

Gigabit Ethernet-SX PCI Adapter

Installation and User's Guide

Note

Before using this information and the product it supports, read the general information under "Product Warranties and Notices" included with your system unit.

Second Edition (December 2002)

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Safety Information

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

D05

Handling the Gigabit Ethernet-SX PCI Adapter

Attention: Static electricity can damage your equipment. Leave the Gigabit Ethernet-SX PCI Adapter in its static-protective bag until you are ready to install it in your system unit.

Electrostatic Discharge Protection

Take the following precautions whenever you handle the Gigabit Ethernet-SX PCI Adapter or other static-sensitive devices:

- If you have an anti-static wrist strap, use it while handling the adapter.
- Limit your movement. Movement can cause static electricity to build up around you.
- With the adapter still in its anti-static bag, touch it to an unpainted metal part of the system unit, such as an expansion slot.
- Hold the adapter carefully by its edges. Avoid touching solder joints, pins, or other printed circuitry.
- Do not place the adapter on the system unit cover or on a metal table. If you must set it aside, put it back into its anti-static bag. Before you pick it up again, touch the bag and metal frame of the system unit at the same time.
- Be very careful when you handle the adapter during cold weather, as low humidity and heating increase static electricity.

About This Book

This book provides information about the Gigabit Ethernet-SX PCI Adapter, how to install and configure the adapter, and how to attach the adapter to a network. Use this book together with your specific system unit and operating system documentation.

Refer to your system unit and operating system documentation for information specific to your hardware and software configuration.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

References to AIX Operating System

This document may contain references to the AIX operating system. If you are using another operating system, consult the appropriate documentation for that operating system.

This document may describe hardware features and functions. While the hardware supports them, the realization of these features and functions depends upon support from the operating system. AIX provides this support. If you are using another operating system, consult the appropriate documentation for that operating system regarding support for those features and functions.

Related Publications

The following publications contain related information:

- System unit documentation for information specific to your hardware configuration
- Operating system documentation for information specific to your software configuration
- *PCI Adapter Placement Reference Guide*, SA23–2504 (for the latest version, you may need to contact your marketing representative)

Trademarks and Acknowledgments

AIX is a registered trademark of International Business Machines Corporation.

Chapter 1. Overview

Note: This document may contain references to the AIX operating system. If you are using another operating system, consult the appropriate documentation for that operating system.

This document may describe hardware features and functions. While the hardware supports them, the realization of these features and functions depends upon support from the operating system. AIX provides this support. If you are using another operating system, consult the appropriate documentation for that operating system regarding support for those features and functions.

The Gigabit Ethernet-SX PCI Adapter is a 32/64-bit high performance expansion adapter card for systems adhering to the Peripheral Component Interconnect (PCI) and IEEE 802.3z standards. The adapter connects the system to an Ethernet LAN at 1000Mbps data rate.

The Gigabit Ethernet-SX PCI Adapter provides the following features:

- 33MHz through 66MHz PCI bus speeds
- 2 LED adapter status indicators
- Full-duplex operation
- 1MB on-card FIFO for transmit and receive
- Fiber SC connector for multimode fiber cabling
- Surface mount (SMT) and pin-in-hole (PIH) technology

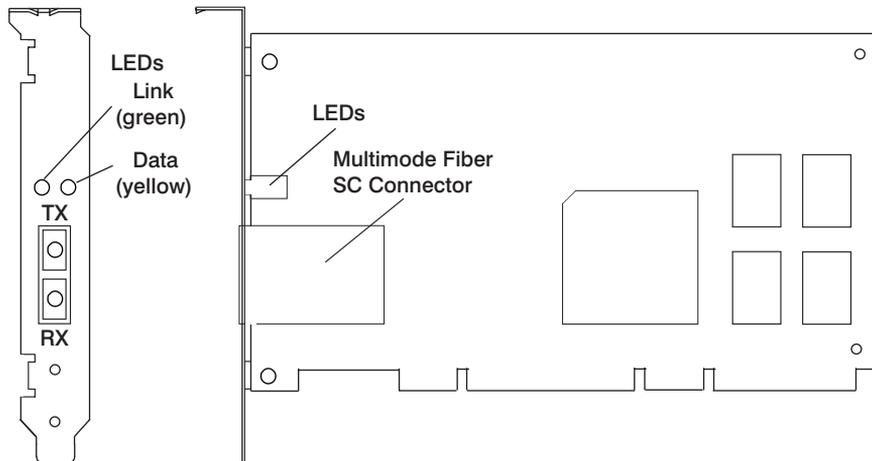


Figure 1. The Gigabit-SX PCI Adapter

Attention:

The fiber adapters are designed with specifications for the cable to be a dual cable connector, transmit and receive cable ends clamped together. If a customer uses separate transmit and receive fiber cables, it is strongly recommended that the cables be clamped together to enhance the retention strength on the fiber transceiver connector. Clamping the cables together also improves the alignment of the fibers with the connector and improves overall performance.

Chapter 2. Preparing to Install the Adapter

This chapter covers the things you need to do before you install your Gigabit Ethernet-SX PCI Adapter. Preparing to install the adapter involves the following tasks:

- Verifying your hardware requirements
- Verifying your software requirements
- Making sure your package is complete
- Gathering tools and documentation

Verifying Your Hardware Requirements

The Gigabit Ethernet-SX PCI Adapter requires the following hardware:

- A wrap plug for the multimode fiber connector, if you are running the total diagnostics package
- Shortwave (850nm) 50/62.5 micron multimode fiber network attachment

The following table shows the minimum and maximum allowable cable lengths from the adapter to the gigabit ethernet switch, including patch cables:

Fiber type	Modal bandwidth (MHz-km)	Minimum range (meters)	Maximum range (meters)
62.5 μ .m MMF	160	2	220
62.5 μ .m MMF	200	2	275
50 μ .m MMF	400	2	500
50 μ .m MMF	500	2	500

Verifying Your Software Requirements

The Gigabit Ethernet-SX PCI Adapter is supported on some AIX 4.2.1 and all AIX 4.3.2 operating systems. Please ensure that your operating system supports this adapter before you install it. Contact your support representative for assistance.

Note: If you are installing your operating system at this time, install the adapter before you install the operating system (see Chapter 4, “Installing the Adapter” on page 7 for instructions). If you are installing only the device driver for this adapter, install the device driver before you install the adapter. (See Chapter 3, “Installing the Device Driver” on page 5 for instructions.)

Checking Your Package

Check that your package contains the following items:

- The Gigabit Ethernet-SX PCI Adapter
- AIX 4.2.1 device driver CD ROM (Part number 94H0965)
- Wrap plug

- A registration card

Contact the place of purchase if an item is missing or damaged.

Note: Be sure to retain your proof of purchase as it might be required to receive warranty service.

Gathering Tools and Documentation

To install the adapter, you need the following items:

- A flat-blade screwdriver
- Your system unit documentation, including any service documentation
- Your operating system documentation

Chapter 3. Installing the Device Driver

This chapter provides instructions for installing the device driver for the Gigabit Ethernet-SX PCI Adapter on an AIX system. The device driver is provided for an AIX operating system.

If your installed AIX operating system (4.2.1 and 4.3.2) supports the Gigabit Ethernet-SX PCI Adapter, the device driver is already installed and you can install the adapter. Go to Chapter 4, “Installing the Adapter” on page 7 for instructions.

If you have AIX 4.2.1 installed on your system and it does not support the Gigabit Ethernet-SX PCI Adapter, to install the device driver on an AIX system:

1. At the system prompt, log in as a root user.
2. Insert the device driver media into the appropriate media device.
3. To start SMIT, type:

```
smit devinst
```

at the prompt, then press Enter. The Install Additional Device Software panel displays. The **INPUT device/directory for software** option is highlighted for selection.

4. Press F4 to display a list of input devices from which you can select. The cursor is already positioned on the input device entry field.
5. Either type the name of the input device in the entry field or select the appropriate device, then press Enter. The Install Additional Device Software panel displays the device you selected in the **INPUT device/directory for software** field. The **SOFTWARE to install** option is highlighted.
6. Press F4 to display a list of the device packages you can install.
7. To display a Find dialog box, type:

```
/
```

in the field where the cursor is positioned.

8. Type the following device package name:

```
devices.pci.14100401
```

then press Enter.

9. Press F7 to select the device package name, then press Enter. The Install Additional Device Software panel displays the completed required fields.
10. Press Enter. The **ARE YOU SURE** list displays.
11. Press Enter. The **COMMAND STATUS** panel displays. The term **RUNNING** is highlighted, indicating that the software is being installed.
12. When **RUNNING** changes to **OK**, scroll down to the bottom of the panel and locate the Installation Summary. If the installation was successful, **SUCCESS** appears at the bottom of the panel in the Result column of the Installation Summary.
13. Remove the device driver software media from the media device.

14. Press F10 to exit SMIT.
15. 15. To shut down your system, type:
shutdown -F

then press Enter.
16. Go to Chapter 4, "Installing the Adapter" on page 7.

Chapter 4. Installing the Adapter

After you install the device driver, you can install the Gigabit Ethernet-SX PCI Adapter. This chapter takes you through the steps of installing your Gigabit Ethernet-SX PCI Adapter which involves the following tasks:

- Installing the adapter in your system unit
- Verifying installation
- Running adapter diagnostics

Installing the Gigabit Ethernet-SX PCI Adapter

Attention:

Be sure to read the “Electrostatic Discharge Protection” on page vii and Chapter 4, “Installing the Adapter” before you begin the installation process.

To install the adapter:

1. Log in as a root user.
2. Shut down the system by typing:

```
shutdown -F
```

at the system prompt, then press Enter. When `halt` completed displays, turn the system unit power off and unplug the power cord from the wall outlet.

3. Remove the covers of your system unit. Follow the instructions provided in your system unit documentation.
4. Install the adapter in an available unrestricted PCI expansion slot in your system unit. See the instructions in your system unit documentation for installing PCI adapters.
5. Follow the directions provided in your system unit documentation to reinstall the covers of your system unit.
6. Plug the power cord back into the wall outlet.
7. Turn the power on to your system unit so that the operating system can update the system configuration.

Verifying the Installation

See the instructions provided in your system unit documentation for verifying the successful installation of the adapter. To verify the installation, type:

```
lsdev -Cs pci
```

at the system prompt, then press Enter. A list of PCI devices displays. An Available status indicates that the adapter is installed and ready to use.

Running Adapter Diagnostics

Diagnostics are provided with the device driver software. If you must run diagnostics, refer to your system unit documentation for instructions.

Chapter 5. Connecting to an Ethernet Network

Refer to your local procedures for information about connecting the Gigabit Ethernet-SX PCI Adapter to your Ethernet network.

Attention:

The fiber adapters are designed with specifications for the cable to be a dual cable connector, transmit and receive cable ends clamped together. If a customer uses separate transmit and receive fiber cables, it is strongly recommended that the cables be clamped together to enhance the retention strength on the fiber transceiver connector. Clamping the cables together also improves the alignment of the fibers with the connector and improves overall performance.

Note: Only one type of network can be attached to the adapter card at a time.

Connecting the Network Cables and Adapter

Make sure you have the hardware listed in “Verifying Your Hardware Requirements” on page 3 before you begin connecting the adapter.

To connect the adapter to the multimode fiber network:

- Insert the male fiber SC connector of the fiber cable into the adapter SC connector.
- Insert the male fiber SC connector of the other end of the cable into the network switch.

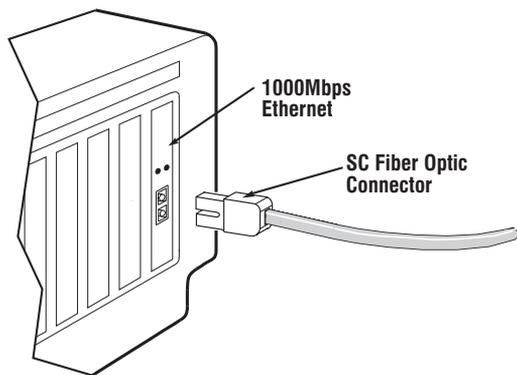


Figure 2. Connecting the Adapter to the Network

Understanding the Adapter LEDs

The LEDs on the Gigabit Ethernet-SX PCI Adapter provide information about the card's operation status. The LEDs are visible through the card's mounting bracket and, when lit, indicate the following conditions:

Light	State	Description
Data(Yellow)	Blinking	Data detected
	Off	No data detected
Link(Green)	On	Good link
	Off	No link: could be the result of a bad cable, bad connector or configuration mismatch
	Blinking	Port has been disabled by software

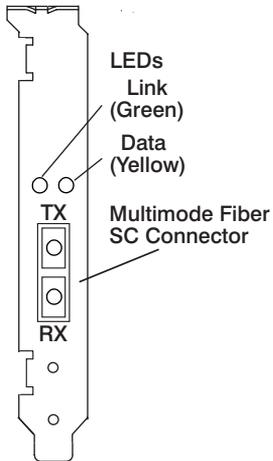


Figure 3. LEDs on the Gigabit Ethernet-SX PCI Adapter

Appendix. Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying documentation.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from authorized dealers. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

- International Business Machines Corporation
- New Orchard Road
- Armonk, New York 10504
- Telephone: (919) 543-2193



European Union (EU) Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. The manufacturer cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards supplied by third parties. Consult with your dealer or sales representative for details on your specific hardware.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe B est conform à la norme NMB-003 du Canada.

Canadian Department of Communications Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

VCCI Statement

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

The following is a summary of the VCCI Japanese statement in the box above.

This product is a Class B Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). This product is aimed to be used in a domestic environment. When used near a radio or TV receiver, it may become the cause of radio interference. Read the instructions for correct handling.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

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