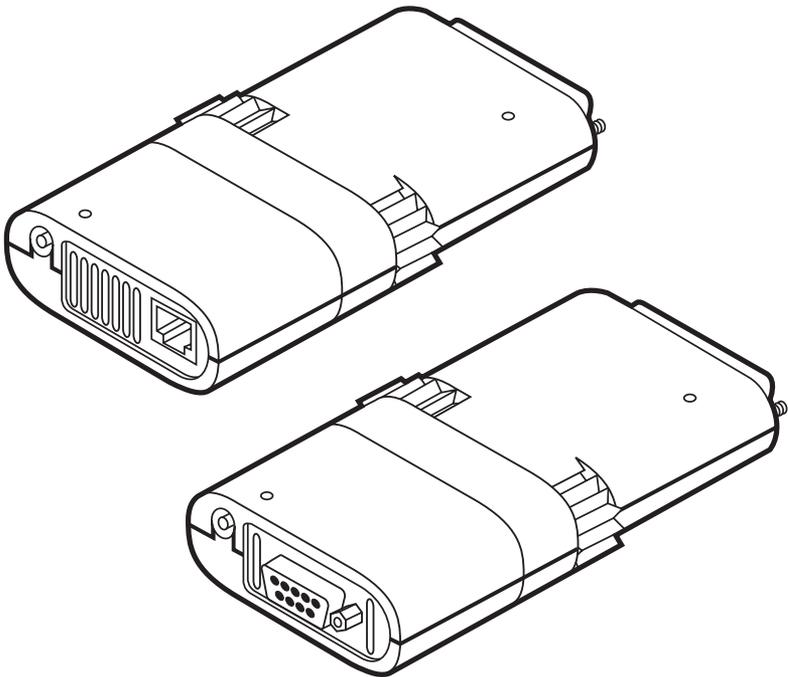




Modular Parallel Adapters Modular Media Units



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This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

Standards — Conforms to the IEEE 802.5 Token Ring standard.

Speed — 4/16 Mbps (default is 16 Mbps)

Computer Interface — Connects to parallel port

Operating Temperature — 32 to 122°F (0 to 50°C)

Storage Temperature — 40 to 176°F (-4 to 80°C)

Memory Size — 64K x 16 network buffer

Input voltage — 12 VDC, 500 mA

Connectors —

LT098A: (1) DB9 male;

LT099A: (1) RJ-45 male;

LT198A: (1) DB9 female;

LT199A: (1) RJ-45 female

Size — 4.1"H x 2.4"W x 1"D (10.3 x 6.1 x 2.5 cm)

Weight — 0.2 lb. (0.1 kg)

2. Introduction

The Modular Parallel Adapter easily connects notebook, laptop, and desktop PCs to virtually any 16- or 4-Mbps Token Ring Local Area Network. It connects externally to a standard parallel printer port, eliminating the need to install internal Token Ring cards. The adapter is easy to install; there are no jumpers or configuration switches to set. It's the perfect solution for notebook and laptop connectivity, as well as for workstations with a limited number of internal expansion slots. The Adapter supports all types of parallel ports including unidirectional, PS/2®, bidirectional, and Enhanced Parallel Port (EPP).

The modular construction of the Token Ring Adapter enables you to work with either of the two cabling systems used in Token Ring networks; you simply attach the Modular Media Unit that matches your cabling system to the Adapter and then connect to the network.

2.1 Available Models

The available Modular Parallel Adapter and Modular Media Unit models are as follows:

Modular Parallel Adapters:

- Modular Parallel Adapter Type 1 (LT098A)
- Modular Parallel Adapter Type 3 (LT099A)

Modular Media Units:

- Modular Media Unit TR-T1 (LT198)
- Modular Media Unit TR-T3 (LT199)

2.2 Features

The Adapter offers the following features:

- 4- or 16-Mbps software-selectable transmission speed
- Fits any Token Ring cable type via modular snap-on media units
- Enhanced Parallel Port (EPP) support for increased performance
- Supplied with drivers for Novell NetWare® (ODI™), Microsoft® LAN Manager, and 3Com® 3+Open™ (NDIS)

- Provides extensive diagnostics and self-test capabilities
- Automatic unidirectional/bidirectional mode selection
- Supports parallel ports LPT1 through LPT4
- Supports interrupt lines IRQ7 and IRQ5, as well as polling mode (when no interrupt line is available)
- Power and network activity LEDs
- Fast and easy installation
- No jumpers or switches to set

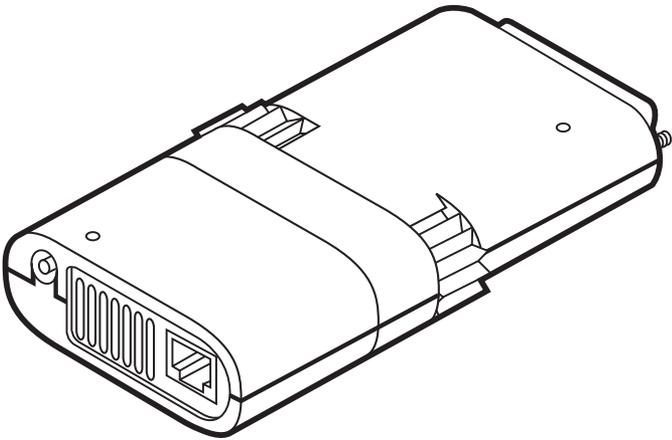


Fig. 2-1. Typical Modular Parallel Adapter.

3. Installation

To install your Token Ring Adapter, you need to perform the following steps, which are described in detail in **Sections 3.1** through **3.4**.

1. Attach the Media Unit.
2. Connect the network cable.
3. Plug the Token Ring Adapter into the computer.
4. Install the AC power adapter.

Instructions for loading the network drivers and configuring the driver (if necessary) are provided in **Chapter 4**.

3.1 Attach the Media Unit

To attach the Media Unit, hold the Adapter with the logo facing up, press the top and bottom of the Media Unit together and insert it until it snaps into the Adapter (**Fig. 3-1**).

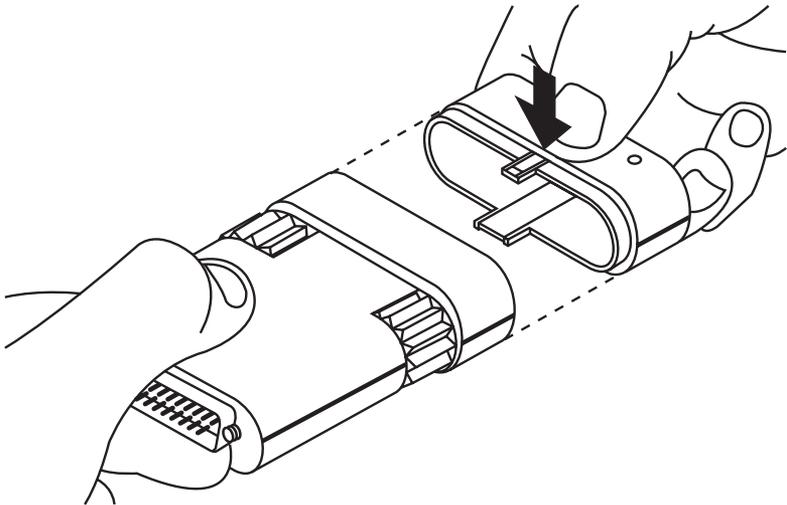


Fig. 3-1. Attaching a Media Unit to the Adapter.

3.2 Connect the Network Cable

Connect the network cable as illustrated for each model shown in **Fig. 3-3** and **3.4**.

3.2.1 LT099A

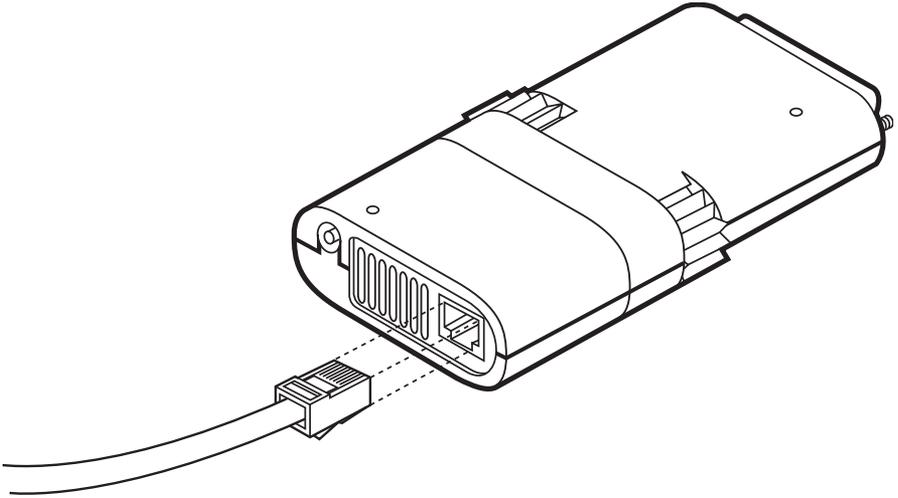


Fig. 3-2. Connecting an Unshielded Twisted-Pair Cable to the Media Unit TR-T3.

3.2.2 LT098A

After connecting the cable, use the captive screws provided on the cable to lock the connector in place.

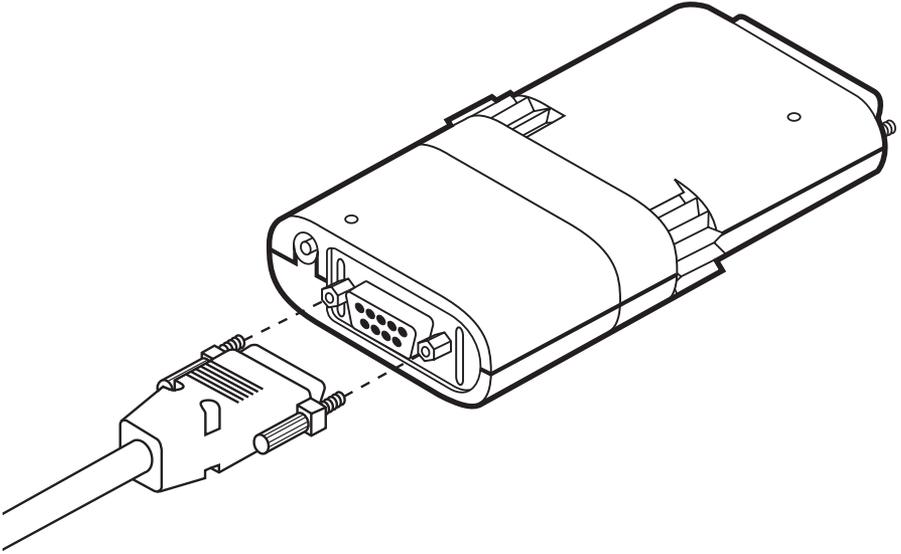


Fig. 3-3. Connecting a Shielded Twisted-Pair Cable to the Media Unit TR-T1.

3.3 Plug the Token Ring Adapter into the Computer

Plug the 25-pin connector on your Adapter into the parallel port at the back of your notebook/laptop computer, holding the adapter with the logo at the top. Tighten the knobs on the Adapter clockwise to fasten it tightly (**Fig. 3-5**).

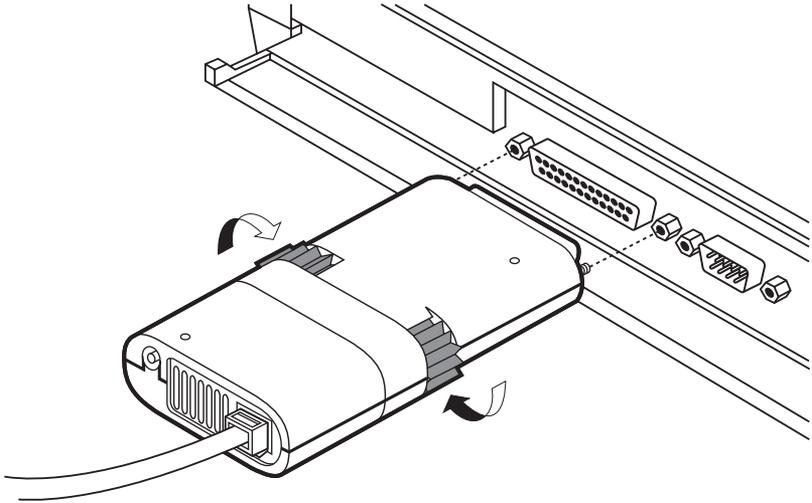


Fig. 3-4. Plugging in the Adapter.

3.4 Install the AC Power Adapter

Plug the AC power adapter into the small round socket at the back of the Modular Media Unit, as shown in **Fig. 3-6**. Plug the other end of the AC adapter cable into any standard electrical outlet. The red LED will then light up.

To AC adapter
connected to mains

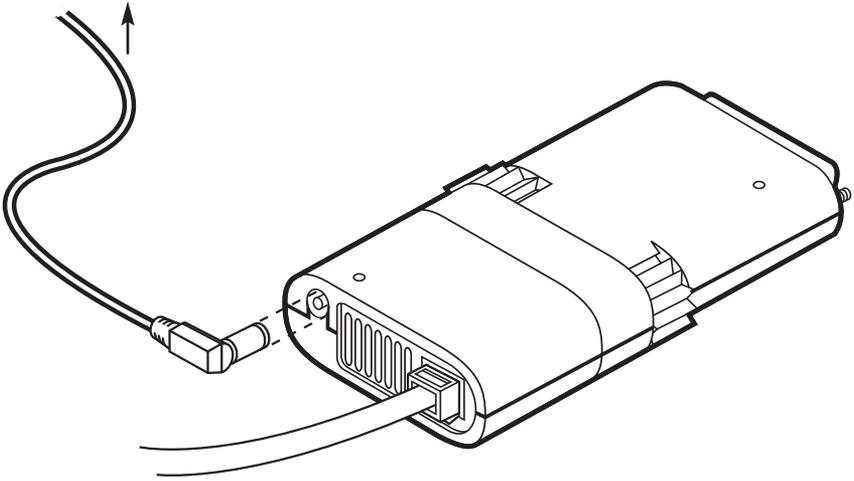


Fig. 3-5. Installing the AC Power Adapter.

4. Software Setup and Operation

The Modular Parallel Adapter TR is supplied with software drivers that support all major network operating systems. These drivers are found on the network drivers diskette. This chapter describes only the Novell DOS ODI, Microsoft NDIS, and IBM® LAN Support Program (LSP) workstation drivers. Instructions on how to use drivers in other network environments are included in the README.DOC file on the network drivers diskette.

4.1 Supplied Files

The network drivers diskette contains the following files:

- README.DOC—Update information about the software
- STRDIAG.EXE—Self-test diagnostic program
- STRDIAG.HLP—Help file for the diagnostic program

The \LSP subdirectory contains the following IBM LAN Support Program (LSP) drivers for use with any network that is compatible with the IBM LSP:

- CPIL.EXE—Hardware driver
- STRTOK.SYS—Software driver for IBM LSP

The \ODI subdirectory contains the following DOS ODI files for use with Novell NetWare:

- CPIM.EXE—Hardware driver
- LSL.COM—Novell Link Support Layer program
- STRODI.COM—Token Ring ODI driver
- IPXODI.COM—Novell IPX™ Program
- NETX.COM—NetWare shell for use with DOS
- STARTNET.BAT—A batch file containing all commands required to load the driver
- NET.CFG—Sample protocol configuration file

The \NDIS subdirectory contains NDIS files for use with the following network operating systems: Microsoft LAN Manager, 3Com 3+Open, Banyan® VINES™, DEC™ Pathworks™, and other network operating systems using the NDIS interface specifications.

- CPIM.EXE—Hardware driver
- STRNDIS.DOS—NDIS driver for DOS
- PROTOCOL.INI—Sample protocol initialization file
- STRDOS.NIF—Configuration file used by Microsoft LAN Manager's setup program for configuring a DOS workstation

4.2 Configuration (Optional)

CPIM and CPIL are self-configuring drivers that automatically detect the correct LPT port, interrupt line, and unidirectional/bidirectional mode to be used. If your PC has an Enhanced Parallel Port (EPP), or if you have a special configuration, you may need to override this automatic selection by using one or more of CPI's command line parameters. Otherwise, you should skip this section.

Available parameters are:

- E (EPP)—The Adapter supports the Enhanced Parallel Port (EPP). Most PCs based on the Intel® 80386SL or 80486SL chipsets may be configured to work in the EPP mode. This mode improves the performance of the Adapter and therefore is recommended if your computer supports it.

NOTE

Be sure that your PC has an Enhanced Parallel Port (EPP) before selecting the "E" command line parameter.

- U (Unload)—The parameter "U" unloads the CPI from memory. Usually it is used when unloading the whole network driver.
- P (Polling)—A PC may use either IRQ-7 or IRQ-5 for handling the parallel port communications. If you need to work without interrupts (usually only with test evaluations), use the POLLING command line parameter. This will force the driver to operate in a polled mode without using hardware interrupts.
- F (Force UNIDIR)—Whenever the CPI driver is loaded into memory, it tests the parallel port to determine whether it can be operated in the faster bidirectional mode. The Adapter is then configured according to the test results. However, when using a long extension cable, the bidirectional mode may not operate reliably, even if the test passes. In this case, you should force the unidirectional mode by using the "F" command line parameter.

NOTE

The parameters “E” and “F” cannot be used simultaneously.

4.3 ODI Driver for Novell NetWare**4.3.1 INSTALLATION**

Copy all the files from the \ODI subdirectory on the network drivers diskette to the network operating system subdirectory on your hard disk. Installation is now complete.

4.3.2 OPERATION

To start work on the NetWare workstation, run the STARTNET batch file. Then log into the network.

The STARTNET.BAT file includes the following set of commands:

```
LSL
CPIM[Parameter 1][Parameter 2]
STRODI
IPXODI
NETX
E:
```

If you wish, you may enter these commands in the AUTOEXEC.BAT file in the order shown above.

The CPIM parameters are described in **Section 4.2**.

To unload the ODI workstation software, unload the programs in reverse order.

```
NETX u
IPXODI u
STRODI u
CPIM u
LSL u
```

4.4 NDIS Driver for Microsoft LAN Manager**4.4.1 INSTALLATION**

1. Install the network operating system according to the manufacturer's installation instructions.
2. Insert the supplied network drivers diskette into drive A of your computer.

3. Copy the appropriate *.NIF file from the \NDIS subdirectory on the diskette to the \LANMAN\DRIVERS\NIF directory on your hard disk.

For DOS, type:

```
copy a:\ndis\strdos.nif c:\lanman\drivers\nif
```

4. Now type the following commands:

```
cd\lanman\drivers\tokenrng  
mkdir modadpt  
cd modadpt
```

This will create a new subdirectory called MODADPT in the \LANMAN\DRIVERS\TOKENRNG directory on your hard disk.

5. Copy the PROTOCOL.INI and the appropriate SETNDIS.* files from the diskette to the newly created subdirectory as follows:

```
copy a:\ndis\cpim.exe  
copy a:\ndis\protocol.ini
```

For DOS, type:

```
copy a:\ndis\strndis.dos
```

6. At the C:\LANMAN prompt, type:

```
setup
```

7. From the main menu, select Actions, then View/Modify. Accept the default selections until the network drivers screen is displayed.
8. The "Network Adapter Cards" dialog box will be displayed with a list of all available network adapter drivers. Select the Modadpt Token Ring Pocket Adapter option and then choose Add Driver.
9. Continue to configure your workstation according to the Microsoft LAN Manager guides.
10. Exit setup, saving the new configuration.
11. If your PC has an Enhanced Parallel Port (EPP) or if you have a special configuration, edit the line:

```
device=c:\lanman\drivers\tokenrng\modadpt\cpim.exe
```

in the `config.sys` file to include one or more of the CPIM command line parameters. The CPIM parameters are described in **Section 4.2**.

Installation is now complete.

NOTE

If you are using an NDIS-compatible network operating system other than LAN Manager, follow the manufacturer's operating system instructions for loading new drivers. The driver files are located in the NDIS subdirectory on the network drivers diskette.

Do not forget to add the CPIM.EXE driver to the `config.sys` before the network operating system's files.

4.5 IBM LAN Support Program

The Adapter can emulate an IBM Token Ring adapter in order to be compatible with software designed to work with an IBM adapter.

4.5.1 INSTALLATION

1. Copy all files from the `\LSP` subdirectory on the network drivers diskette to the network subdirectory on your hard disk.
2. Edit the `CONFIG.SYS` file to include the following two lines:

```
device=[path] spil.exe [parameter 1] [parameter 2]  
device=[path] strtok.sys [node address]
```

The `CPIL.EXE` and `STRTOK.SYS` files together replace the `DXMA0MOD.SYS` and the `DXMC0MOD.SYS` programs from IBM. The CPIL parameters are described in **Section 4.2**.

The node address parameter of `STRTOK.SYS` is optional, and may be used to override the “burnt-in” node address that the adapter normally uses. The node address is a 12-digit hexadecimal parameter.

5. Self-Test and Diagnostics

The network drivers diskette contains the STRDIAG self-test diagnostic utility program, which tests the adapter, reports the result of the tests, and may be used to change the data transfer rate between 16 Mbps and 4 Mbps.

NOTE

Be sure that the network driver is not loaded before you run this program.

To run the self-test and diagnostics program:

1. Copy the STRDIAG.* files from the supplied network drivers diskette into the network directory.

2. At the network directory prompt, type the following command:

```
strdiag
```

The strdiag command may be entered with special command line parameters, as follows:

U—force unidirectional mode

C—use color display (default is monochrome)

?—display a Help screen

3. The STRDIAG main menu is displayed with a list of topics. To select a topic, use the up and down arrow keys to highlight your choice, and press the Enter key.

5.1 Diagnostics

The diagnostics program verifies that the Adapter has been properly connected, executes several self-test routines, and displays the following information:

- LPT port number and address
- IRQ line used (if any)
- Interrupt line polarity of the parallel port
- Data transfer method (unidirectional, bidirectional on ps2)
- Transmission speed (16/4 Mbps)

- Node address
- Model name and hardware version
- Date of manufacture
- Serial number

If the Adapter is not properly connected or not powered on, the following message is displayed:

Adapter not connected or not powered.

After the information above is displayed, additional tests are performed. These tests check the internal components of the Adapter, the cable circuitry up to the MAU (ring), and the Adapter's ability to integrate within the ring. The diagnostics begin by identifying the parallel port's address and IRQ number. During the information display, the EEPROM and other internal components are checked for proper operation.

The Bring Up Test checks the communication processor and its peripheral devices such as the RAM. It also tests the integrity of the software downloaded to the processor.

After the Bring Up Test, the processor is ready for initialization, which checks the interrupt logic and the connection between the PC and the communication processor. The initialization test also tests the internal cable circuitry of the Adapter.

During operation, many Token Ring tests are performed, such as physical insertion test, address verification tests, and ring poll participation. These tests check the integration between the Adapter and other ring members.

5.1.1 CONTINUOUS DIAGNOSTICS

The diagnostics portion of the STRDIAG program activates a single set of adapter tests. However, in order to thoroughly test the adapter, you may want to run the tests continuously. The continuous diagnostics option activates those tests.

Once activated, all tests are run in a loop. The display indicates the last run results of each test, the number of tests performed successfully, and the number of test failures, if any. The tests can be terminated at any time by pressing any key.

5.1.2 SET ADAPTER SPEED

The Adapter is software-switchable for operation on 16-Mbps or 4-Mbps Token Ring networks. The Adapter is preconfigured to operate at 16 Mbps. This option provides the user with the ability to change the current value.

This setup should be done only once, because the data is stored in an internal nonvolatile memory (EEPROM).

5.1.3 LPT REPORT

This option in the STRDIAG main menu displays all available parallel ports of the PC and indicates the port to which the Adapter is connected.

5.1.4 VIEW CONFIGURATION FILES

This option allows the user to view the contents of the different configuration files (NET.CFG for Novell ODI and PROTOCOL.INI for LAN Manager NDIS). If the file is longer than the window on the screen, use the up and down arrow keys to scroll through the file.

To modify the configuration files, use your preferred text editor.

5.1.5 HELP

This option provides a detailed description of all self-test and diagnostics options.

5.1.6 QUIT

This option enables you to exit from this diagnostics program.

6. Error Messages

If problems occur during operation of your Adapter, one of the messages below will be displayed. Error messages can be recognized by the beep and the word FATAL that precedes the message. All other messages on the screen are for information only. The following is a list of common communication and driver error messages.

Modadpt Token Ring Adapter is not connected or not powered.

Check that the Adapter is connected to the AC power adapter and that the red LED of the adapter is on.

Check that the adapter is properly plugged into a parallel (printer) port of the computer.

Run the STRDIAG diagnostic program to get more information about the problem.

Modadpt Token Ring Adapter failed to open on ring.

The adapter failed to integrate within the ring.

Check that the LAN cable is properly attached to the adapter and network.

Check that the adapter speed is the same as the LAN speed. If not, use the STRDIAG program to change it.

Run the STRDIAG diagnostic program before requesting service.

Adapter failed to initialize correctly.

The adapter-initialization process failed.

Run the STRDIAG diagnostic program before requesting service.

Modadpt Token Ring Adapter Memory (RAM) failure.

The adapter failed during memory test.

Run the STRDIAG diagnostic program before requesting service.

Modadpt Token Ring Adapter EEPROM read failure.

The adapter failed to read the EEPROM information.

Run the STRDIAG diagnostic program before requesting service.

MODULAR PARALLEL ADAPTERS AND MODULAR MEDIA UNITS

Additional error messages related to your network operating system are described in the appropriate NOS manuals.

7. Customer Service Information

While we trust that your Adapter will operate reliably over a long period of time, if you encounter any problems while using it, please perform the following steps before contacting Technical Support.

1. Make sure that your Adapter is properly installed, powered, and connected to the network.
2. Run STRDIAG and write down the results of the diagnostics.
3. Try to operate your Adapter in unidirectional and polling modes, by using the appropriate CPI command line parameters (see **Chapter 4**).
4. Write down any error messages that have been displayed.

When you contact Technical Support, you will be asked for the results of the STRDIAG diagnostic tests and for all error messages that have been displayed.



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