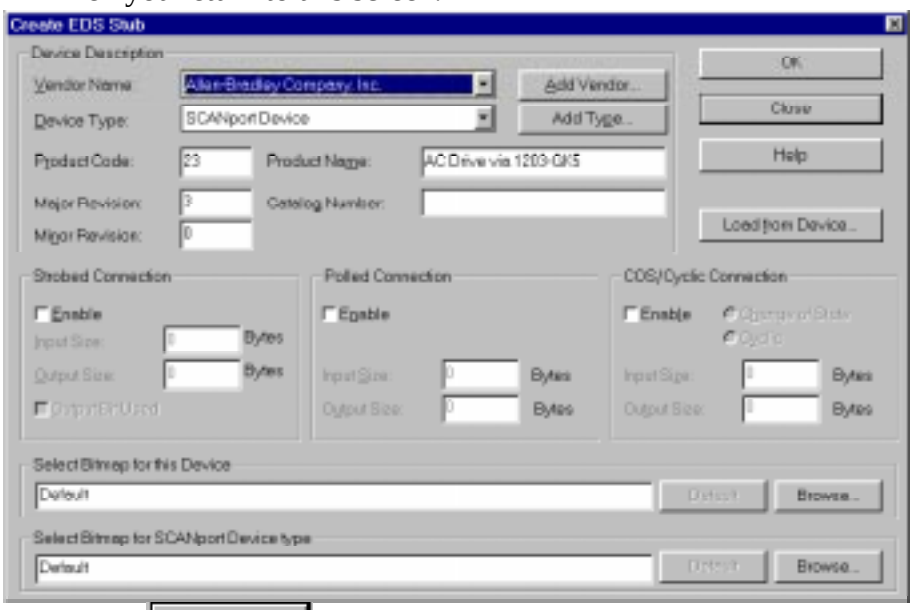
7. Make sure **4** is selected from the Device Node Address scroll-down list.



8. Choose OK

Be patient. It will take approximately 1-2 minutes to upload the EDS parameters.
You see “Loading Device Description” during the upload.

Then you return to this screen.



9. Choose OK

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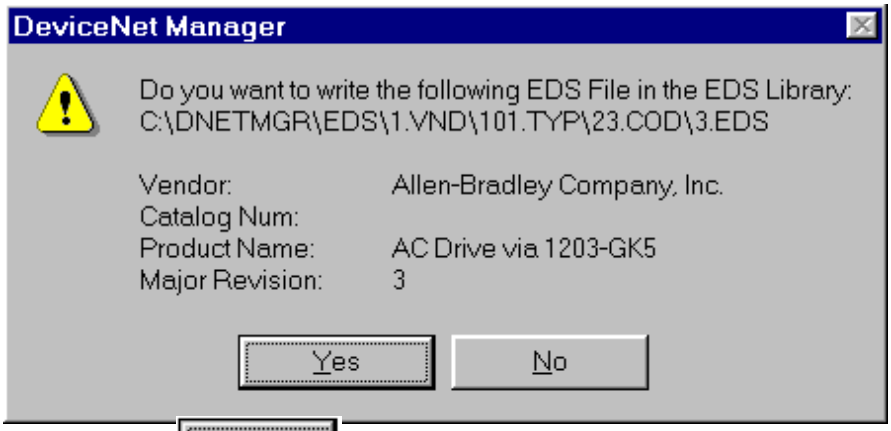
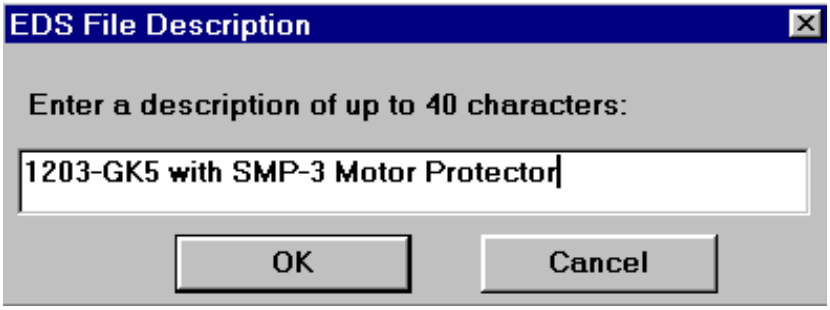
You see this screen.



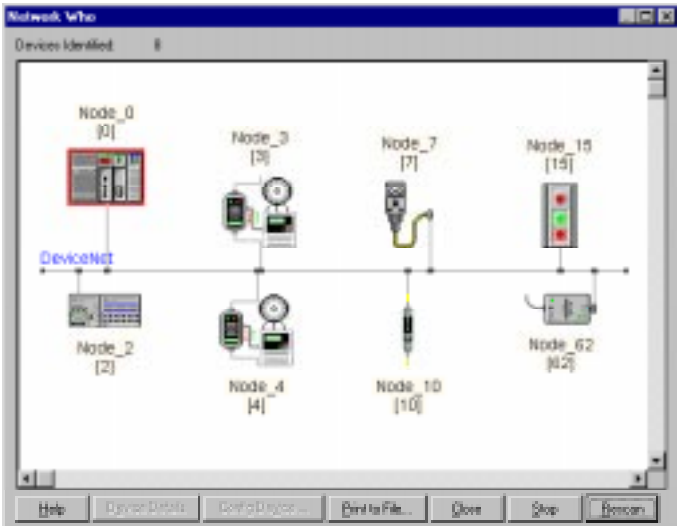
10. Choose 

11. Type **1203-GK5 with 1305 AC Drive** for the description of this device.



12. Choose 

You see this screen.

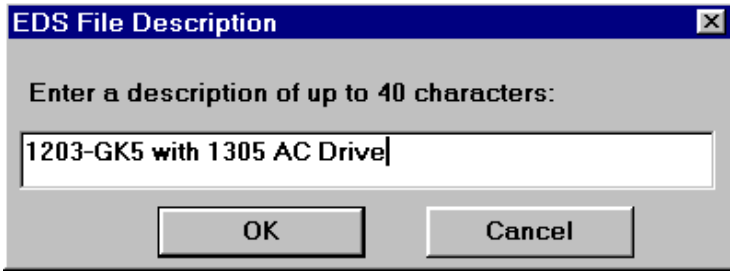


13. Double-click **Node 3.**

14. Choose 

15. Repeat steps 5 through 14 substituting Node 3 for Node 4 (step 9) and entering the following description for Node 3 (step 13).

16. Enter the description for Node 3 as shown below.



17. Choose OK

You return to the DeviceNet network screen.

Repeat Network Who. Now double-clicking on Node 3 or Node 4 should reveal the uploaded EDS file parameters.

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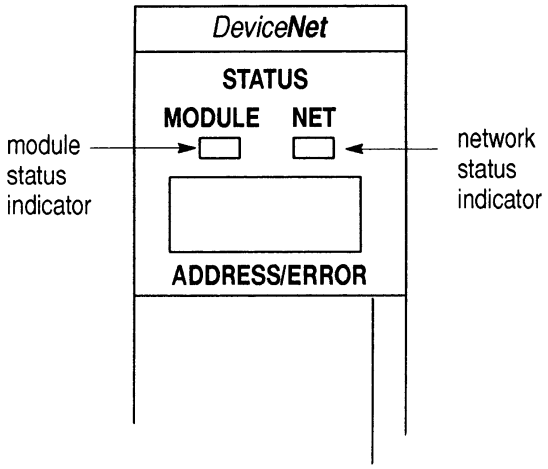
Troubleshooting Your 1747-SDN Scanner Module

The bicolor (green/red) module status indicator (MODULE) displays module status. It indicates whether the module has power and is functioning properly.



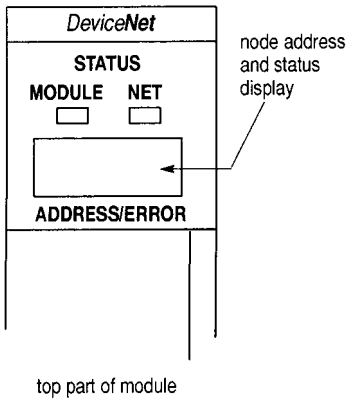
If the indicator is	Then	Take this action
Off	There is no power applied to the module.	Apply power.
Green	The module is operating in normal condition.	Do nothing.
Flashing green	The module is not configured.	Configure the module.
Flashing red	There is an invalid configuration.	Check configuration setup.
Red	The module has an unrecoverable fault.	Replace the module.

The DeviceNet channel has a bicolor (green/red) network status indicator (NET). The following table provides troubleshooting information about the DeviceNet channel communication link.

If the indicator is	Then	Which indicates	Take this action
Off	The device has no power or the channel is disabled for communication due to bus off condition, loss of network power, or has been intentionally disabled.	The channel is disabled for DeviceNet communication.	Power-up the module, provide network power to channel, and be sure channel is enabled in both the module configuration table and module command word.
Flashing green	The two-digit numeric display for the channel indicates an error code that provides more information about the condition of the channel.	The channel is enabled but no communication is occurring.	Configure scan list table for channel to add devices.
Solid green	There is normal operation.	All slave devices in the scan list table are communicating normally with the module.	Do nothing.

If the indicator is	Then	Which indicates	Take this action
Solid red	The communications channel has failed. The two-digit numeric display for the channel indicates an error code that provides more information about the condition of the channel.	The module may be defective.	Reset module. If failures continue, replace module.
Flashing red	The two-digit numeric display for the channel indicates an error code that provides more information about the condition of the channel.	At least one of the slave devices in the module's scan list table has failed to communicate with the module.	Examine the failed device and the scan list table for accuracy.

Your 1747-SDN Scanner module uses numeric displays to indicate diagnostic information about the status of your module. The display flashes at 1 second intervals. The following table summarizes the meanings of the numeric codes.



If the numeric code is	Which indicates	Take this action
0-63	Normal operation. The numeric display matches the scanner's node address on the DeviceNet network.	Do nothing.
70	Module failed the Duplicate Node Address check.	Change the module channel address to another available one. The node address you selected is already in use on that channel.
71	Illegal data in scan list table (node number alternately flashes).	Reconfigure the scan list table and remove any illegal data.
72	Slave device stopped communicating (node number alternately flashes).	Inspect the field devices and verify the connections.
73	Device ID does not match scan list table entry (node number alternately flashes).	Enter a matching scan list device ID.
74	Data overrun on port detected.	Modify your configuration and check for invalid data.
75	No network traffic has been detected.	Verify your connections.

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If the numeric code is	Which indicates	Take this action
76	No direct network traffic for the module detected.	None. The module hears other network communication.
77	Data size returned does not match scan lists entry (node number alternately flashes).	Reconfigure your module and change the addressing.
78	Slave device in scan list table does not exist (node number alternately flashes).	Add the device to the network or delete the scan list entry for that device.
79	Module has failed to transmit a message.	Make sure that your module is connected to a valid network.
80	Module is in IDLE mode.	Put SLC in RUN mode and put scanner in RUN mode through module status register.
81	Module is in FAULT mode.	Check module command register to 1747-SDN that FAULT bit (bit 1) is not set.
82	Error detected in sequence of fragmented I/O messages from device (node number alternately flashes).	Check scan list table entry for slave device to make sure that input and output data lengths are correct. Check slave device configuration.
83	Slave device is returning error responses when module attempts to communicate with it (node number alternately flashes).	Check accuracy of scan list table entry. Check slave device configuration.
84	Module is initializing the DeviceNet channel.	None. This code clears itself once the module attempts to initialize all slave devices on the channel.
85	Data size returned is bigger than expected.	Check accuracy of scan list table entry. Check slave device configuration.
86	Idle data being produced in RUN mode. The SDN has received data from a slave in the past but now is getting 0 bytes from the slave.	Check scanport connection between 1203-GK5 and the attached device. Check to make sure attached device is powered up.
88	This is not an error. At power-up and reset, the module displays all 14 segments of the node address and status display indicators.	Do nothing.
90	You have disabled the communication port.	Reconfigure your module.
91	Bus-off condition detected on comm port. Module is detecting communication errors.	Check DeviceNet connections and physical media integrity. Check system for failed slave devices or other possible sources of network interference.
92	No network power detected on the comm port.	Provide network power. Make sure that the module's drop line is providing network power to the module comm port.
95	Application FLASH update in progress.	None. Do no disconnect the module while application FLASH is in progress. You will lose any existing data in the module's memory.
97	Module halted by user command.	Check module command register to 1747-SDN that HALT bit (bit 6) is not set.
98	Unrecoverable firmware failure.	Service or replace your module.
99	Unrecoverable hardware failure.	Service or replace your module.

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Allen-Bradley Headquarters, 1201 South Second Street, Milwaukee, WI 53204 USA, Tel: (1) 414 382-2000 Fax: (1) 414 382-4444

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