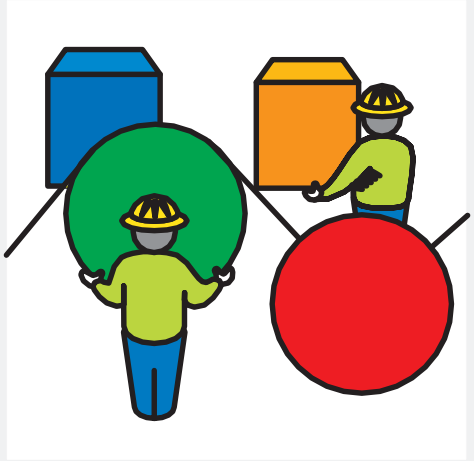
Allen-Bradley

DeviceNet Starter Kit

(Cat. No. 1787-STARTKIT1)

User Manual



Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. “Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls” (Publication SGI-1.1) describes some important differences between solid state equipment and hard–wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will the Allen-Bradley Company be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, the Allen-Bradley Company cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Allen-Bradley Company with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual we use notes to make you aware of safety considerations.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

Attentions help you:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is especially important for successful application and understanding of the product.

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Before You Begin

What this Chapter Contains

This chapter describes what you must know and do before you begin to use your starter kit. The following table describes what this chapter contains and its location.

What Is DeviceNet?

DeviceNet is a low-end, open network providing connections between simple, primarily discrete industrial devices and controllers without the need for intervening I/O modules or blocks. Simple devices include products such as sensors and actuators.

The intent of this network is to provide an alternate way for control engineers to connect simple devices to their control systems. The DeviceNet network:

- supports devices that are becoming more intelligent
- facilitates increasingly precise troubleshooting to reduce down-time (a communication fault can be traced to a single device rather than to the rack or block level as with an I/O network)
- reduces installation and startup costs and time (compared to traditional I/O wiring, especially when devices are spread over several hundred feet)

What Hardware and Software You Need for Your Starter Kit

The following table lists what materials you need to follow the procedures described in this manual. Notice which products are supplied in the DeviceNet starter kit and which you must provide.

Product	Quantity	Part number
Provided in the Starter Kit 1		
T-port tap (right keyway)	5	1485P-P1N5-MN5R1
mini-male to conductor 1m drop cable	4	1485R-P1M5-C
mini-male to micro female 1m drop cable	4	1485R-P1M5-R5
terminator, female	2	1485A-T1N5
3-receptacle 5-wire terminal block	1	1492-DNTB3
DeviceLink I/O mini-male to mini female	1	1485D-A1M5-R4
limit switch, mini-male	1	802T-APJ1
Series 9000 Diffuse Photoelectric sensor	1	42GNP-9000-QD
800T RediSTATION	1	2705-T3DN1A42A
this user manual	1	DN-6.91
Feedback Disk with DeviceNet survey	1	CSV-683
What You Must Provide		
24 volt, DC power supply (<3amp output)	1	n/a
wires for power supply (18 gauge recommended)	3	n/a
SLC® chassis	1	1746-A4, -A7, -A10, -A13
SLC 5/02®, 5/03®, or 5/04® processor	1	1747-L524, -L532, -L542
SLC DeviceNet scanner[1]	1	1747-SDN
SLC chassis power supply	1	1746-P1, -P2, -P3, -P4
SLC programming software[2]	1	APS or AI5
IBM® compatible PC	1	n/a
Microsoft® Windows™ (3.1 or later), Windows NT™ or Window '95™ software	1	n/a
DeviceNetManager™ software[1]	1	1787-MGR
RS-232 interface module[1]	1	1770-KFD
PC-to-SLC programming connection[3]	1	n/a[3]

[1] This product is included with DeviceNet Starter Kit 2 or 3.
[2] APS software is used in this manual's examples.
[3] Due to the varied possibilities, the components for your PC-to-processor communication link do not appear in the table above or the following illustrations. Your existing PC-to-processor connection is compatible with this document's procedures and configurations.

Important: You can use this starter kit with a PLC® chassis, processor and 1771-SDN scanner module. Differences are based on PLC technology (scanner mapping and PLC programming). These variations are described where applicable in this user manual.

You can use this starter kit with any DeviceNet master. Refer to your user documentation for more information.

What We Assume You Know and Have Done

The descriptions in this user manual assume that you know how to install and use all of the hardware and software that you must provide (listed above). We also assume you have these items installed and ready.

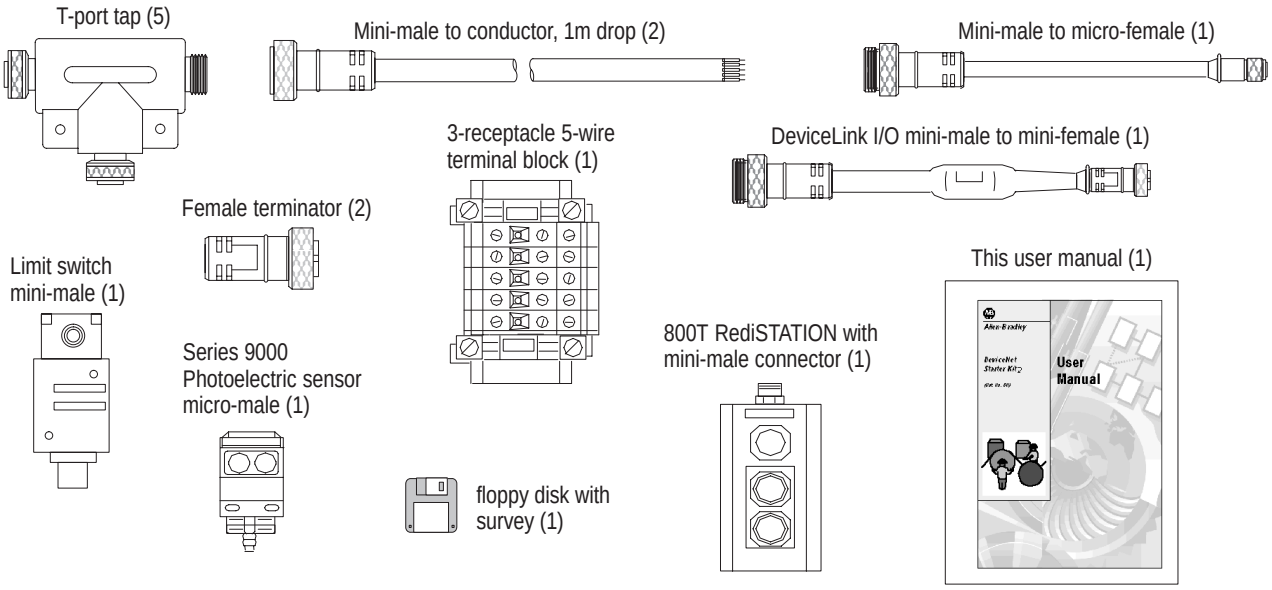
If you do not, read the documentation associated with these items and have them installed and ready to use before you attempt to assemble your starter kit.

Tool You Must Provide

To connect the wiring in this starter kit, you'll need a small, flat-blade screwdriver.

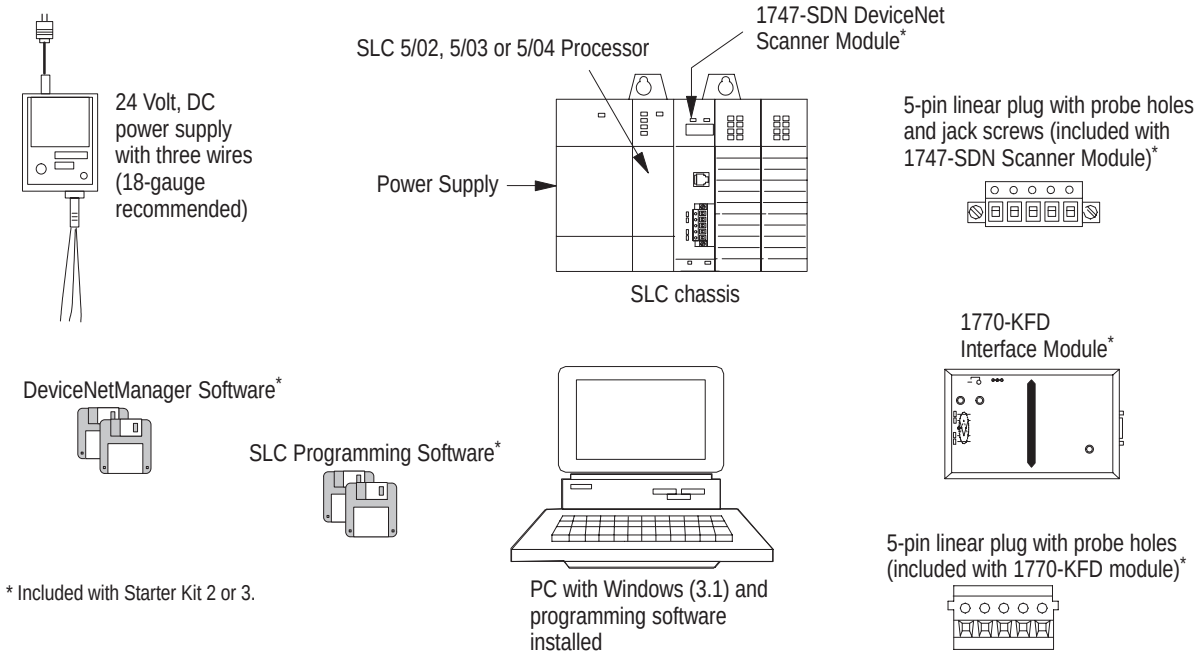
Identify the Starter Kit Components

Unpack your starter kit and use the following illustration to identify all of the components you should have received. Contact your local Allen-Bradley representative if any item is missing.



Identify the Components You Must Provide

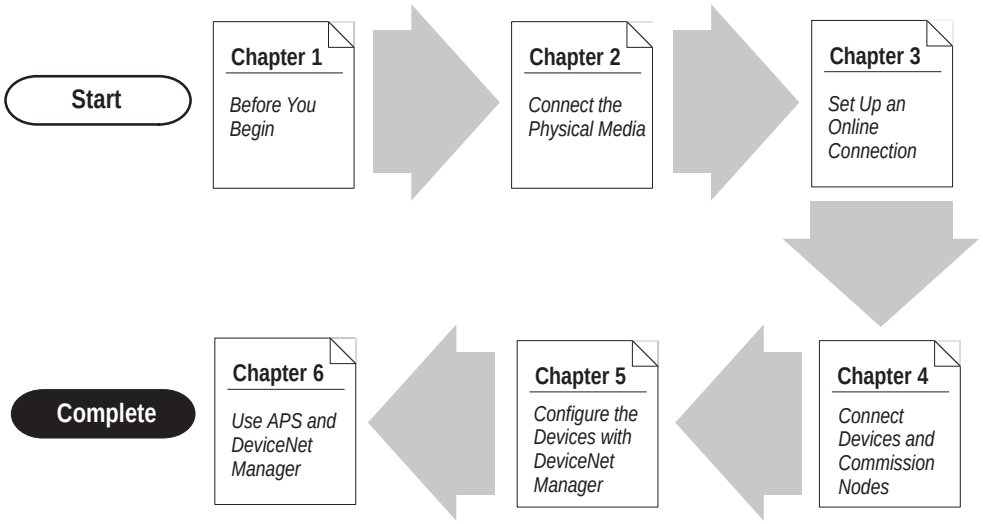
Use the following illustration to identify all of the hardware and software you must provide.



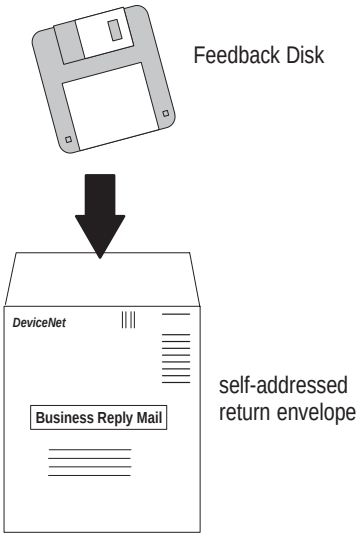
* Included with Starter Kit 2 or 3.

What You Will Be Doing in this Manual

The following chapters describe how to setup up a simple DeviceNet network and perform basic operations:



Complete the Starter Kit Feedback Disk



Your starter kit contains a Feedback Disk with a Windows-based survey. This survey is designed to get your comments on the starter kit, the DeviceNet network and Allen-Bradley products and services. We will use your input for future product and service development.

Please complete the survey by answering all the questions, enclosing the disk in the self-addressed stamped envelope and mailing it. Allen-Bradley guarantees complete confidentiality of all information on the survey disk.

Rely on A-B Quality and DeviceNet Support

We have helped numerous customers around the world achieve their manufacturing goals. For assistance with A-B DeviceNet products, call your local distributor or sales office.

Our support network offers complete system integration and support services including application engineering, installation supervision, system startup, training, field service, and ongoing product support.

We're global because we're local to you.

You can access an A-B sales representative, appointed distributor, or authorized system integrator almost anywhere around the world. Perhaps that's why A-B is the preferred supplier of automation controls in the industry.

Related Publications

Title	Publication Number
DeviceNet Product Overview	DN-2.5
DeviceNet Sealed Physical Media Bulletin 1485 Product Profile	DN-1.8
DeviceNet Media System Vendor List	DN-2.1
PHOTOSWITCH™ Series 9000 Photoelectric Sensors for the DeviceNet Network Product Profile	DN-1.11
DeviceNet RediSTATION Product Profile	DN-1.13
DeviceNet Communication Link Overview Product Profile	DN-1.18
DeviceLink I/O Product Profile	DN-1.15
DeviceNet Scanner for 1771 Chassis Product Profile	DN-1.7
Open DeviceNet Vendor Association Catalog	CSV-654
Open Device Network Offers Improved Communications and Flexibility Product Profile	DN-1.9

Summary and What's Next

In this chapter, you learned:

- about the DeviceNet network
- what you need to use this starter kit
- what we assume you know and have done
- to identify the starter kit components
- to identify the components you must provide
- what you will be doing in this manual
- how to complete the starter kit survey diskette
- about Allen-Bradley quality and DeviceNet support

Move on to Chapter 2 to learn how to connect the physical media.

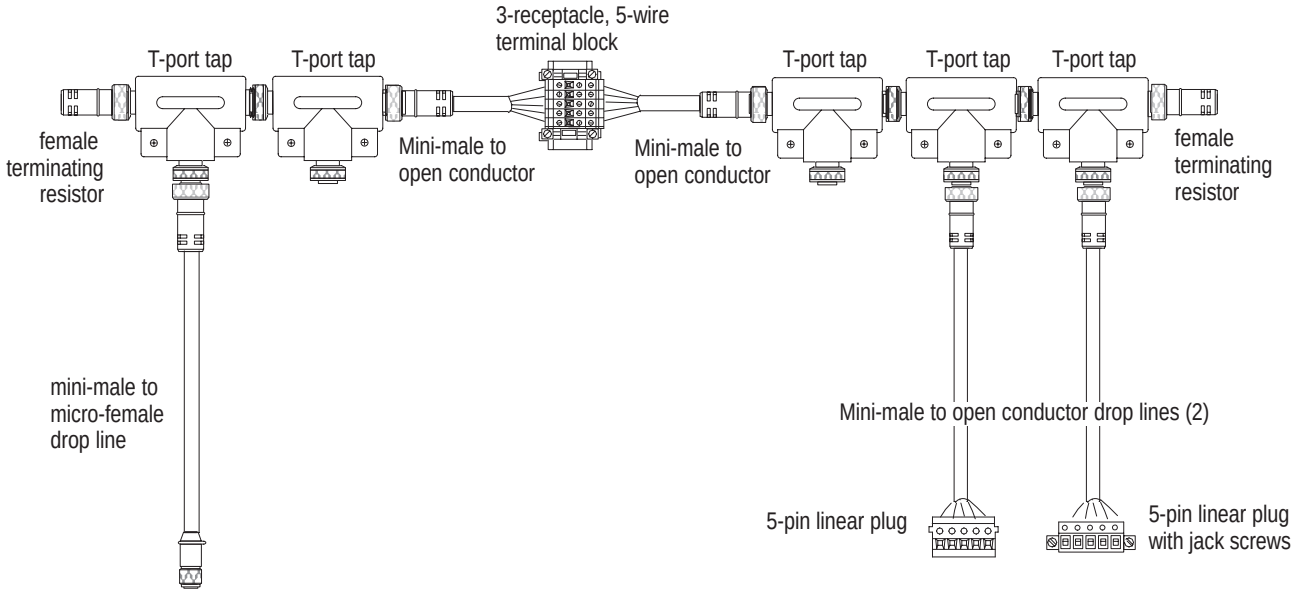
Connect the Physical Media

What this Chapter Contains

The following table describes what this chapter contains and its location.

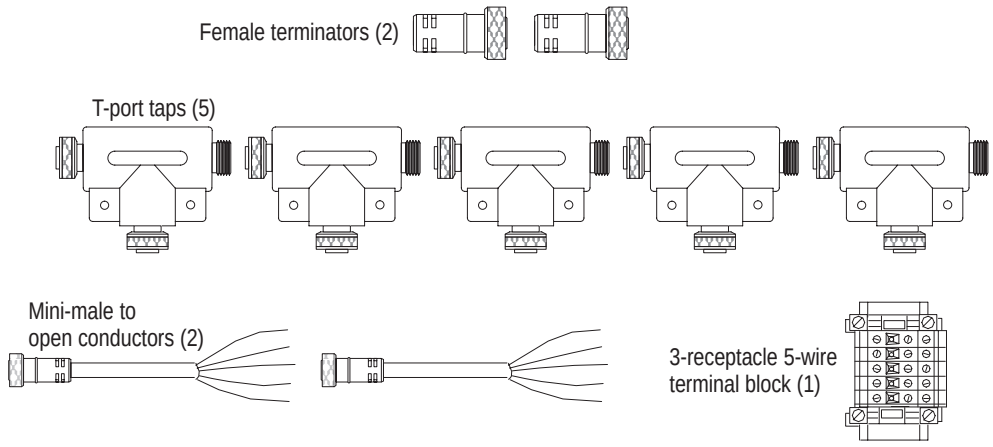
Illustrated Objective

Use the illustration below to see how your DeviceNet network will look after following this chapter's procedures.



Connect the Trunk Line

Gather the following components from your starter kit:

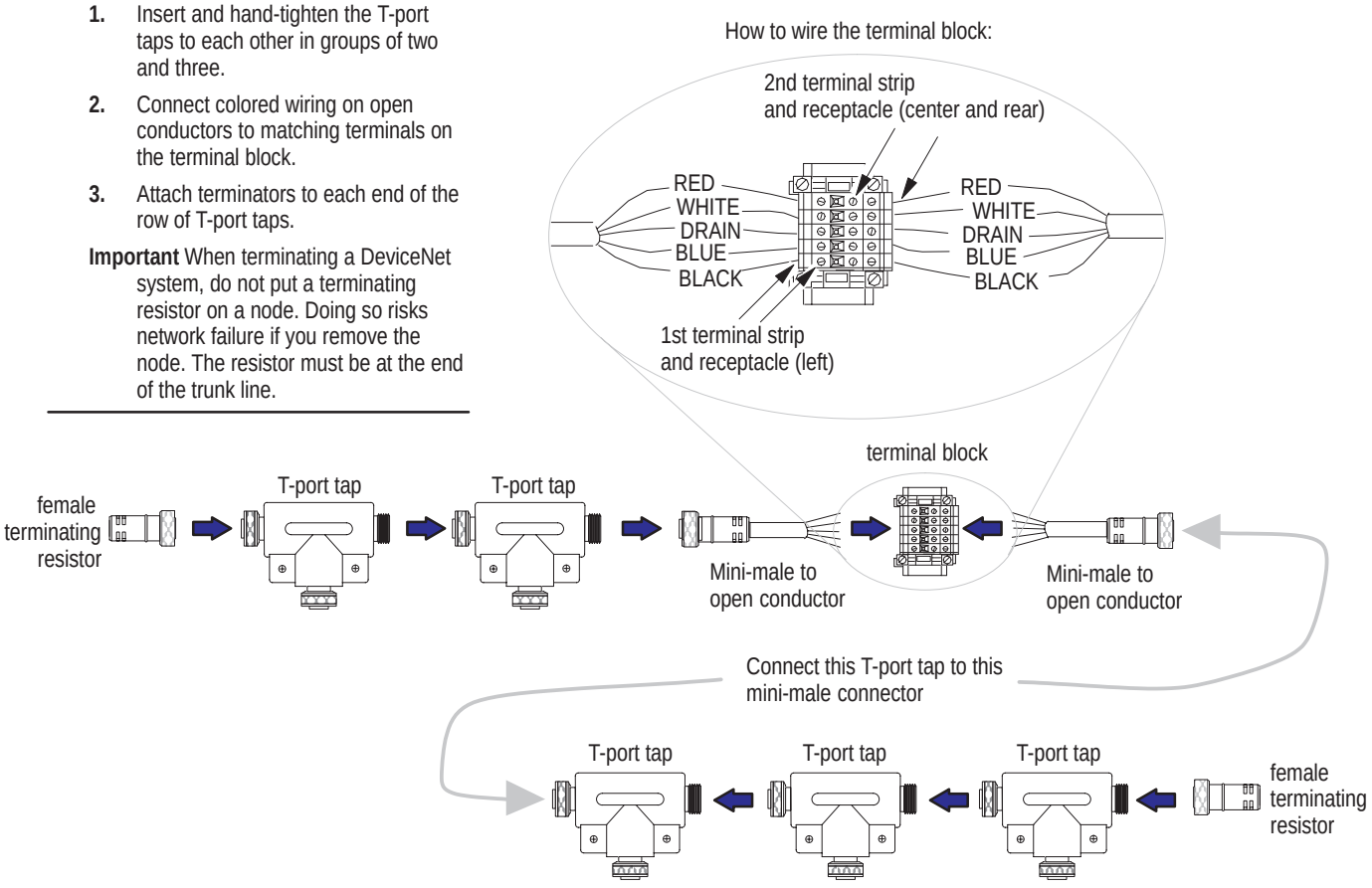


Use the following illustration as a guide to connect the trunk line:

Basic steps

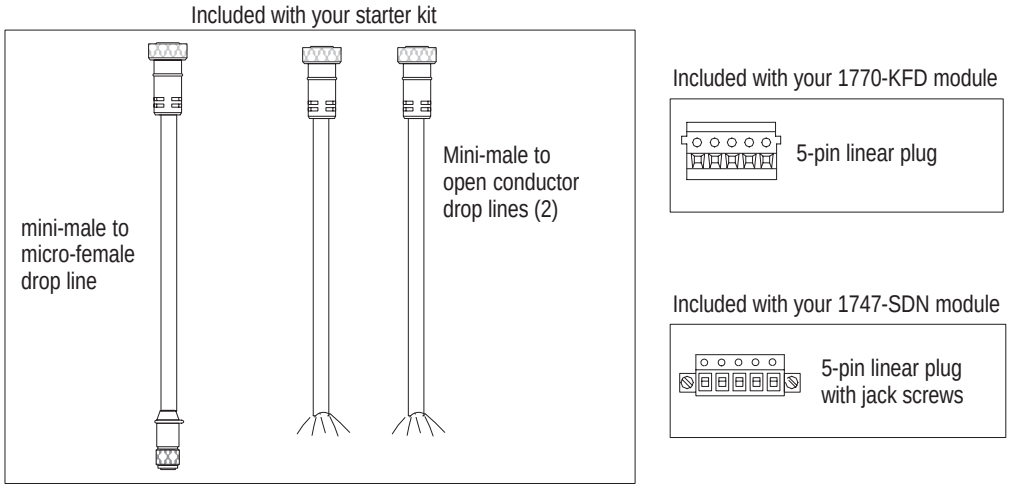
1. Insert and hand-tighten the T-port taps to each other in groups of two and three.
2. Connect colored wiring on open conductors to matching terminals on the terminal block.
3. Attach terminators to each end of the row of T-port taps.

Important When terminating a DeviceNet system, do not put a terminating resistor on a node. Doing so risks network failure if you remove the node. The resistor must be at the end of the trunk line.

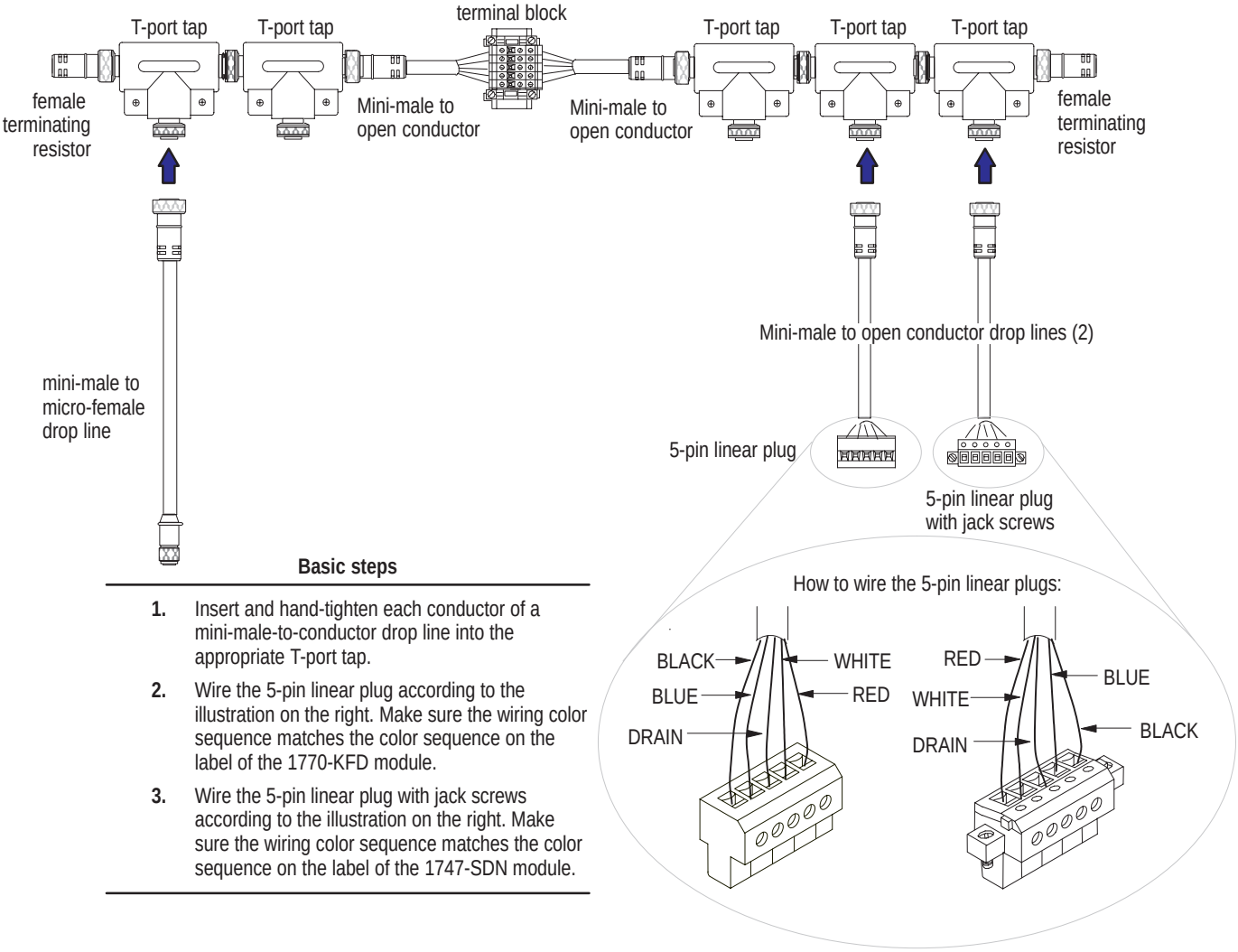


Connect the Drop Lines

To connect the drop lines, gather the following components:



Use the following illustration as a guide to attach the drop lines to the trunk line:



Basic steps

1. Insert and hand-tighten each conductor of a mini-male-to-conductor drop line into the appropriate T-port tap.
2. Wire the 5-pin linear plug according to the illustration on the right. Make sure the wiring color sequence matches the color sequence on the label of the 1770-KFD module.
3. Wire the 5-pin linear plug with jack screws according to the illustration on the right. Make sure the wiring color sequence matches the color sequence on the label of the 1747-SDN module.

Summary and What's Next

In this chapter, you learned how to:

- understand what the network will look like
- connect the trunk line components
- connect the drop lines

Move on to Chapter 3 to learn how to set up an online connection.

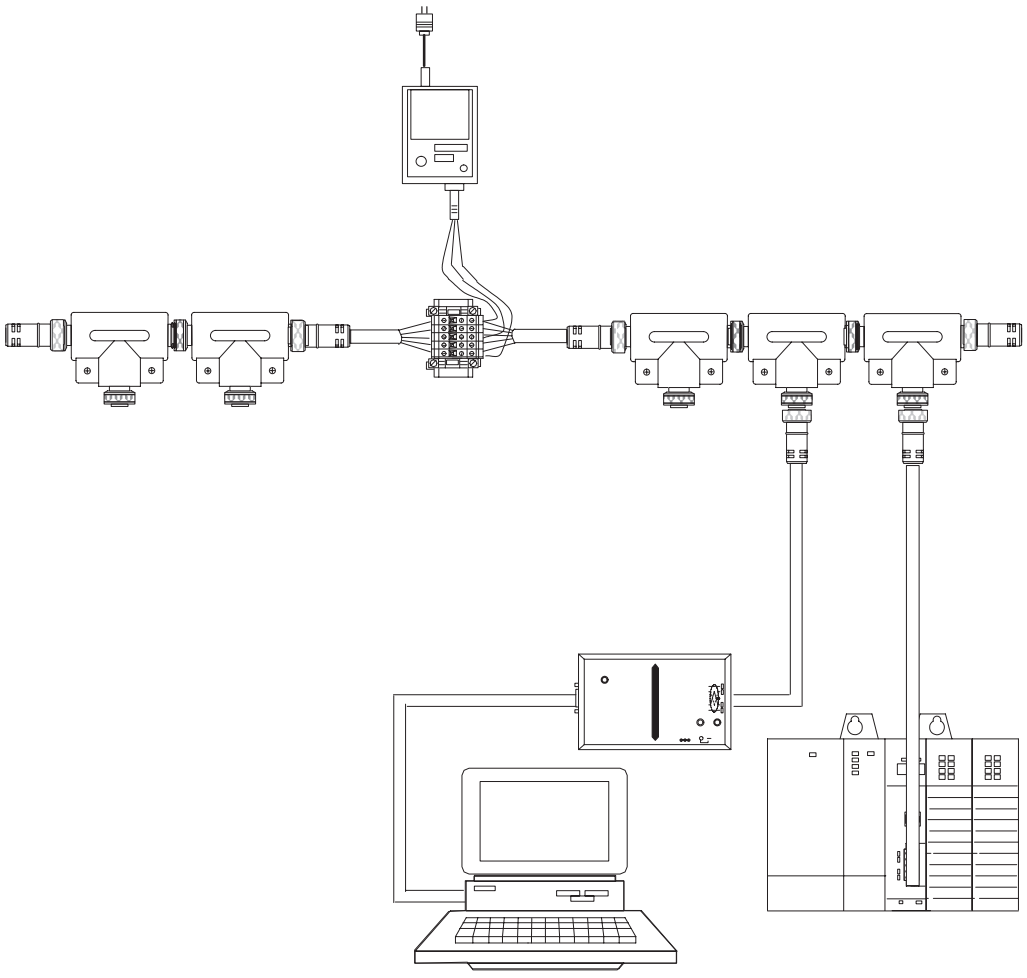
Set Up an Online Connection

What this Chapter Contains

The following table describes what this chapter contains and its location.

Illustrated Objective

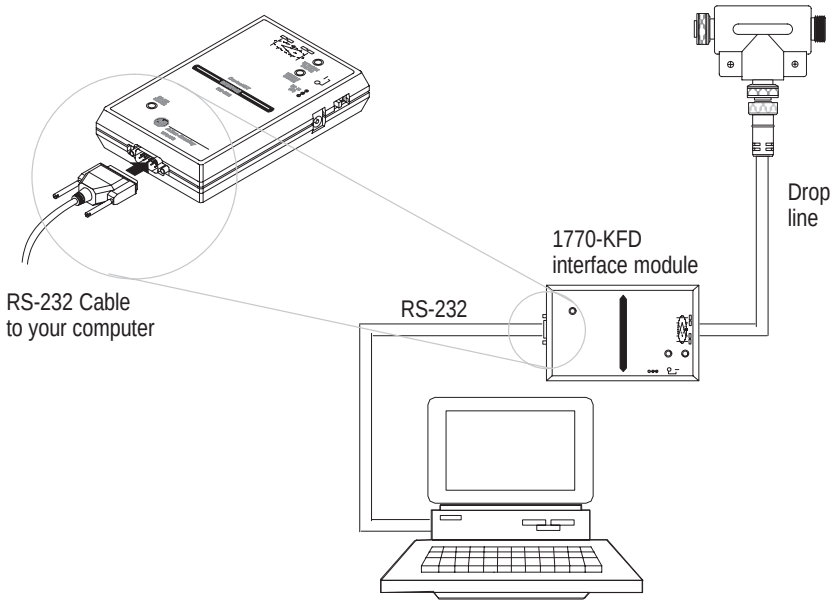
Use the illustration below to see how your DeviceNet network will look after following this chapter's procedures.



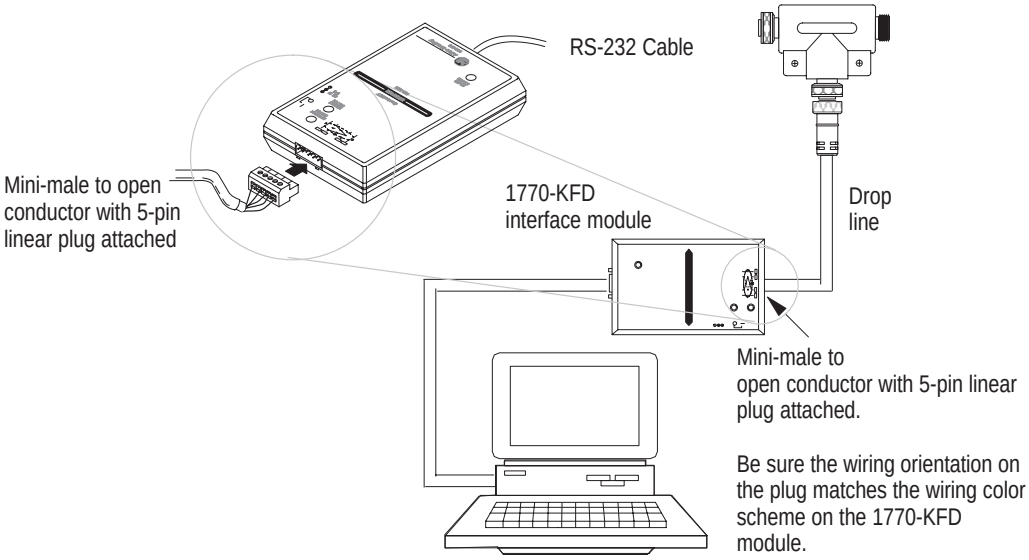
Connect the 1770-KFD and Personal Computer

To connect the 1770-KFD interface module:

1. Use the RS-232 cable to connect the 1770-KFD module to your computer's serial port.



2. Use one of the 5-pin linear plugs (attached to the mini-male to open conductor) to connect the 1770-KFD module to the trunk line.



Connect the 1747-SDN Scanner Module

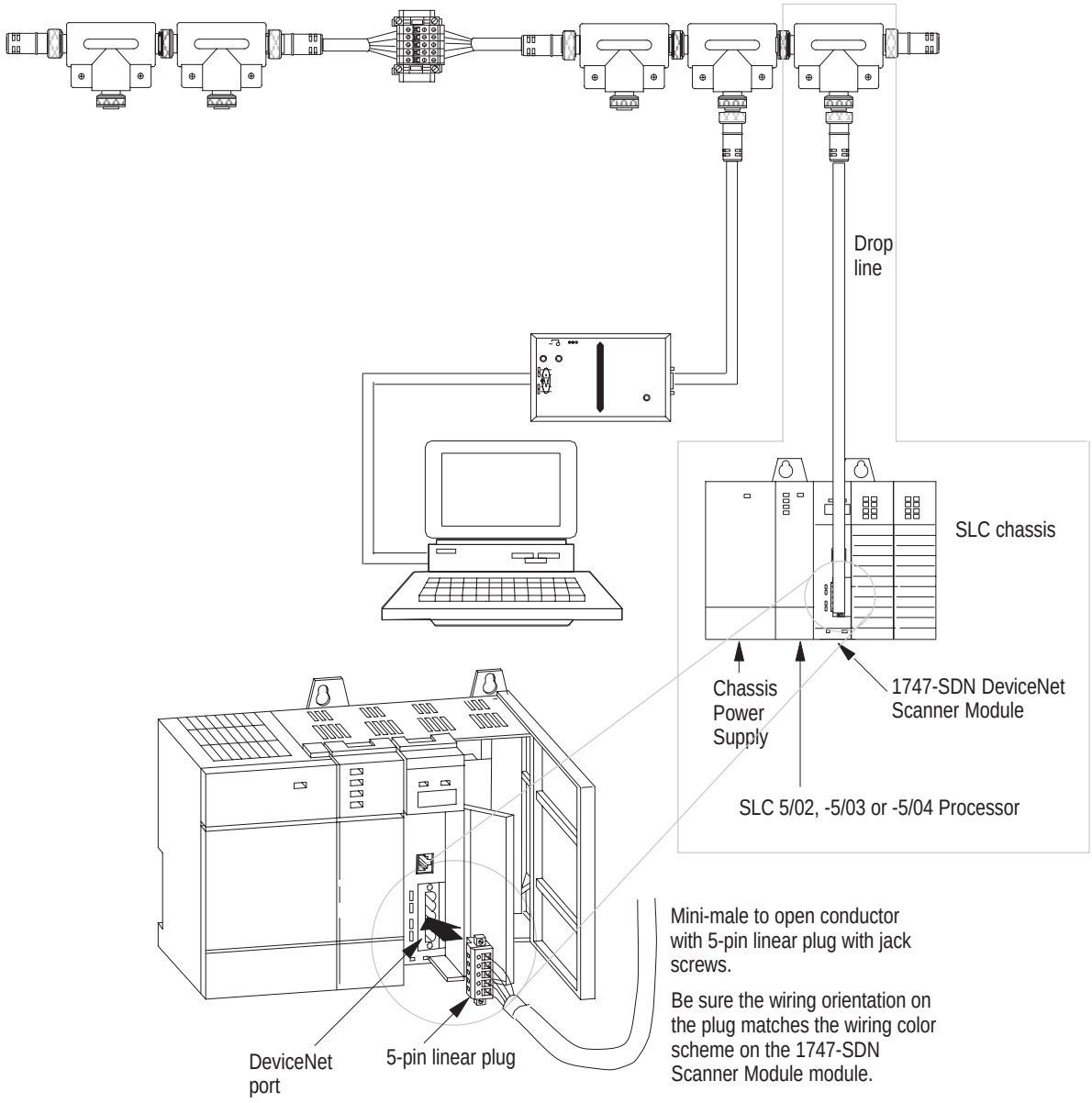
For installation information on the 1771-SDN scanner module, refer to the *Installation Instructions,* publication 1771-5.14.

To connect the scanner module:

1. Be sure that the SLC chassis power is off.

ATTENTION: Do not wire the 1747-SDN Scanner Module with the network power supply on. Wiring the module with the network power supply on may short your network or disrupt communication.

2. Connect the 1747-SDN Scanner Module to the 5-pin linear plug (attached to the mini-male open conductor) as shown in the area of detail below:

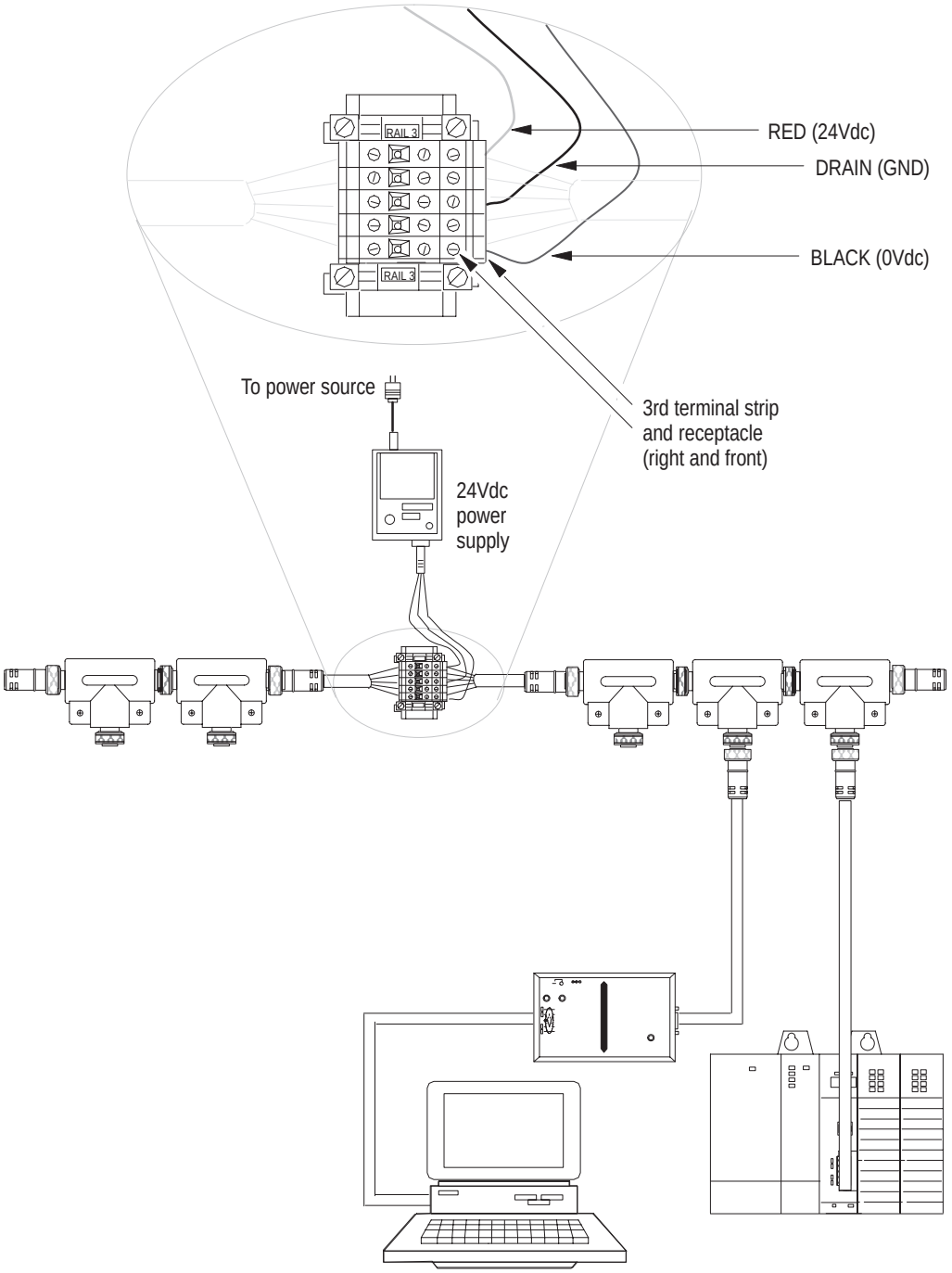


3. Tighten the jack screws on the 5-pin linear plug.

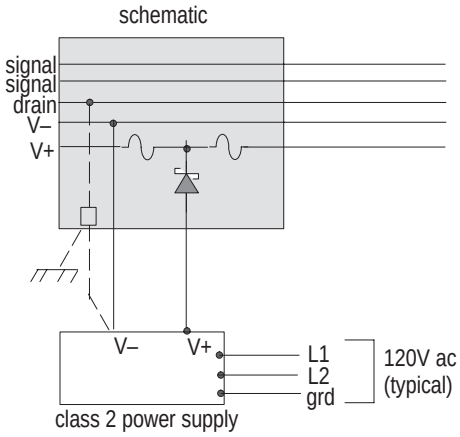
Connect the Power Supply

Connect the 24Vdc power supply to the terminal block as shown in the area of detail below:

ATTENTION: The cabling in the DeviceNet starter kit is rated at 3 amps. Be sure your power supply output current does not exceed 3 amps.



Ground the Network



You must ground your DeviceNet network at only one location.

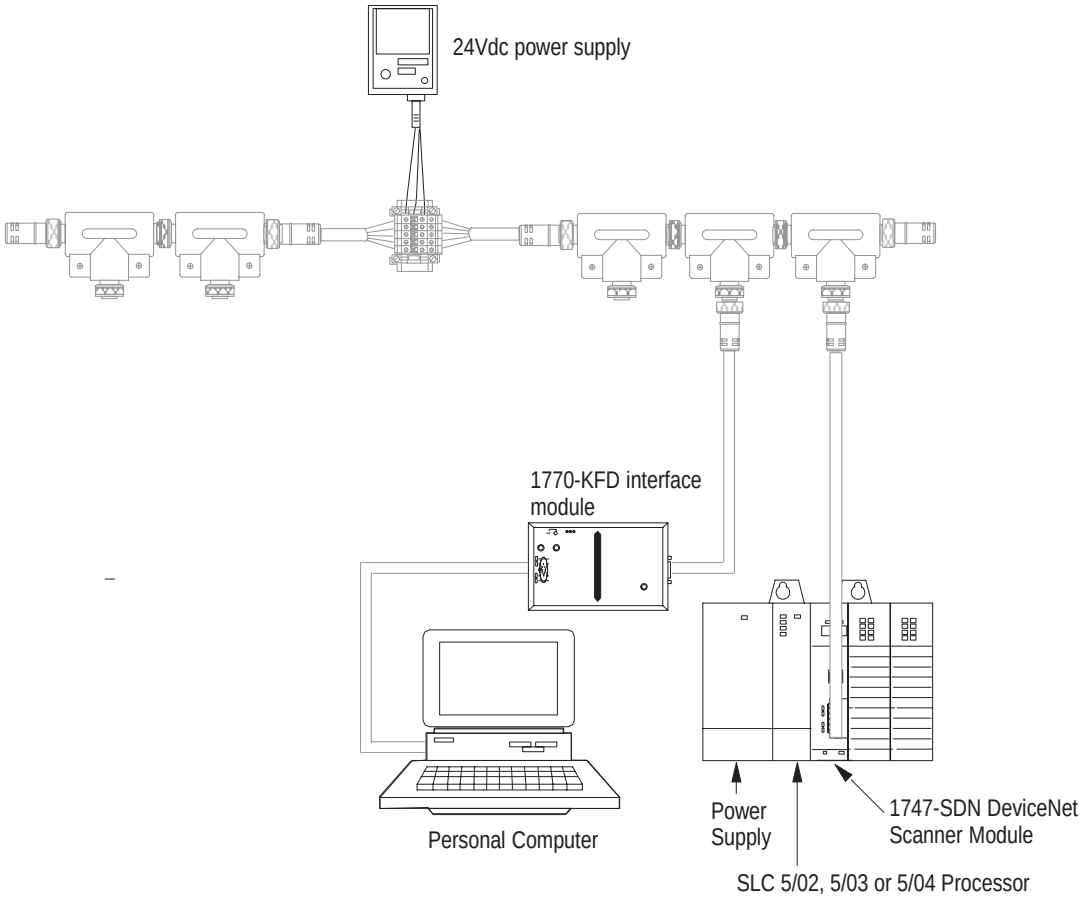
To ground the network:

- Connect the network shield and drain wire to an earth or building ground using a 0.25mm (1in) copper braid or a #8 AWG wire up to 3m (10ft) maximum in length
- Use the same ground for the V– conductor of the cable system and the dc ground of the power supply.

Apply System Power

Apply power to the devices you just installed in your DeviceNet system:

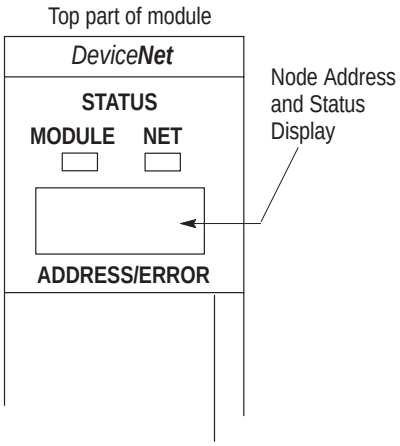
- 24V dc power supply
- 1770-KFD interface module
- personal computer
- SLC chassis with power supply and scanner module installed



Check Scanner Module Diagnostics

Observe the diagnostics on the scanner module:

- the node address and status display should be alternately flashing between 00 and 75
- the module status indicator should illuminate solid green
- the network status should be flashing green

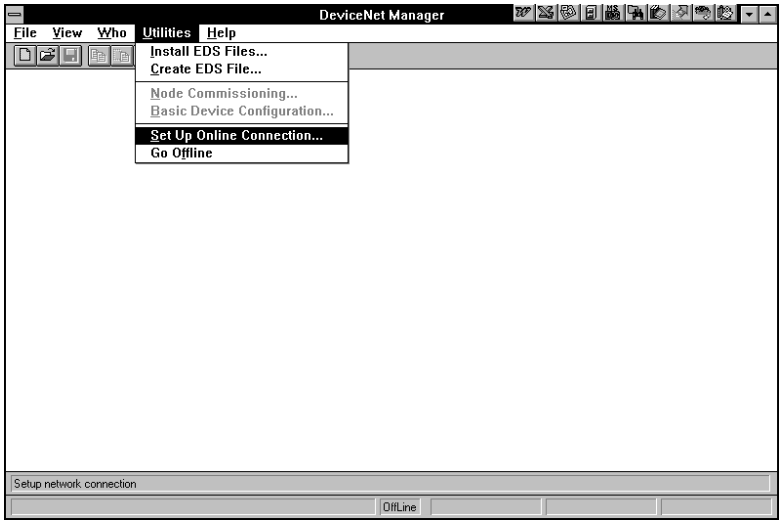


Set Up an On-line Connection

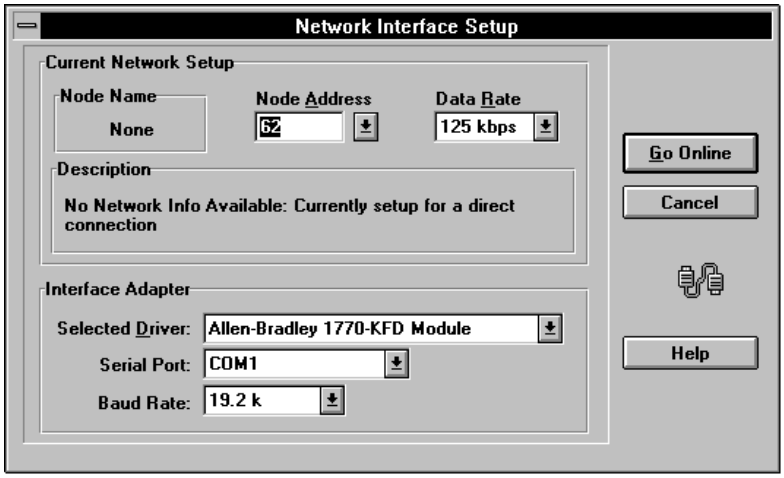
For installation information on DeviceNetManager Software, refer to the *DeviceNetManager User Manual*, publication 1787-6.5.3.

Follow these steps to go on line:

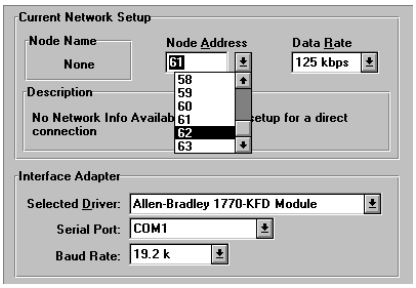
1. Start DeviceNetManager software.
2. From the *Utilities* menu, choose **Set Up Online Connection**.



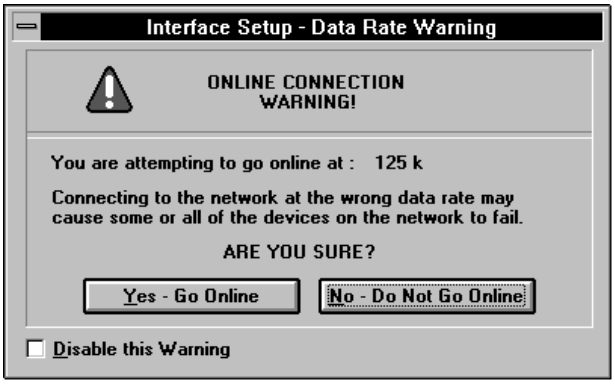
You see this screen:



The node address for the 1770-KFD module should be 62.

Is the Node Address for your 1770-KFD 62?	Choose
Yes	**Go Online**
No	the new address by scrolling to 62 in the **Node Address** dialog box:  and then: **Go Online**

You see this screen:



3. Choose 

You see this status bar at the bottom of the **Program Manager** screen:

The status bar indicates you are online.

For troubleshooting information on DeviceNetManager Software, refer to the *DeviceNetManager User Manual*, publication 1787-6.5.3.

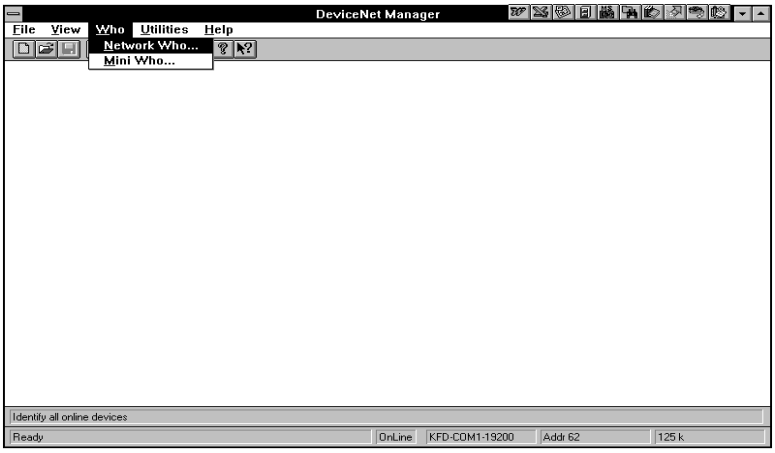
If you see this screen:

check your network connections and repeat the **Set Up Online Connection** procedure.

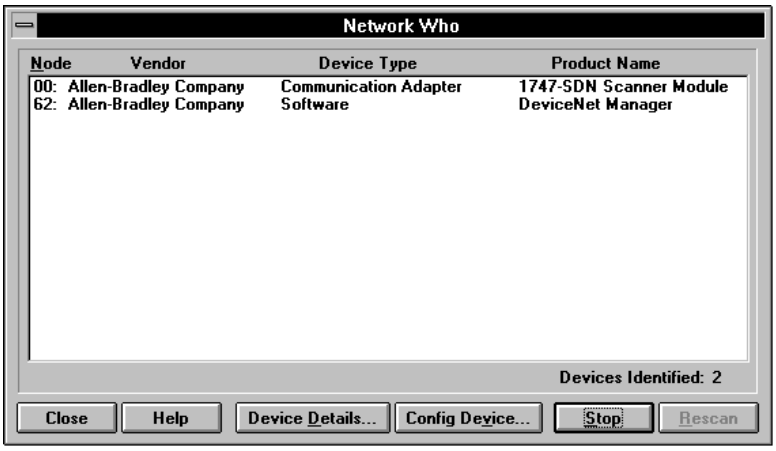
Perform a Network Who

Perform a **Network Who** to verify that the 1747-SDN Scanner Module and DeviceNetManager software are on the network.

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



You see this screen:



2. After the 1747-SDN Scanner Module and DeviceNetManager software devices appear on the network, click on

If one or both of the devices do not appear, check their connections and repeat the **Network Who** procedure.

Summary and What's Next

In this chapter, you learned how to:

- connect the 1770-KFD and your personal computer
- connect the 1747-SDN scanner module
- connect the power supply
- ground the network
- apply system power
- set up an on-line connection
- perform a **Network Who**
- chapter summary and what's next

Move on to Chapter 4 to learn how to connect the devices.

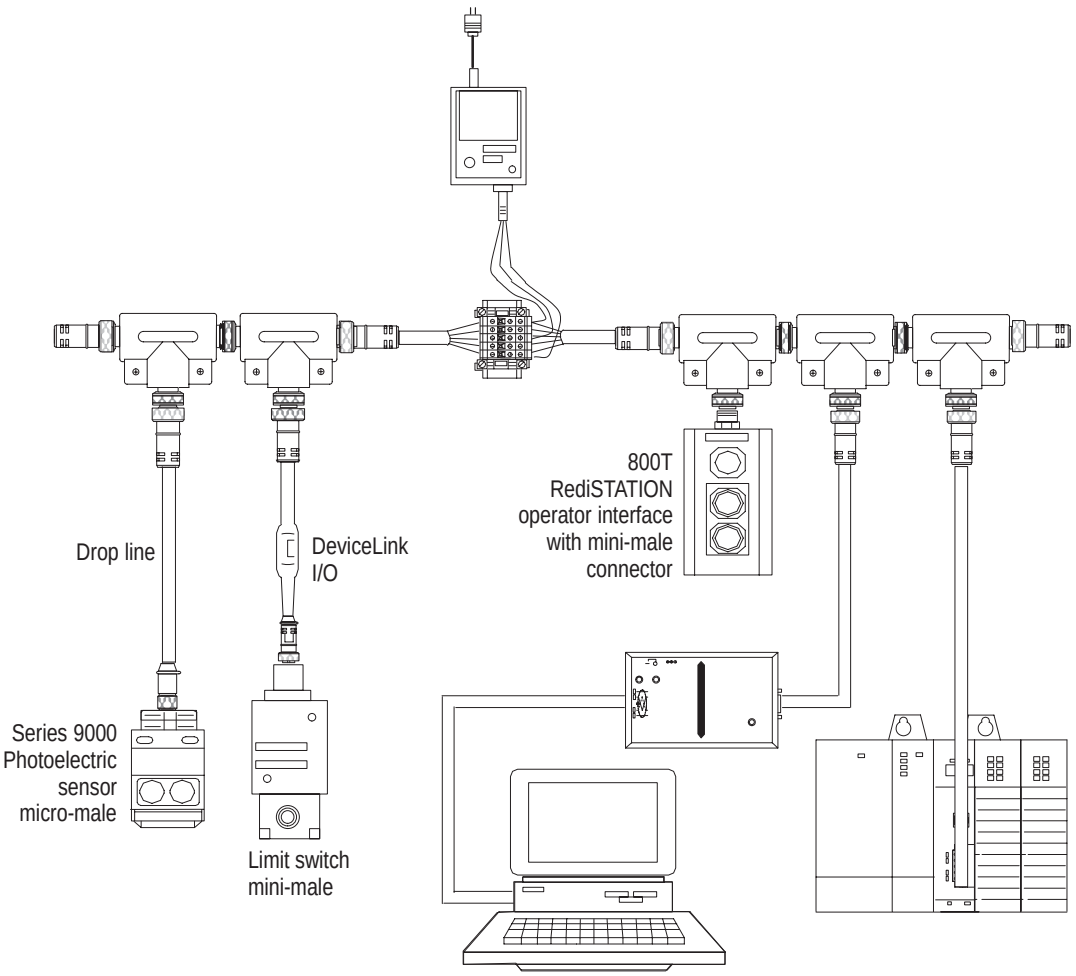
Connect the Devices and Perform Node Commissioning

What this Chapter Contains

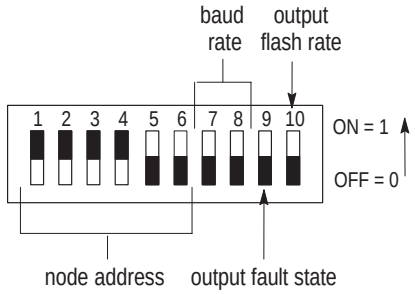
The following table describes what this chapter contains and its location.

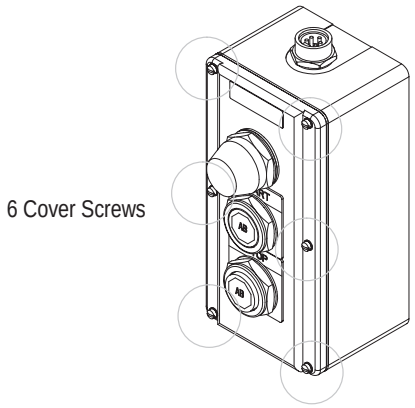
Illustrated Objective

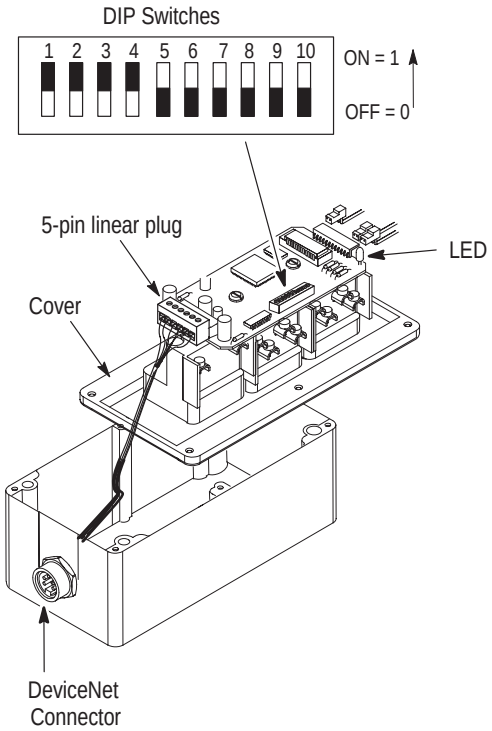
Use the illustration below to see how your DeviceNet network will look after following this chapter's procedures.



Configure the 800T RediSTATION Operator Interface







You must configure the RediSTATION operator interface's DIP switches before it can go online. This configuration is its commissioning. The RediSTATION operator interface is not commissioned through the software. Switch-configured values include:

- node address
- baud rate
- output fault-state
- output flash-rate

To configure your RediSTATION operator interface:

1. Remove the RediSTATION operator interface's enclosure cover:
   - **A.** Using a slotted screwdriver, remove the six cover screws.
   - **B.** Carefully remove the cover so as not to disconnect any wires.
   - **C.** To easily access the DIP switches, disconnect the 5-pin linear plug from the circuit board.
2. Set the DIP switches to match the illustration below.

ATTENTION: Do not use a pencil to set the RediSTATION operator interface's DIP switches. Graphite from the pencil is conductive and may damage the switch.

In this manual's example, these dip switch settings indicate that:

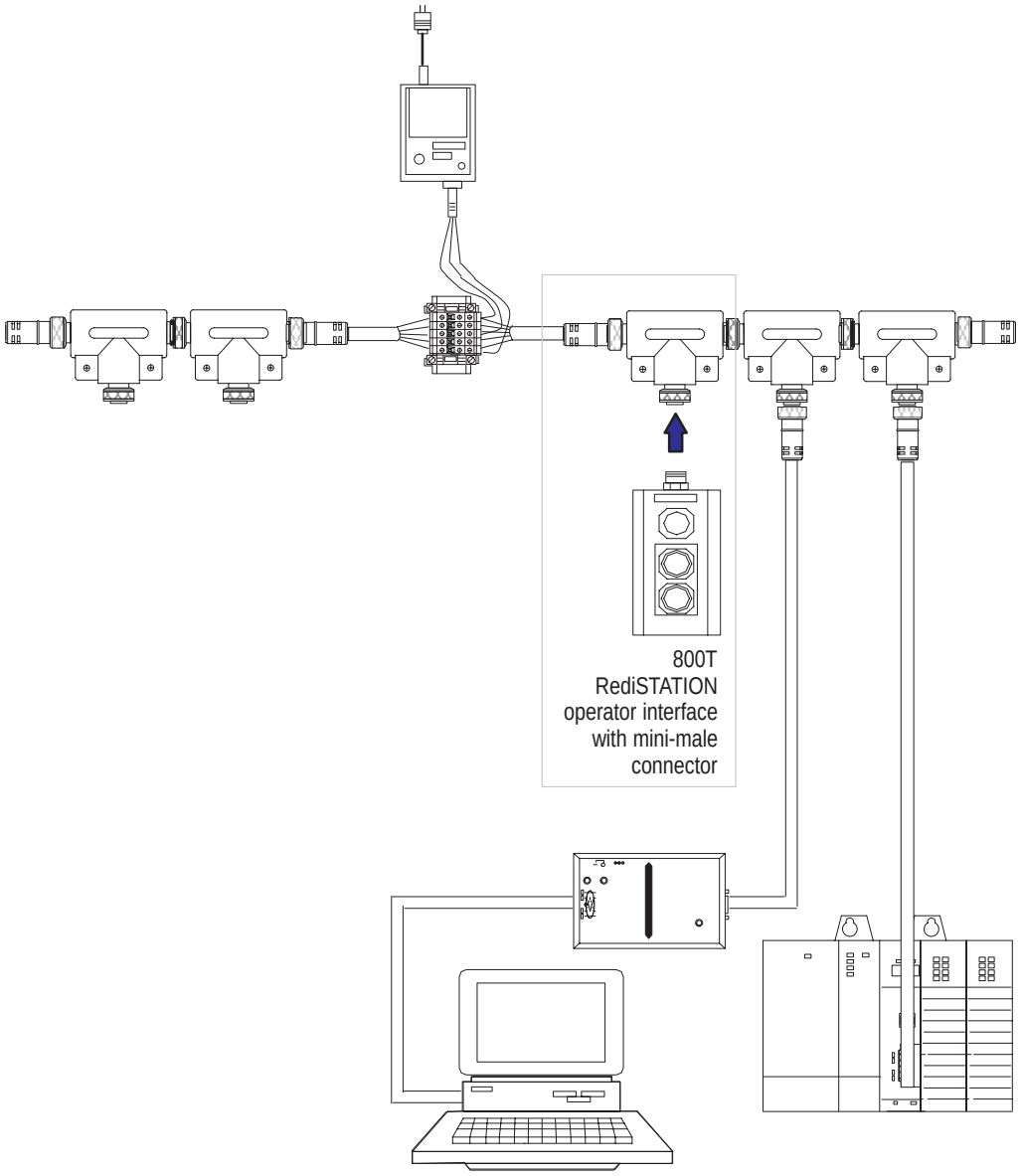
- the node address is **15**
- the baud rate is **125 Kb**
- the output fault-state is **off**
- the output flash rate is **1 hz** (0.5 seconds on and 0.5 seconds off)

3. Re-attach the 5-pin linear plug to the circuit board.
4. Use the six cover screws to re-attach the enclosure to the station's cover.

For more detailed information about setting DIP switches, refer to the RediSTATION Operator Interface User Manual.

Connect the 800T RediSTATION Operator Interface

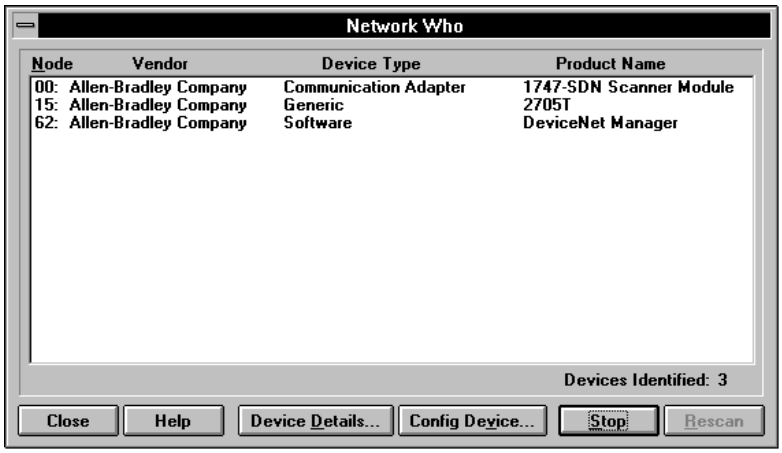
Connect the 800T RediSTATION operator interface to the mini-female end of the T-port connector as shown in the area of detail below:



Check the Node Address of the RediSTATION Operator Interface

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

   You see this screen:



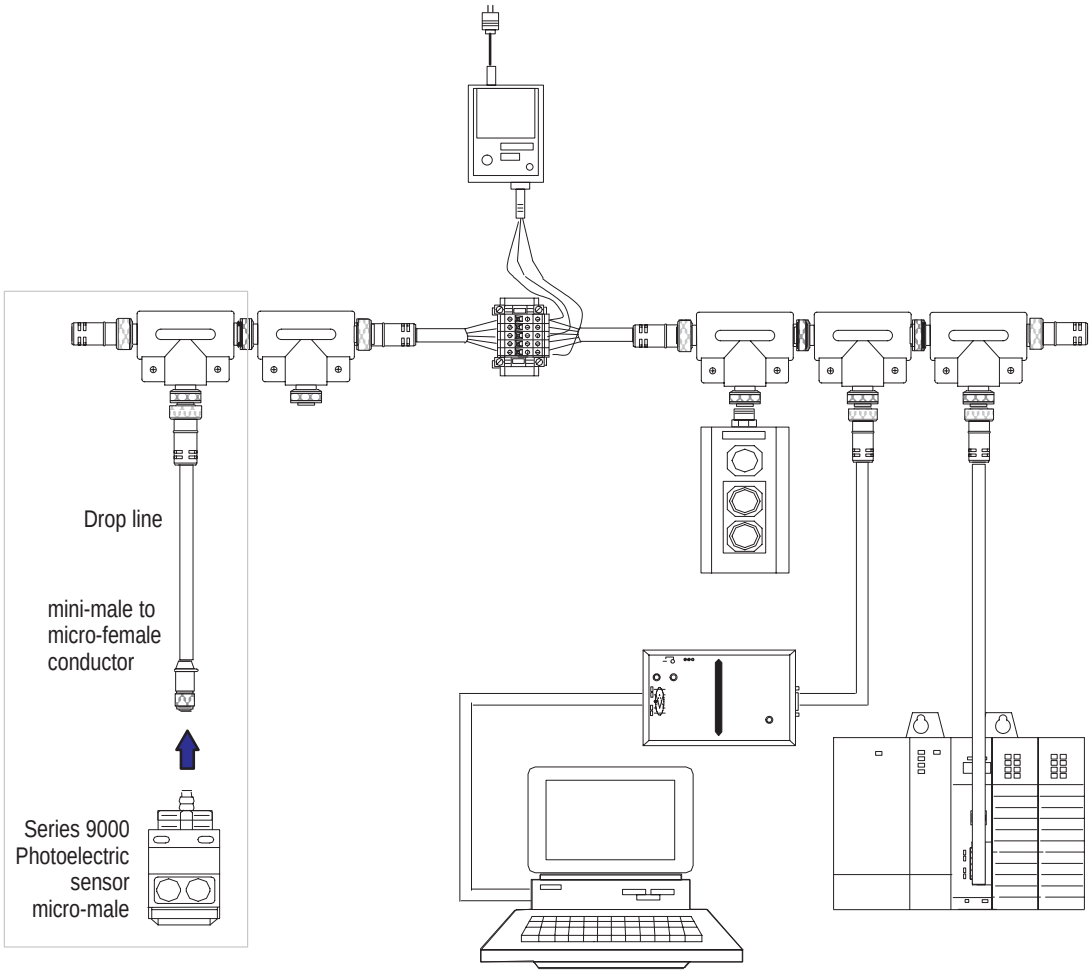
2. After all three devices appear, click on 

   The node address for the RediSTATION operator interface is **15**. You configured this node address on page 4–2.

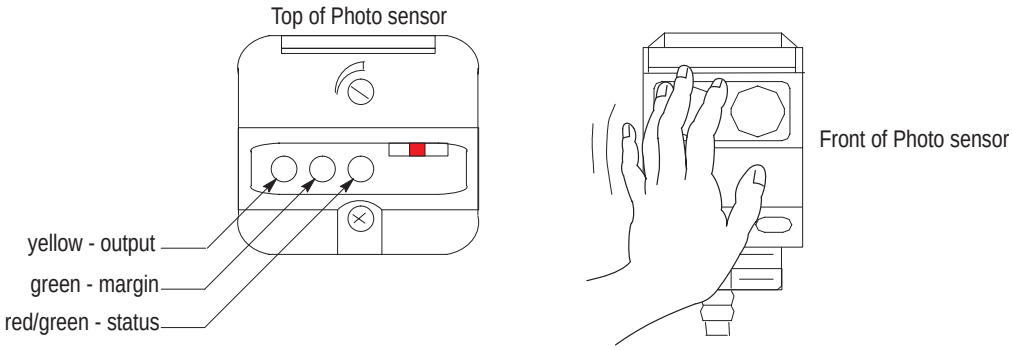
3. Click on 

Connect the Series 9000 Photoelectric Sensor

Connect the Series 9000 Photoelectric Sensor to the micro-female end of drop line as shown in the area of detail below:



After you connect the photoelectric sensor to the network, look for the illuminated and flashing indicators that indicate the sensor is functioning.

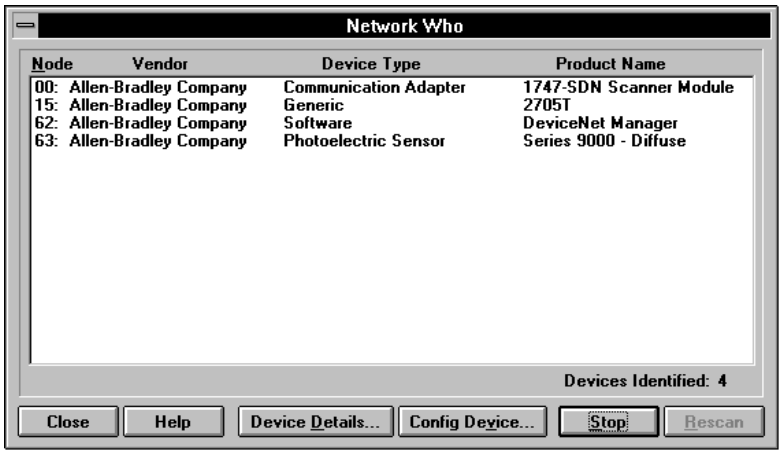


Pass your hand in front of the sensor's eye to block it. Observe how the indicators change as you pass your hand back and forth.

Check the Node Address of the Photoelectric Sensor

1. If you have not already done so, refer to Chapter 3 to set up an online connection.
2. From the *Who* menu, select **Network Who**.

   You see this screen:



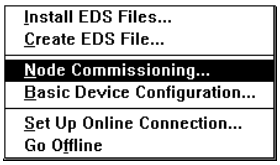
3. After all four devices appear, click on 

   The node address for the photoelectric sensor should be 63. The following steps show you how to use DeviceNetManager to change the node address to **07.**

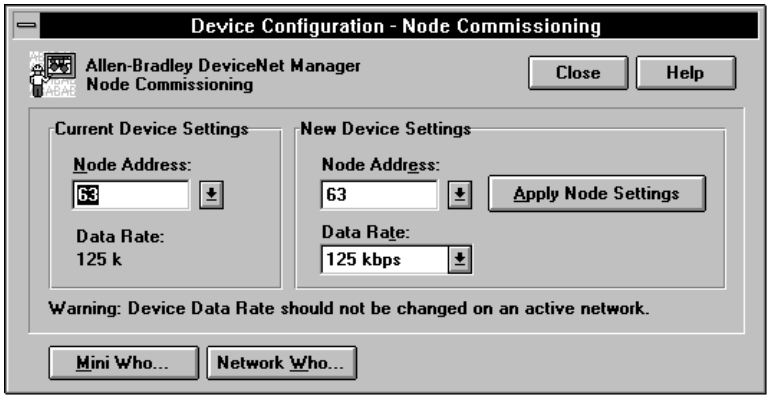
4. Click on 

Perform Node Commissioning

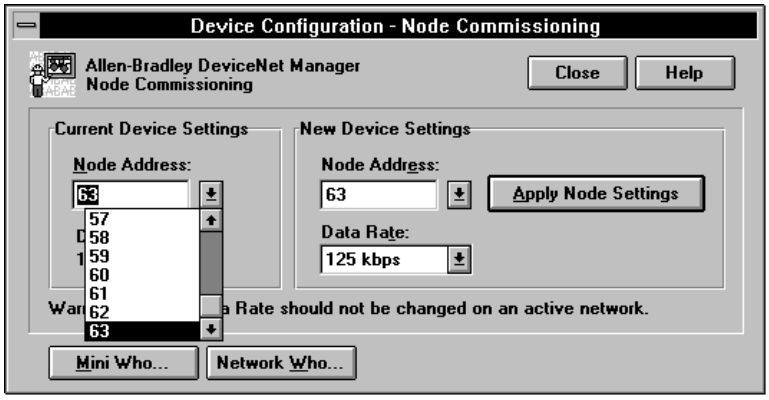
Commission the node to change the node address.

1. From the *Utilities* menu, select 

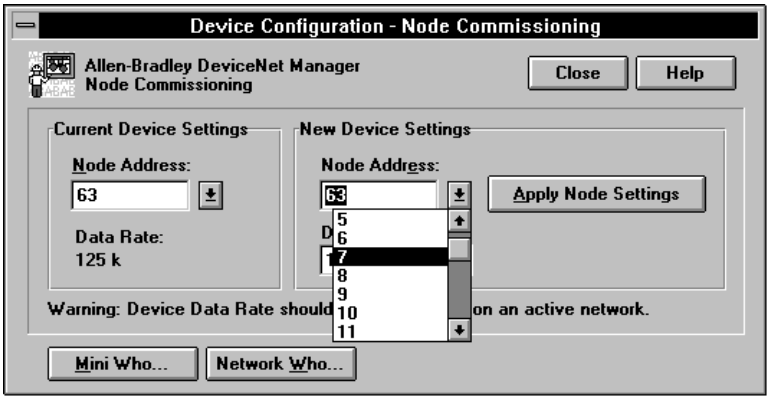
You see this screen:



2. In the **Current Device Settings** dialog box, scroll to the node address you want to change (in this example, **63**).



3. In the **New Device Settings** dialog box, scroll to **07**.



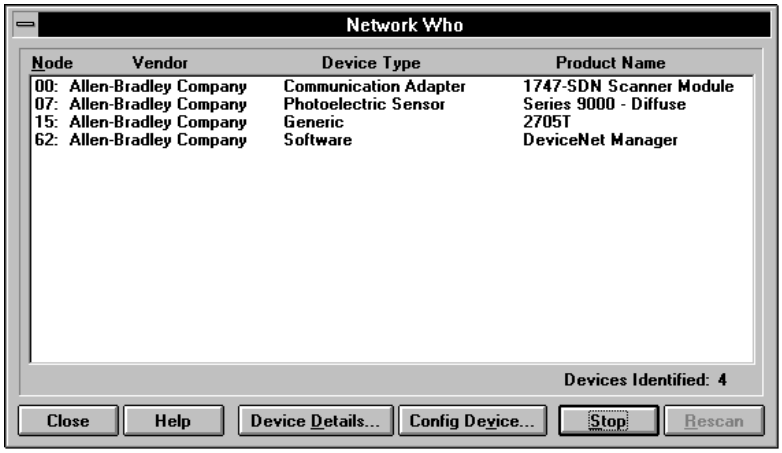
4. Click on 

The status bar indicates **Transaction Completed** :

5. Click on 

to verify the address has changed.

You see this screen:



6. After all four devices appear, click on 

7. Verify that the node address for the photoelectric sensor has changed from **63** to **07**.

8. Click on 

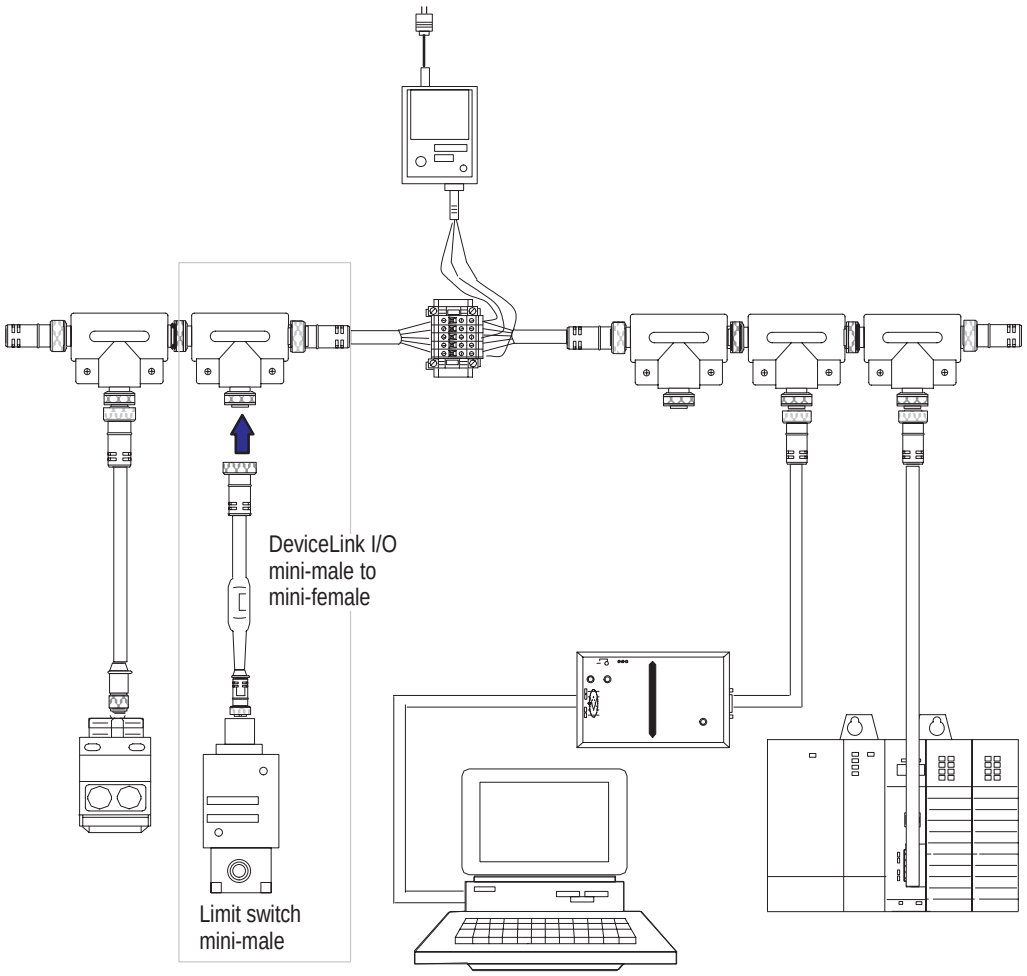
to close network who.

9. Click on 

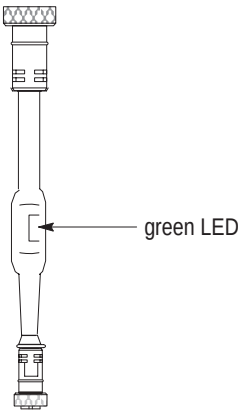
to close node commissioning.

Connect the DeviceLink I/O and Limit Switch

Connect the DeviceLink I/O (with the limit switch attached) to the trunk line as shown in the area of detail below:



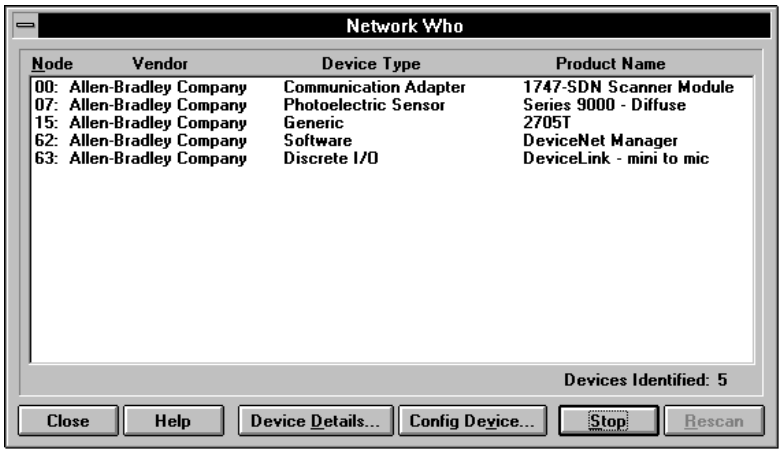
After you connect the DeviceLink I/O to the network, look for the flashing green LED that indicates the device is functioning.



Check the Node Address of the DeviceLink I/O

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

   You see this screen:

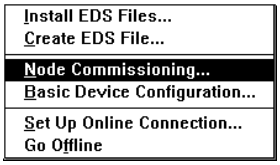


2. After all five devices appear, click on 

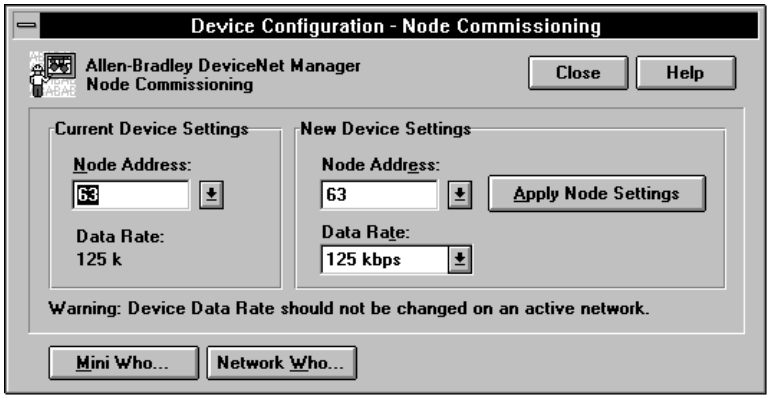
3. Click on 

Perform Node Commissioning

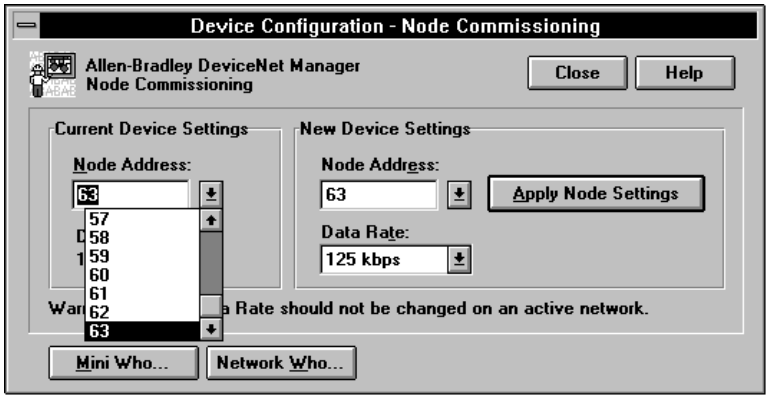
You must change the node address for the DeviceLink I/O to **10.** Commission the node to change the node address.

1. From the *Utilities* menu, select 

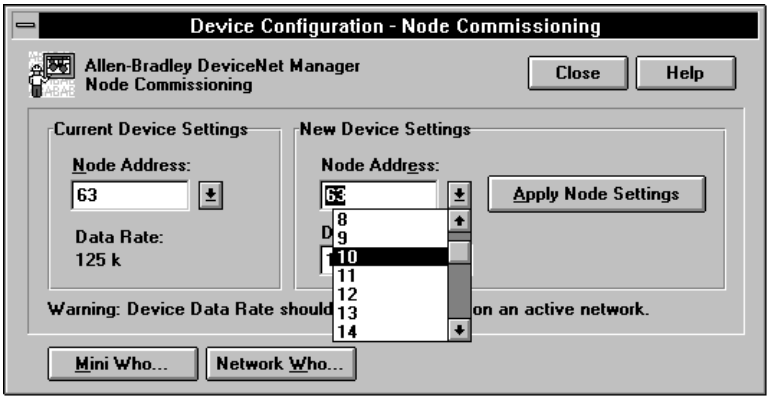
You see the **Device Configuration Node Commissioning** screen:



2. In the **Current Device Settings** dialog box, scroll to the node address you want to change (the incorrect node address number for the DeviceLink I/O). In this example, the number is **63.**



3. In the **New Device Settings** dialog box, scroll to **10**.



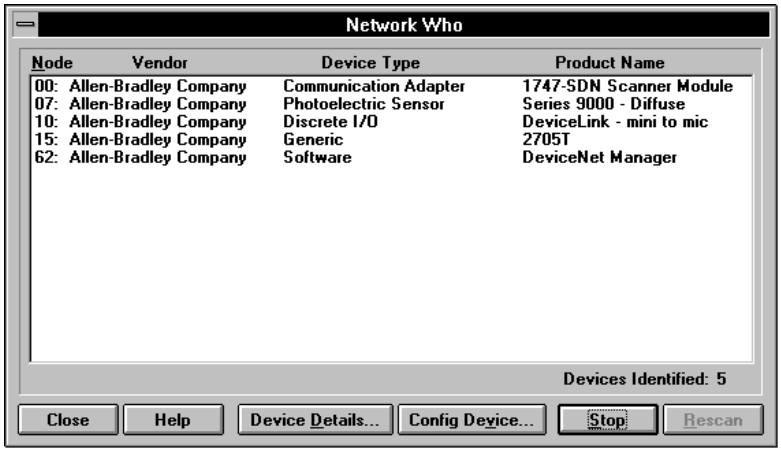
4. Click on 

The status bar indicates **Transaction Completed** :

5. Click on 

to verify the address has changed.

You see this screen:



6. After all five devices appear, click on 

7. Verify that the node address for the DeviceLink I/O has changed from **63** to **10**.

8. Click on 

to close network who.

9. Click on 

to close node commissioning.

Summary and What's Next

In this chapter, you learned how to:

- understand what the network should look like
- configure the 800T RediSTATION operator interface
- connect the 800T RediSTATION operator interface
- connect the Series 9000 photoelectric sensor and perform node commissioning
- connect the DeviceLink I/O and limit switch and perform node commissioning

Move on to Chapter 5 to learn how to configure and monitor devices with the DeviceNetManager software.

Configure and Monitor the Devices with DeviceNetManager Software

What this Chapter Contains

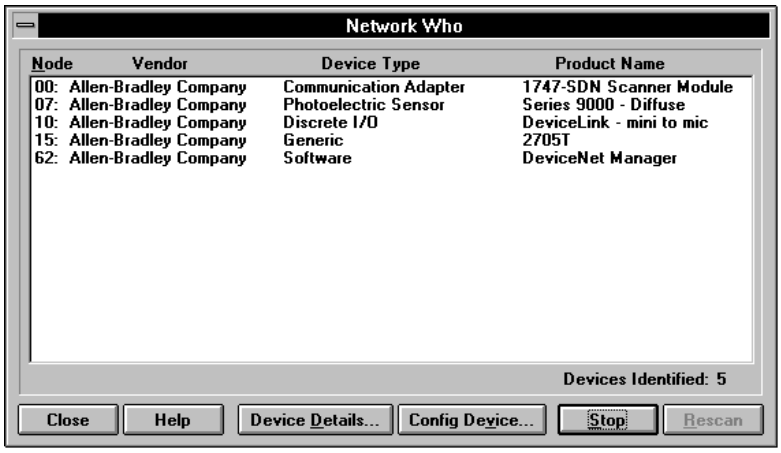
The following table describes what this chapter contains and its location.

Configure the Series 9000 Photoelectric Sensor

Use DeviceNetManager software to change the configuration of the photoelectric sensor:

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

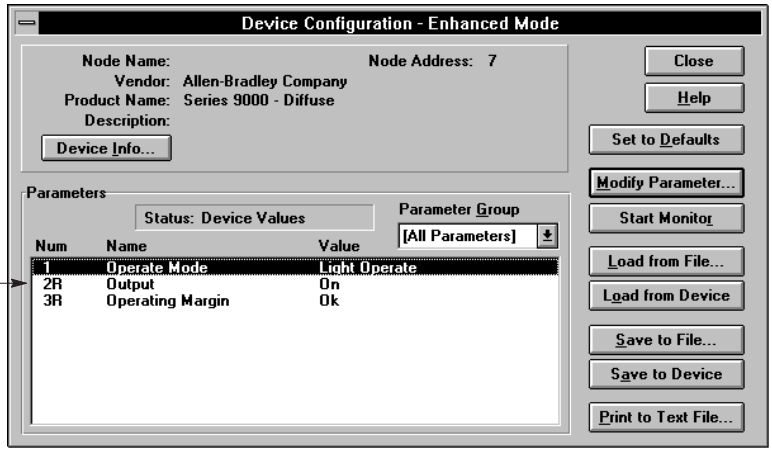
   You see this screen:



2. After all five devices appear, click on 

3. Double-click on the **Photoelectric Sensor** to open its **Device Configuration – Enhanced Mode** screen.

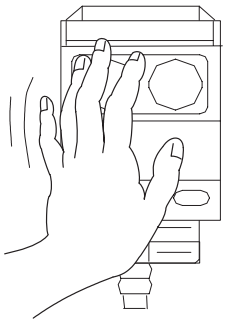
You see this screen:



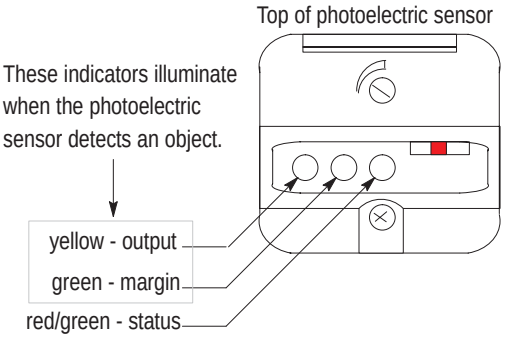
The photoelectric sensor supports these three parameters. **Operate Mode** is the only configurable parameter. **Output** and **Operating Margin** are "read only" as indicated by the letter "R."

The sensor is configured for **Light Operate**.

4. To verify this, pass your hand in front of the sensor and you see that the output (yellow) and margin (green) indicators illuminate. This indicates that the sensor is in **Light Operate** mode.

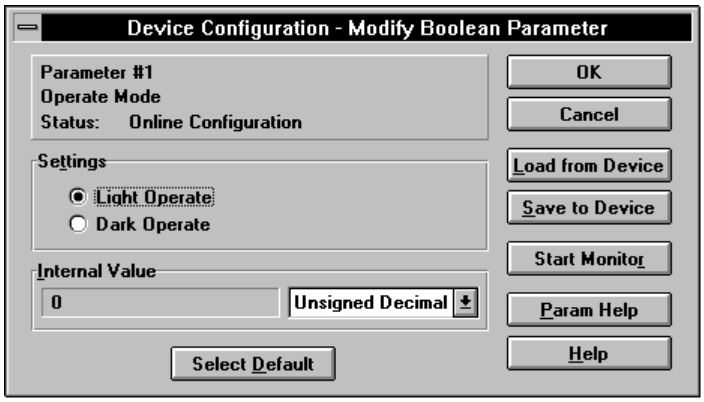


Front of photoelectric sensor



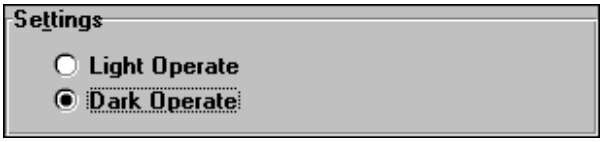
5. To change this parameter from **Light Operate** to **Dark Operate**, first highlight the **Output Mode** parameter as shown in the above screen, then click on 

You see this screen:



6. In the **Settings** dialog box, click in the **Dark Operate** radio button.

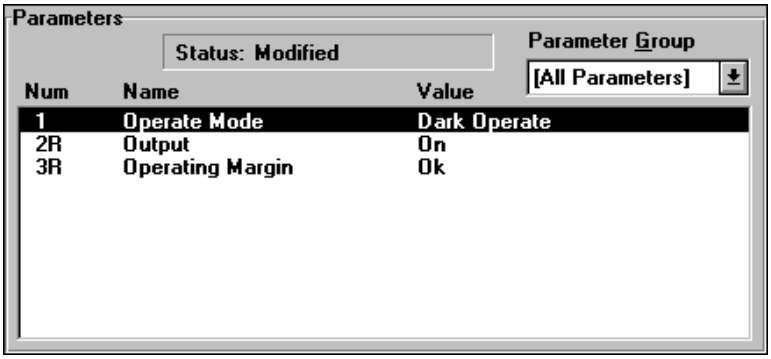
You see the **Dark Operate** area become highlighted:



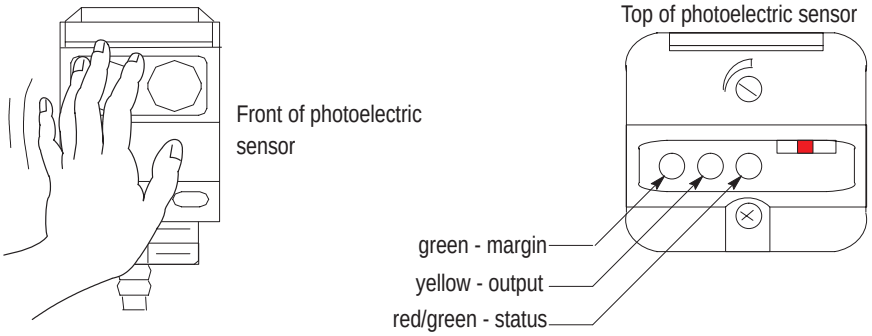
7. Click on Save to Device

8. Click on OK

The **Parameters** dialog box shows that the mode has changed from light to dark operate:



9. To verify this, pass your hand in front of the photoelectric sensor. When the photoelectric sensor detects your hand, the output indicator (yellow) goes off and the margin indicator (green) goes on. This indicates that the sensor is in Dark Operate mode.



10. To return to Light Operate mode, repeat steps 5–8 and select **Light Operate**.

11. To close the **Device Configuration** screen, click on Close

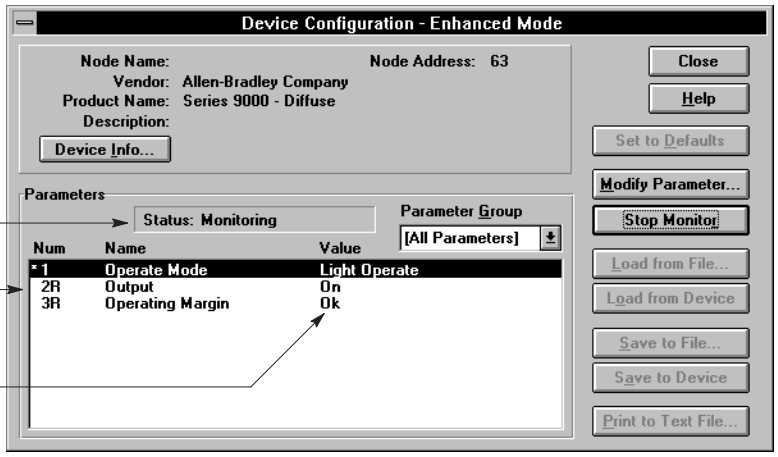
Monitor the Status of the Photoelectric Sensor

To monitor the status of the photoelectric sensor:

1. In the **Device Configuration** screen, click on

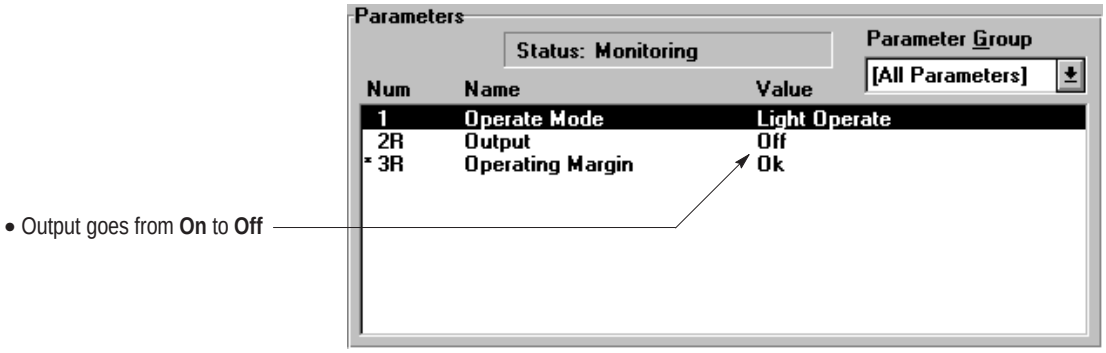
   

   You see how the DeviceNet Manager software monitors and reports status:



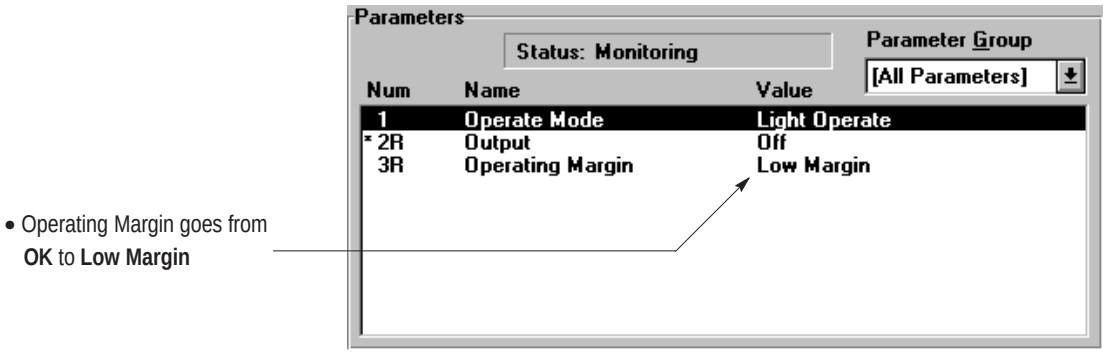
2. Hold your hand in front on the photoelectric sensor.

   You see how the **Output Value** changes:



3. Use your thumb to cover part one of the lenses on the photoelectric sensor.

   You see how the **Operating Margin Value** changes:



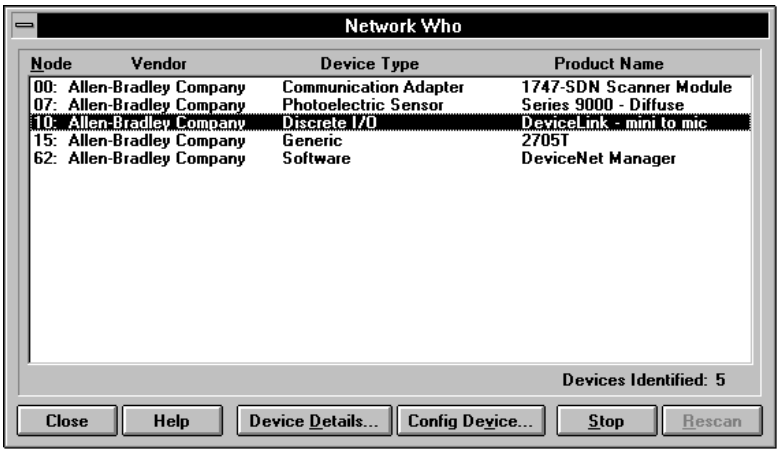
4. Click on 

5. Click on 

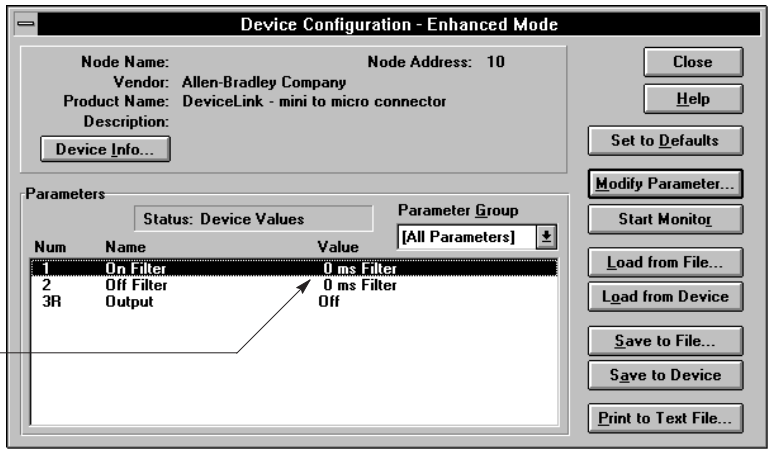
Configure the DeviceLink I/O

Continue with DeviceNetManager software to change the configuration of the DeviceLink I/O:

1. From the **Network Who** screen, double-click on the **DeviceLink - mini to mic** to open its **Device Configuration – Enhanced Mode** screen.



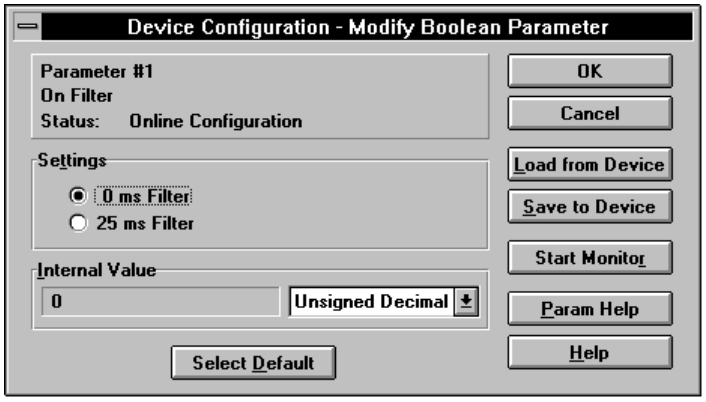
You see this screen:



- The **On Filter Value** indicates the DeviceLink default – **0ms Filter**

2. To change this parameter from **0ms** to **25ms**, first highlight the **On Filter** parameter as shown in the above screen, then click on 

You see this screen:

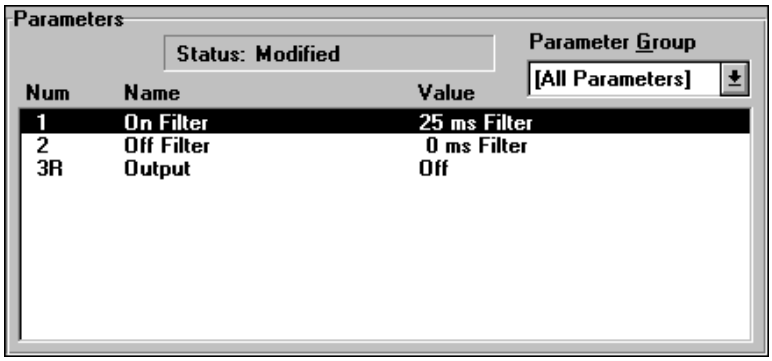


3. In the **Settings** dialog box, click on the **25ms Filter** radio button.

   You see the **25ms Filter** area become highlighted:

4. Click on 

   The **Parameters** dialog box shows that the mode has changed from 0ms to 25ms:



5. To close the **Device Configuration** screen, click on 

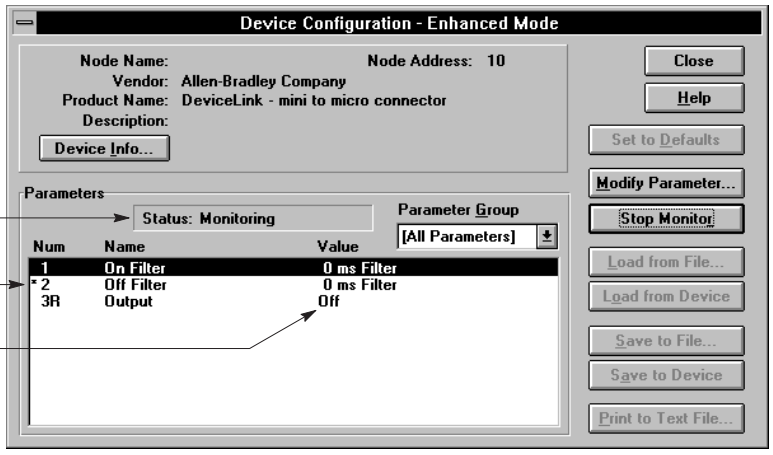
Monitor the Status of the DeviceLink I/O

To monitor the status of the DeviceLink I/O:

1. In the **Device Configuration** screen, click on

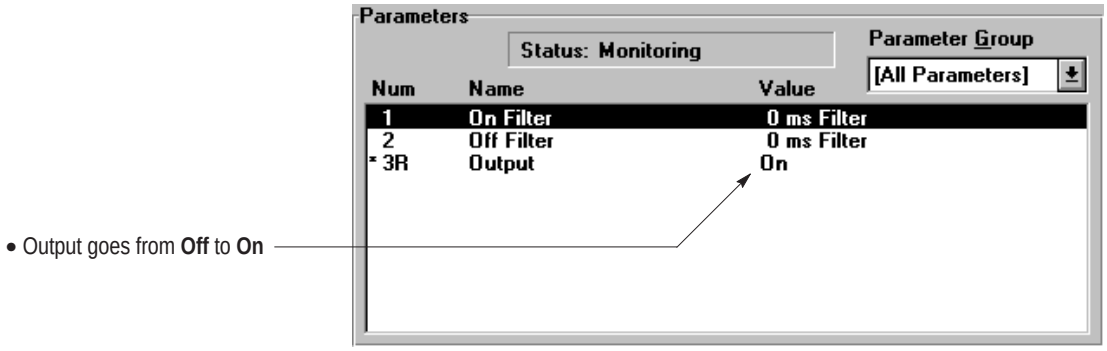
   

   You see how DeviceNet Manager software monitors and reports status of the DeviceLink I/O:



2. Turn and hold the switch on the limit switch.

   You see how the **Output Value** changes:



3. Click on

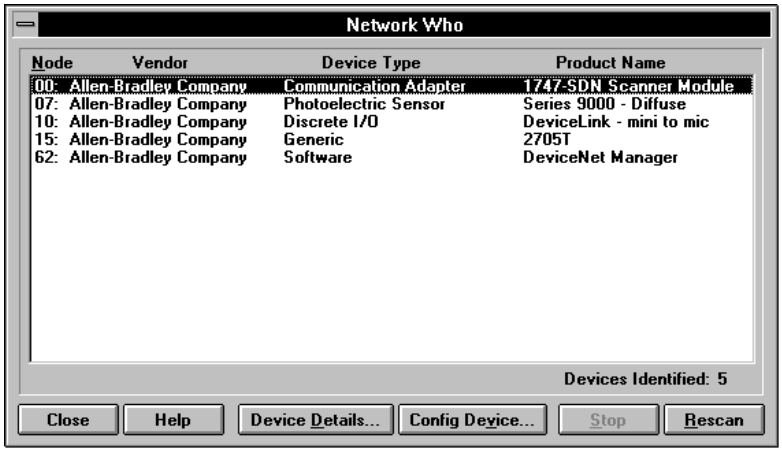
4. Click on

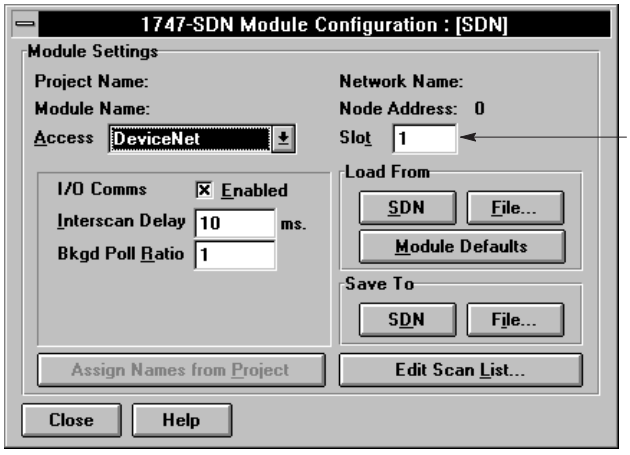
Configure the 1747-SDN Scanner Module

Continue with DeviceNetManager software to configure the 1747-SDN Scanner Module.

1. From the **Network Who** screen, double-click on the **1747-SDN Scanner Module** to open its **Module Configuration** screen**.**



You see this screen:



Specify the SLC chassis slot where the scanner module is installed.

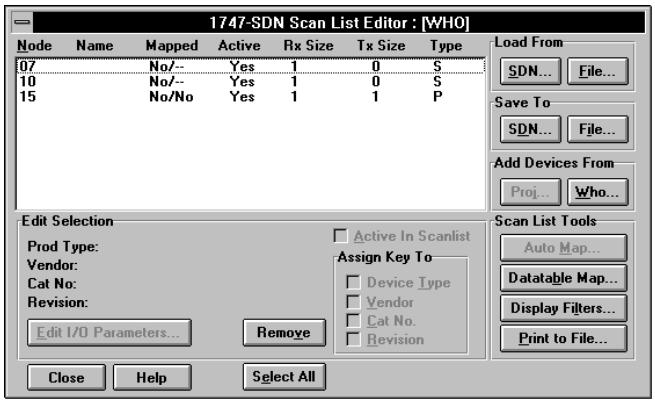
Note: If you are using a PLC-5 chassis with a 1771-SDN scanner module, select the rack/group/slot of the 1771-SDN Scanner Module.

2. In the **Load From** dialog box, click on 

3. In the **Module Settings** dialog box, specify the SLC chassis slot where the scanner module is installed.

4. In the **Module Settings** dialog box, click on

You see this screen:

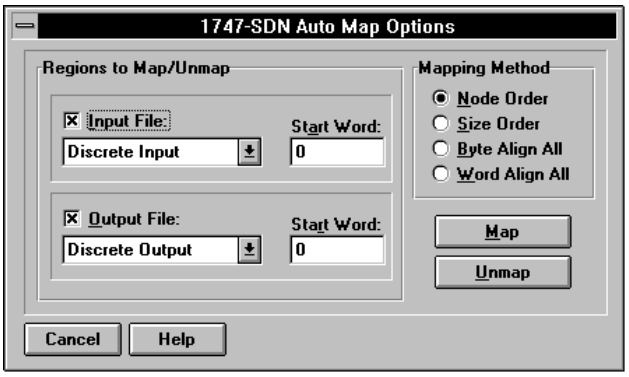


5. Click on 

6. In the Scan List Tools dialog box, click on

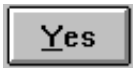
You see this screen:

Note: If you are using a 1771-SDN scanner module, the module should be mapped into Block Transfer 62 input and output.



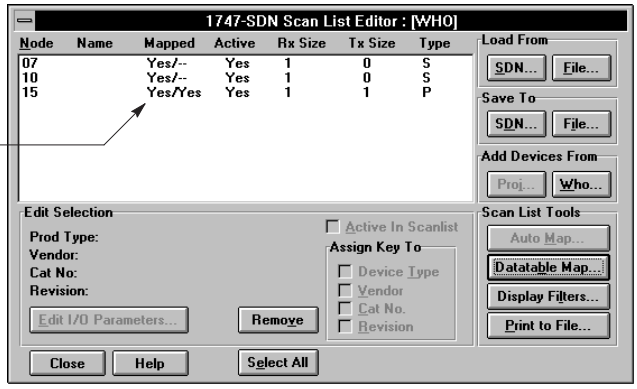
7. Click on 

You see this screen:

8. Click on 

You return to this screen:

DeviceNet Manager software verifies that the devices have been mapped.



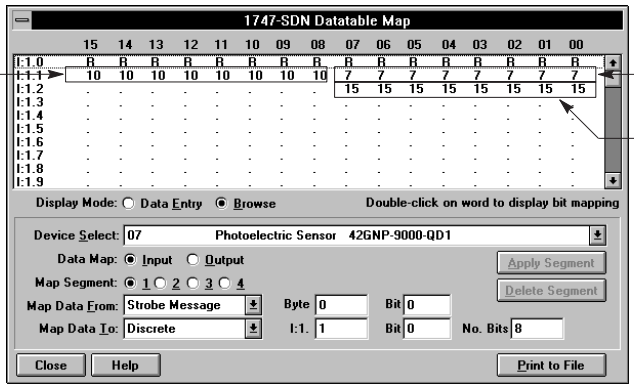
9. Click on 

You see this screen:

DeviceLink I/O Node Address 10

Photoelectric Sensor Node Address 07

800T RediSTATION Node Address 15



Note: If you are using a 1771-SDN scanner module, PLC-5 data table with block transfer addresses will appear.

Observe how the devices' node addresses are assigned as inputs in the data table map.

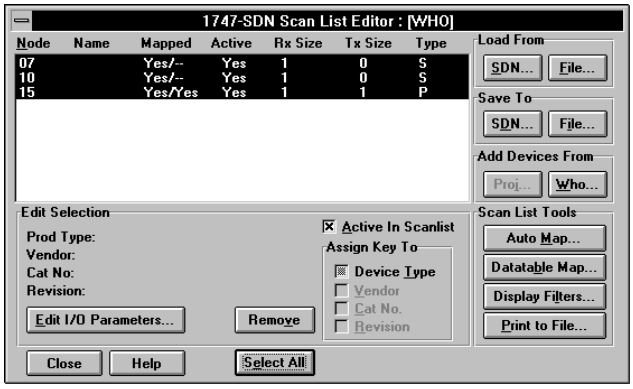
10. In the **Data Map** area, click on the **Output** radio button.

11. Click on 

You return to this screen:

12. Click on 

You see that all devices are highlighted:



13. In the **Save To** dialog box, click on 

You see this screen:

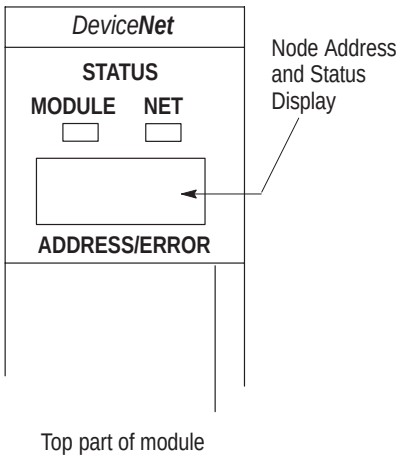
14. Click on 

You see this screen:

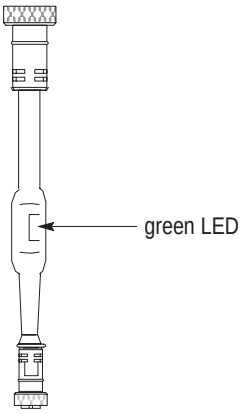
15. Click on 

Wait a few more moments for the download to complete. When the download is complete and the scanner has rebooted:

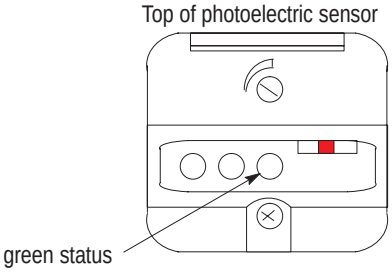
- the scanner module alternately flashes **80** and **00**



- the DeviceLink I/O status is solid green

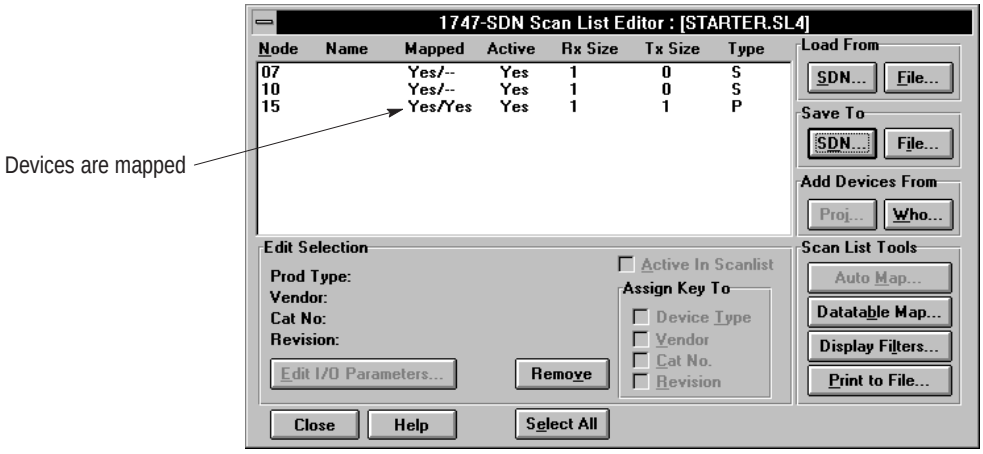


- the photoelectric sensor status is solid green



- the DeviceNetManager software status bar indicates **Transaction Completed**:

- The **Scan List Editor** screen also indicates that the devices have been mapped:



16. Click on **Close**

You see this screen:

17. Click on either Yes or No

We recommend that you save your scanner configuration files for future use.

Summary and What's Next

In this chapter, you learned how to configure and monitor these devices using DeviceNetManager software:

- Series 9000 photoelectric sensor
- DeviceLink I/O
- 1747-SDN Scanner Module

Move on to Chapter 6 to learn how to use APS ladder logic with DeviceNetManager software.

Use APS with the DeviceNet Starter Kit to Perform Control and Diagnostics Examples

What this Chapter Contains

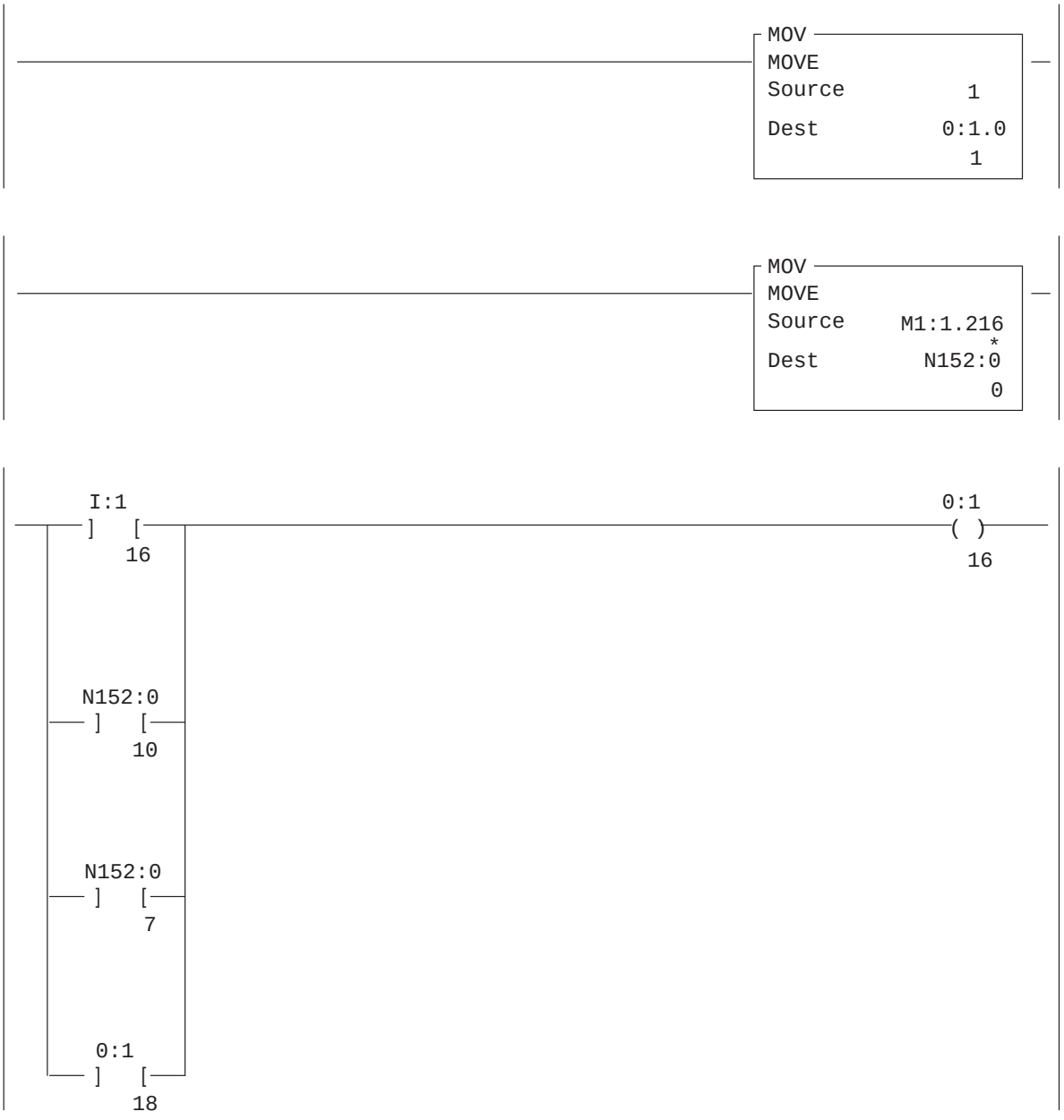
This chapter describes how to use Advanced Programming Software (APS) with the DeviceNet Starter kit for DeviceNet control and diagnostics examples:

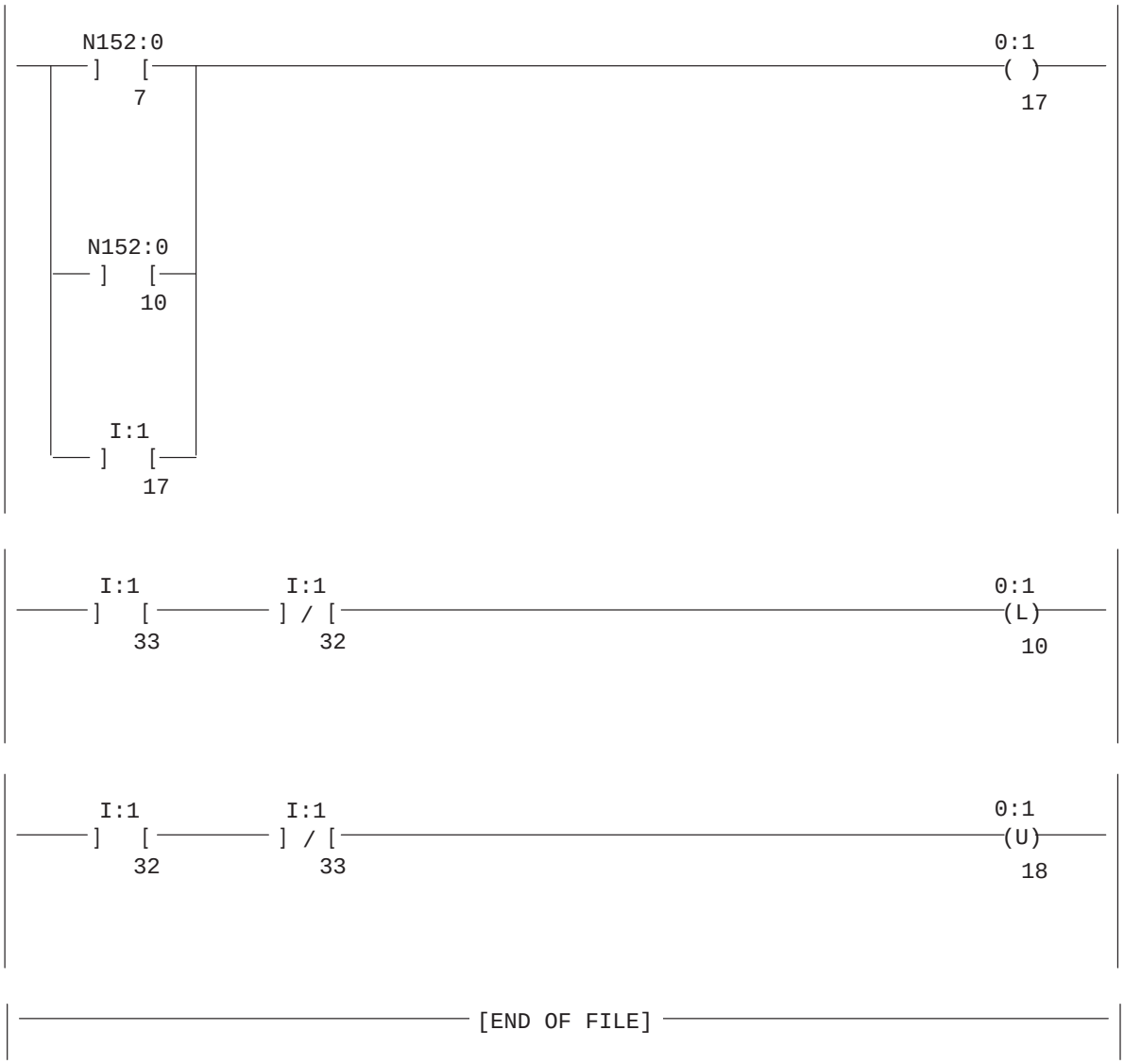
To complete the tasks in this chapter, you must have:

- Windows with DeviceNetManager software open
- your DeviceNet network running with an online connection
- APS installed

Create the Ladder Logic Program

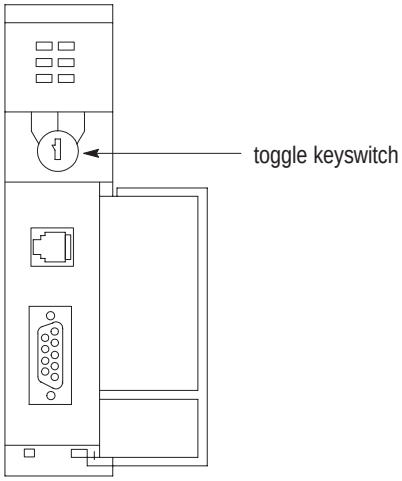
Use APS to create the following ladder logic program:




N152:0
7
0:1
17
N152:0
10
I:1
17
I:1
33
I:1
32
0:1
(L)
10
I:1
32
I:1
33
0:1
(U)
18
[END OF FILE]

Use the APS Ladder Program as You Perform DeviceNet Control and Diagnostics Examples

Move through the APS ladder program as you perform the following DeviceNet control and diagnostics examples. Read the text descriptions of each rung as you perform these procedures:



Rung 0

This rung turns on when the scanner is put in RUN mode.

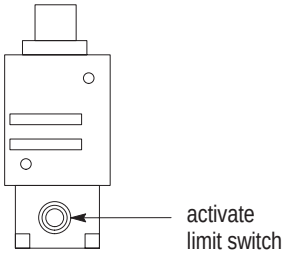
1. Toggle the SLC processor keyswitch between RUN and PROGRAM.
- You see the field behind the ladder rung change color

2. Put the processor in RUN mode.

Rung 2

This rung turns on when the red light of the RediSTATION operator interface illuminates and/or blinks.

1. Cursor down to Rung 2, word O:1 bit 16.

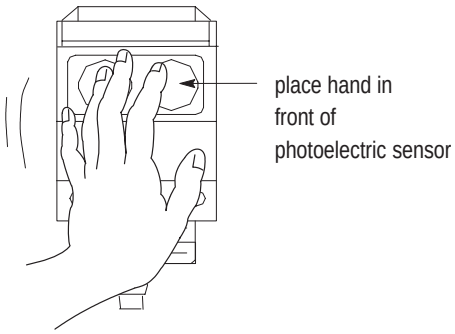


2. Activate the limit switch.
- You see the red light on the RediSTATION operator interface illuminate
- You see the field behind the ladder rung (word O:1 bit 16) change color

3. Press F8 **`Data Monitor`**.

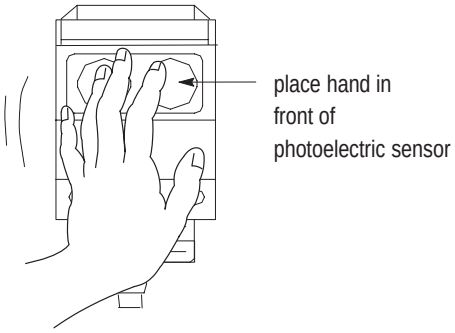
4. Again, activate the limit switch.
- In the output data table, you can see word O:1 bit 16 changes from 0 to 1

5. Press Esc to return to the ladder program**.**



6. Cursor left to Rung 2, word I:1 bit 6.

7. Place your hand in front of the photoelectric sensor.
- You see the red light on the RediSTATION operator interface illuminate
- You see the field behind the ladder rung (word I:1 bit 16) change color



8. Press F8 **Data Monitor**.

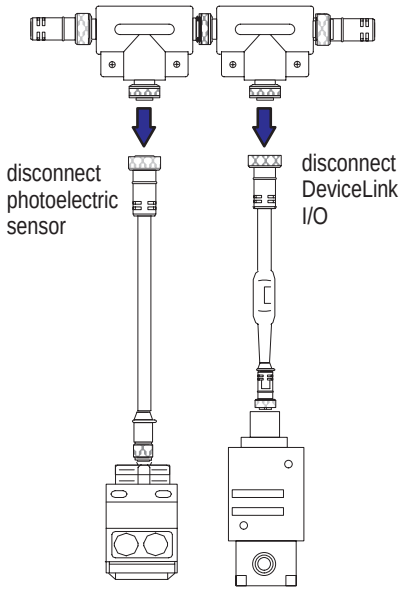
9. Again, place your hand in front of the photoelectric sensor.

- In the input data table, you can see word I:1 bit 16 changes from 0 to 1

10. Press Esc to return to the ladder program.

Rung 3

This rung turns on when the DeviceLink I/O and the photoelectric sensor are pulled off of the DeviceNet network, or when the photoelectric sensor is out of margin.



1. Cursor down to Rung 3, word O:1 bit 17.

2. Pull the DeviceLink I/O and the photoelectric sensor off of the DeviceNet network.

- You see the red light illuminate and flash
- You see the fields behind the ladder rungs (word O:1 bit 17) and (word N:152 bit 7) change color

3. Press F8 **Data Monitor**.

4. Press F1 **Change Radix**.

5. Press F1 **Binary Data**.

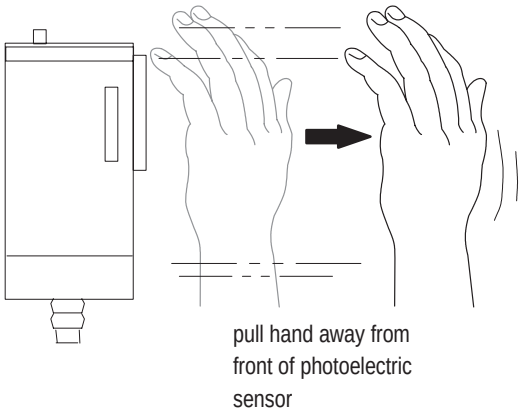
- In the integer data table, you can see words 6 and 9 change from 0 to 1

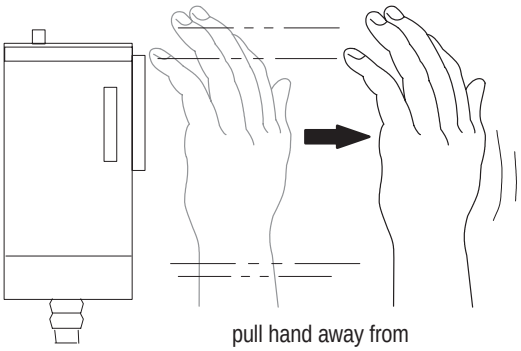
6. Press Esc to return to the ladder program.

7. Cursor down to word I:1 bit 17.

8. Put your hand over the photoelectric sensor and slowly pull your hand away (out of margin) from the photoelectric sensor.

- You see the 800T RediSTATION red light go out
- You see the photoelectric sensor indicators go out
- You see the field behind the ladder rung (word I:1 bit 17) change color





pull hand away from front of photoelectric sensor

9. Press F8 **`Data Monitor`**.

10. Again, place your hand in front of the photoelectric sensor.

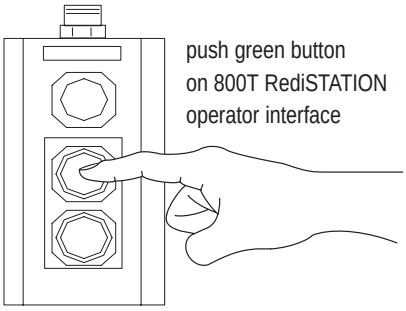
- In the input data table, you can see word I:1 bit 17 changes from 0 to 1

11. Again, slowly pull your hand away (out of margin) from the front of the photoelectric sensor.

- In the input data table, you can see word I:1 bit 17 changes back from 1 to 0

Rung 4

This rung turns on when the red or green buttons on the RediSTATION operator interface are pushed.



push green button on 800T RediSTATION operator interface

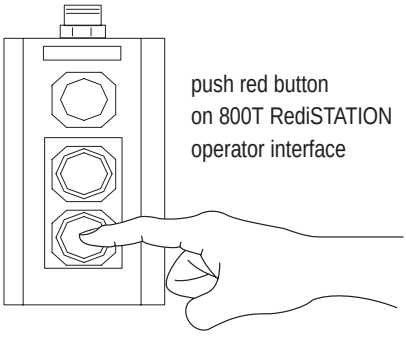
1. Cursor to Rung 4, word I:1 bit 33.

2. Push the green button on the 800T RediSTATION operator interface.

- You see the red light illuminate
- You see the field behind the ladder rung (word I:1 bit 33) change color

3. Press F8 **`Data Monitor`**.

- In the input data table, you can see word I:1 bit 33 changes from 0 to 1 each time you push the green button



push red button on 800T RediSTATION operator interface

4. Cursor down to word I:1 bit 32.

5. Push the red button on the 800T RediSTATION operator interface.

- You see the red light go out
- You see the field behind the ladder rung (word I:1 bit 32) change color

6. Press F8 **`Data Monitor`**.

- In the input data table, you can see word I:1 bit 32 changes from 0 to 1 each time you push the red button

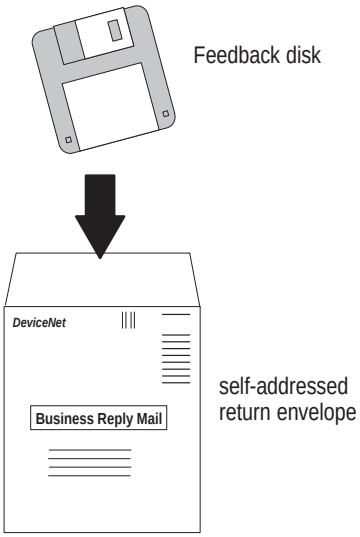
7. Press Esc to return to the ladder program**.**

1. Press F3 to exit APS.

Summary

In this chapter, you learned how to use APS software with DeviceNet starter kit to perform control and diagnostics:

- create the ladder logic program
- use APS with DeviceNetManager software to perform control and diagnostics examples



You are done performing the tasks in this user manual. For more information on A-B DeviceNet products, call your local distributor or sales office.

Please remember to complete the survey on the enclosed floppy disk.

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