

2210 Nways Multiprotocol Router

GC30-3867-02

**Installation and  
Initial Configuration Guide**





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Initial Configuration Guide**

**Note**

Before using this information and the product it supports, be sure to read the general information under Appendix B, "Notices" on page B-1 and "Electronic Emission Notices" on page B-1.

**Third Edition (November 1998)**

This edition applies to the IBM 2210 Nways Multiprotocol Router.

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## About This Guide

This guide describes how to set up the IBM 2210, perform the initial configuration, and identify and correct any problems that occur during the installation.

The IBM 2210 has multiple connectors (ports) on the rear of the unit. This guide tells you how to attach the correct cable to each port to complete the physical installation of the IBM 2210.

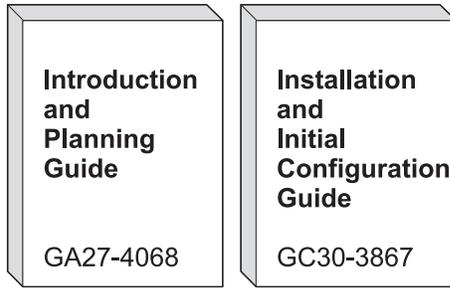
In order for the IBM 2210 to communicate with other devices in the WAN, it must be configured with some basic information about its location (address). This guide describes three alternative ways to configure the IBM 2210

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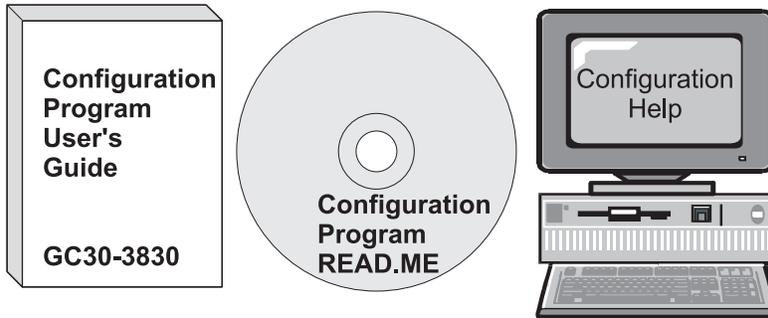
## Who Should Use This Guide

This guide is intended for the person responsible for installing the IBM 2210 and performing simple configuration tasks when assisted by a network administrator.

Planning and Installation



Configuration



Diagnostics/Maintenance



Operations and Network Administration

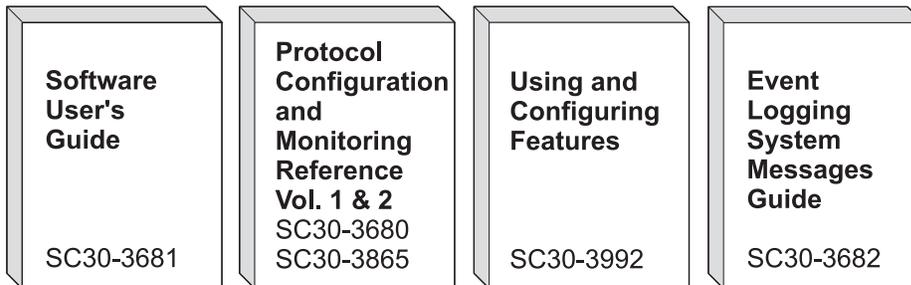


Figure 0-1. IBM 2210 Nways Multiprotocol Router Library Overview

## Library Description

### Introduction and Planning

GA27-4068 *IBM 2210 Nways Multiprotocol Router Introduction and Planning Guide*

This book is shipped with the 2210. It explains how to prepare for your network and for installation.

This book provides translations of danger notices and other safety information.

GC30-3867 *IBM 2210 Nways Multiprotocol Router Installation and Initial Configuration Guide*

It explains how to prepare for installation, install the 2210, perform an initial configuration, and verify that the installation is successful.

This book provides translations of danger notices and other safety information.

### Diagnostics and Maintenance

SY27-0345 *IBM 2210 Nways Multiprotocol Router Service and Maintenance Manual*

This book is shipped with the 2210. It provides instructions for diagnosing problems with and repairing the 2210.

### Operations and Network Management

SC30-3681 *Software User's Guide for Multiprotocol Routing Services*

This book explains how to:

- Configure, monitor, and use the IBM Multiprotocol Routing Services software shipped with the router.
- Use the Multiprotocol Routing Services command-line router user interface to configure and monitor the network interfaces and link-layer protocols shipped with the router.

SC30-3680 *Protocol Configuration and Monitoring Reference Volume 1 for Multiprotocol Routing Services*

SC30-3865 *Protocol Configuration and Monitoring Reference Volume 2 for Multiprotocol Routing Services*

These books describe how to access and use the Multiprotocol Routing Services command-line router user interface to configure and monitor the routing protocol software shipped with the router.

They include information about each of the protocols that the devices support.

SC30-3682 *IBM Nways Event Logging System Messages Guide*

This book contains a listing of the error codes that can occur, along with descriptions and recommended actions to correct the errors.

SC30-3992 *Using and Configuring Features for Multiprotocol Routing Services*

This book details how to configure and use the features for Multiprotocol Routing Services. These features include bandwidth

reservation, WAN restoral, WAN reroute, DIALs, and Network Address Translation (NAT).

### **Configuration**

Online help The help panels for the Configuration Program assist the user in understanding the program functions, panels, configuration parameters, and navigation keys.

GC30-3830 *Configuration Program User's Guide for Multiprotocol Routing Services*

This book discusses how to use the Configuration Program.

GG24-4446 *IBM 2210 Nways Multiprotocol Router Description and Configuration Scenarios*

This book contains examples of how to configure protocols using IBM Multiprotocol Routing Services.

### **Safety**

SD21-0030 *Caution: Safety Information - Read This First*

This book provides translations of caution and danger notices applicable to the installation and maintenance of an IBM 2210.

## **Library Ordering Information**

All 2210 publications can be ordered separately.

These publications are shipped in hardcopy with the 2210:

*IBM 2210 Nways Multiprotocol Router Introduction and Planning Guide*

*IBM 2210 Nways Multiprotocol Router Installation and Initial Configuration Guide*

*IBM 2210 Nways Multiprotocol Router Service and Maintenance Manual*

*Configuration Program User's Guide for Multiprotocol Routing Services*

*Caution: Safety Information - Read This First*

These publications are shipped with the Configuration Program in softcopy on a CD-ROM:

*IBM 2210 Nways Multiprotocol Router Introduction and Planning Guide*

*IBM 2210 Nways Multiprotocol Router Installation and Initial Configuration Guide*

*IBM 2210 Nways Multiprotocol Router Service and Maintenance Manual*

*Software User's Guide for Multiprotocol Routing Services*

*Protocol Configuration and Monitoring Reference Volume 1 for Multiprotocol Routing Services*

*Protocol Configuration and Monitoring Reference Volume 2 for Multiprotocol Routing Services*

*IBM Nways Event Logging System Messages Guide*

*Using and Configuring Features for Multiprotocol Routing Services*

## Obtaining Softcopy Information

Softcopy BookManager READ library information is available for many of the 2210 publications in the *IBM Networking Systems Softcopy Collection Kit*. To place a single order for the CD-ROM, use form number SK2T-6012.

Yearly subscriptions to the *IBM Networking Systems Softcopy Collection Kit*, product number 5636-PUB, are available through your branch office representative. Order feature code 2003 and media code 5003 for CD-ROM format.

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## System Library Subscription Service

The 2210 publications are available via the System Library Subscription Service (SLSS). Use machine type 2210 and program number 5765-B86 to receive 2210 publications.

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## Visit Our Web Site

Visit the IBM 2210 Web site at: <http://www.networking.ibm.com/220/220prod.html> for:

- Storage Estimator
- Performance testing results
- Configuration programs and MRS code
- Publications
- Questions and answers

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## Summary of Changes

Changes to the *IBM 2210 Nways Multiprotocol Router Installation and Initial Configuration Guide* include:

- The 4- and 8-Port Dial Access Adapters
- The 4 and 8 MB Additional Flash Feature
- Access and Configuration Methods

The technical changes and additions are indicated by a vertical line (|) to the left of the change.



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## Chapter 1. Installing the 2210

### DANGER

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the IBM 2210 or the devices that attach to the IBM 2210. 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 cord for the IBM 2210 is unplugged.**

**When possible, use one hand 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 or disconnect any cables.**

**Note:** For translations of this safety notice, see "Safety Notices" on page B-6.

To install the IBM 2210, you will first install the hardware, and then perform an initial configuration if your router was not configured at the factory.

1. To install the hardware, see the following sections of this guide:
  - a. "Preparing for Installation" on page 1-2
  - b. "Installing Options in Models 14T and 24x" on page A-1, if needed
  - c. "Placing the IBM 2210 on the Table or in the Rack" on page 1-4
  - d. "Connecting the Cables" on page 1-8
  - e. "Connecting the Power Cord" on page 1-11
  - f. "Attaching the IBM 2210 to Devices" on page 1-11
  - g. "Verifying Operation" on page 1-12
2. See Chapter 4, "Performing the Initial Configuration" on page 4-1 to perform an initial configuration.

If your IBM 2210 is configured with just an IP address and a Bootp server address, the IBM 2210 will use the EasyStart feature to obtain a full configuration from the Bootp Server. EasyStart is described in *Software User's Guide for Multiprotocol Routing Services*

If the IBM 2210 has an IP address and is connected to a network, you can also use the Configuration Program to send a full configuration to the router and restart the router.

To configure protocols, transports, and features you need on the IBM 2210, using the command line interface, refer to the following publications:

- *Software User's Guide for Multiprotocol Routing Services*
- *Protocol Configuration and Monitoring Reference Volumes 1 and 2 for Multiprotocol Routing Services*
- *Using and Configuring Features for Multiprotocol Routing Services*

To use the Configuration Program, refer to *Configuration Program User's Guide for Multiprotocol Routing Services*.

An additional source of information is the *IBM 2210 Nways Multiprotocol Router Description and Configuration Scenarios*, GG24-4446.

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## Preparing for Installation

**Note:** Before installing the IBM 2210, be sure to read "Electronic Emission Notices" on page B-1.

Before beginning the installation procedure, make sure that the following tasks have been completed:

- If the IBM 2210 is to be placed in a rack, provide a rack that meets the requirements and that has space for the IBM 2210. See "Placing the IBM 2210 on the Table or in the Rack" on page 1-4 for information about rack requirements. You will also need to provide the mounting hardware appropriate for your rack.
- Verify that appropriate power outlets are available.
- Unpack the IBM 2210 and place it where it is to be installed.
- Provide any network interface cables not ordered with the IBM 2210.
- You will need an ASCII terminal to perform initial configuration. See "Attaching an ASCII Terminal to the Service Port" on page 3-3 for information about ASCII terminals.

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## Verifying the Shipment Inventory

Check the components included with your shipment using the following list.

### Hardware

- IBM 2210
- Network interface cables (optional)
- Service port cable
- Adhesive-backed feet (not available with all models)
- Cable management bracket (not available with all models)
- AC power cord
- Service kit with wrap plugs and service port converter (optional)

### Optional Features

The following models of the 2210 support the following features:

Table 1-1. IBM 2210 Models

Model	LAN	No. of Integrated WANs (see note)	ISDN BRI	Base Flash Memory	Base DRAM	Supports Adapter Features
1S4*	Ethernet	1	1	2 MB	4 MB	No
1S8*	Ethernet	1	1	4 MB	8 MB	No
1U4*	Ethernet	1	1	2 MB	4 MB	No
1U8*	Ethernet	1	1	4 MB	8 MB	No
12T	Token-Ring	2	0	4 MB	8 MB	No
12E	Ethernet	2	0	4 MB	8 MB	No
127	Token-Ring	2	1	4 MB	8 MB	No
128	Ethernet	2	1	4 MB	8 MB	No
14T	Token-Ring	4	0, 1, or 4 (optional)	4 MB	16 MB	Yes
24T	2 Token-Ring	4	0, 1, or 4 (optional)	4 MB	16 MB	Yes
24E	2 Ethernet	4	0, 1, or 4 (optional)	4 MB	16 MB	Yes
24M	1 Token-Ring 1 Ethernet	4	0, 1, or 4 (optional)	4 MB	16 MB	Yes

**Note:**

The standard WAN ports on the IBM 2210 will support any of these physical interfaces:

- EIA 232-D/V.24
- V.35
- V.36
- X.21

WAN Net Handlers:

- V.25bis (not supported on X.21)
- X.25
- PPP
- FR
- SDLC
- SDLC Relay
- Tunneled binary synchronous communication (BSC)
- Additional Flash Feature
- V.34 (only supported on EIA-232)

Expandable base DRAM:

- Base DRAM for the 12x can expand to 16 MB.
- Base DRAM for the 14x can expand to 32 MB.

\*The 1S4, 1S8, 1U4, and 1U8 can use both ISDN BRI B channels, or the WAN port, or 1 ISDN BRI B channel and the WAN port at any given time.

These items will be installed in your IBM 2210 if ordered with the unit:

- 4 MB Additional Flash Feature
- 8 MB Additional Flash Feature
- 16 MB DRAM Memory Expansion Feature
- 32 MB DRAM Memory Expansion Feature
- 14.4 Kbps Modem Port Feature
- EIA 232 Service Port Feature
- 1-port ISDN Basic Rate Interface Adapter
- 4-port ISDN BRI Adapter
- 1-port E1 120-ohm ISDN PRI Adapter
- 1-port T1/J1 ISDN PRI Adapter

- 4-port WAN Concentration Adapter
- 8-port WAN Concentration Adapter
- 4-port Dial Access Adapter
- 8-port Dial Access Adapter
- 1-port 25-Mbps ATM Interface Adapter

The following documentation is provided:

- *IBM 2210 Nways Multiprotocol Router Introduction and Planning Guide*
- *IBM 2210 Nways Multiprotocol Router Installation and Initial Configuration Guide*
- *IBM 2210 Nways Multiprotocol Router Service and Maintenance Guide*
- *Configuration Program User's Guide for Multiprotocol Routing Services*

Store the books near the machine.

---

## Placing the IBM 2210 on the Table or in the Rack

Models 1S4, 1S8, 1U4, and 1U8 are for table top use. The other models can be placed on a tabletop or rack. The following figures use a 12x model as an example.

### Placement on a Table

If you are placing the IBM 2210 on a table:

- 1** Attach the four adhesive-backed feet to the bottom of the IBM 2210 at the corners.

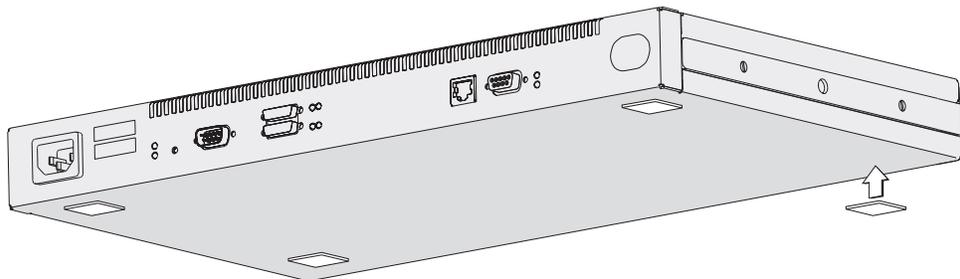


Figure 1-1. Attaching the Feet to the Bottom of the IBM 2210

- 2** Place the IBM 2210 on the table and go to “Connecting the Cables” on page 1-8.

## Placement in a Rack

If you choose rack-mounting, you must provide the rack; it is not provided with the 2210.

You can use any EIA standard 19-inch rack. The rack can be open or closed. However, if you choose a closed rack, you must make sure that enough air flows through the 2210. Covers on the front of the rack that would not let air reach the 2210 must be removed or modified to let air pass. Similarly, unvented rear rack covers that would not let air exit the 2210 or would cause back pressure to build up from several machines must not be used.

If you are placing the IBM 2210 in a rack:

- 1** To install the IBM 2210 with the cables at the back of the rack, go to step 2 on page 1-6.

To install the IBM 2210 with the cables at the front of the rack, follow these steps for each rack-mounting bracket:

- a** Remove the outer screws that attach the mounting bracket to the side of the IBM 2210.

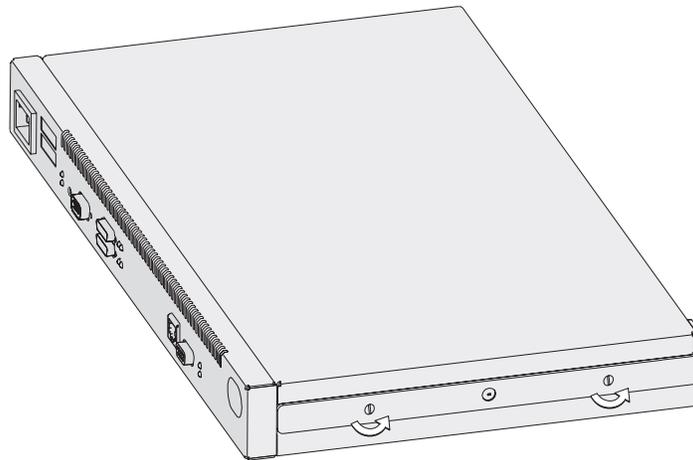


Figure 1-2. Removing the Screws on the Mounting Bracket

- b** Turn the bracket around so that the ear is in front and is pointed away from the machine.

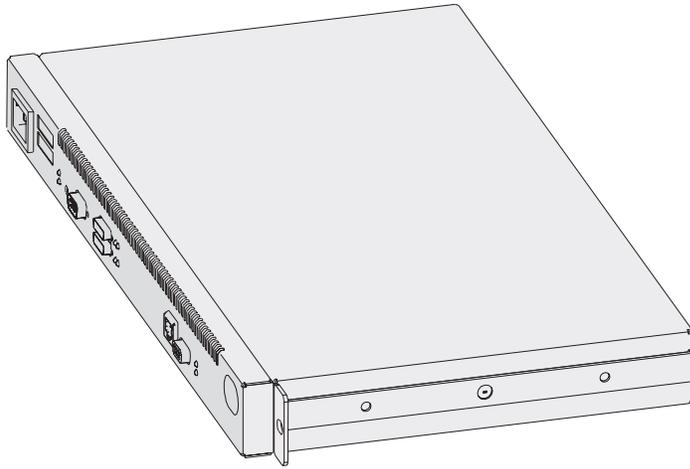


Figure 1-3. Turning the Mounting Bracket

**C** Secure the bracket to the IBM 2210.

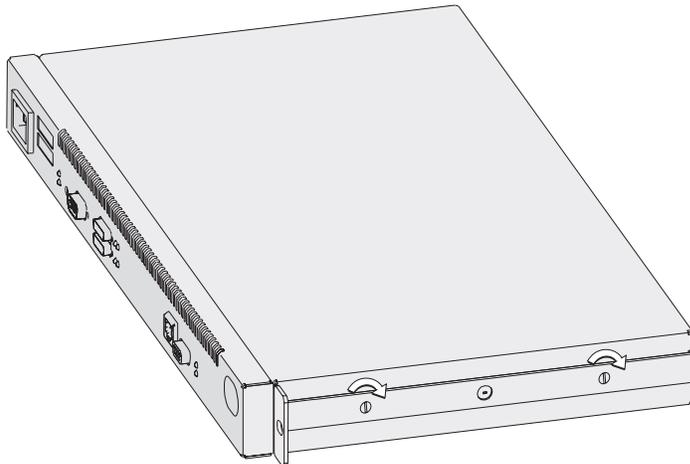


Figure 1-4. Securing the Mounting Bracket

**d** Go to step 3 on page 1-7.

**2** To install the IBM 2210 with the cables at the back of the rack, follow these steps for each rack-mounting bracket:

**a** Remove the outer screws that attach the mounting bracket to the side of the IBM 2210.

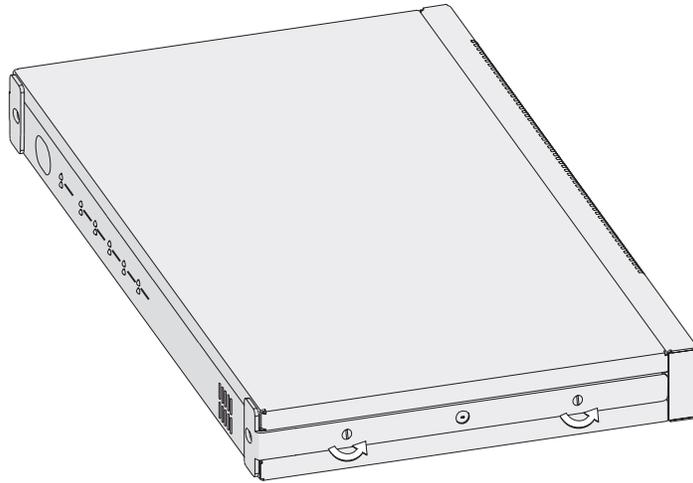


Figure 1-5. Removing the Screws on the Mounting Bracket

- b** Turn the mounting bracket so that the ear faces away from the machine.

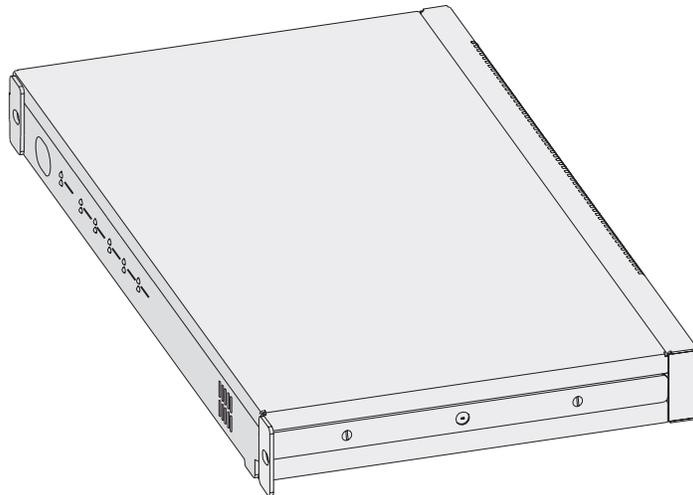


Figure 1-6. Turning the Mounting Bracket

- c** Secure the bracket to the IBM 2210.
- 3** Select the desired position for the IBM 2210 in the rack.
- 4** Attach the IBM 2210 to the rack using mounting hardware appropriate for your rack.

- 5** A cable management bracket is provided. If you wish to use it, install it as shown here.

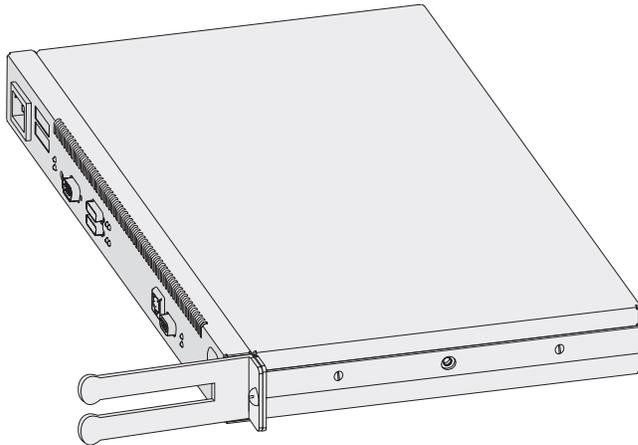


Figure 1-7. Attaching the Cable Management Bracket

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## Connecting the Cables

The ports of the different models of the IBM 2210 are shown below. Find the picture of the model you are installing. Connect the cables to the ports.

**Notes:**

1. You must attach an ASCII terminal to the service port to perform initial configuration of the IBM 2210. For information about attaching an ASCII terminal, go to “Attaching an ASCII Terminal to the Service Port” on page 3-3.
2. Be sure to follow standard CCITT 1.430 when connecting cables to the ISDN port on the models that support ISDN, including the correct wall termination for your ISDN network.

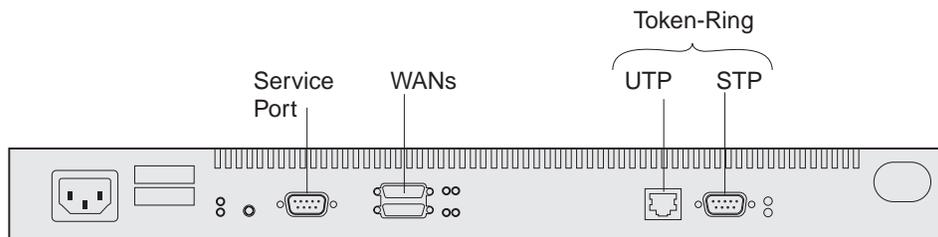


Figure 1-8. Model 12T

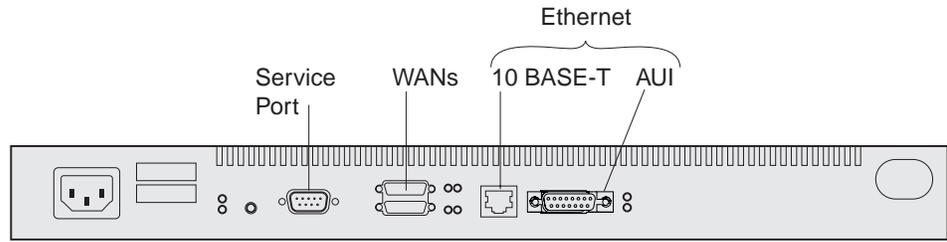


Figure 1-9. Model 12E

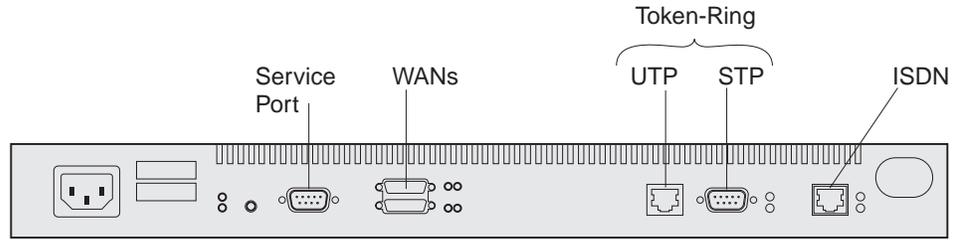


Figure 1-10. Model 127

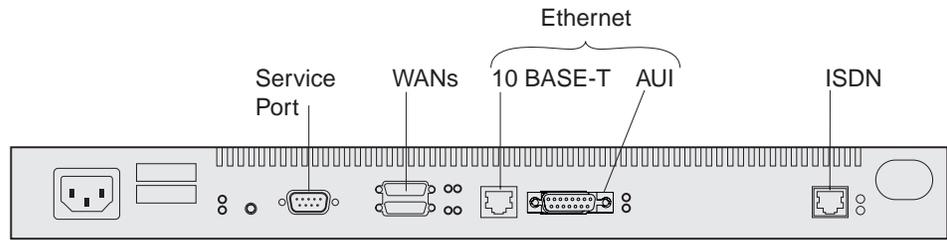


Figure 1-11. Model 128

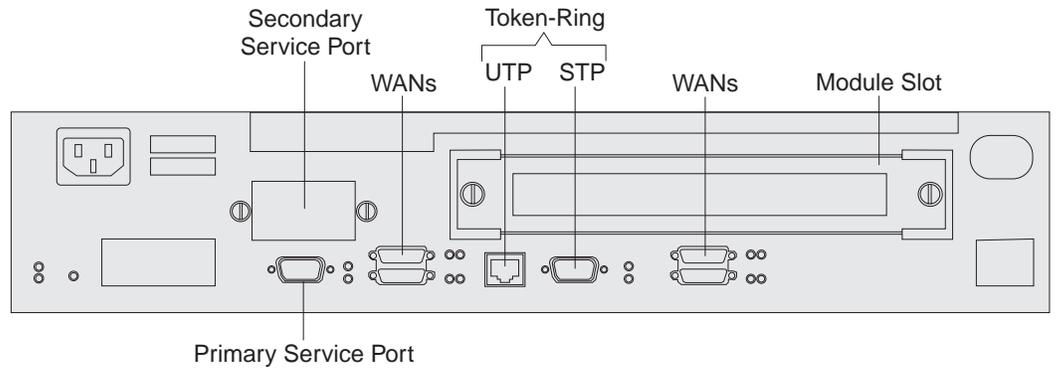


Figure 1-12. Model 14T

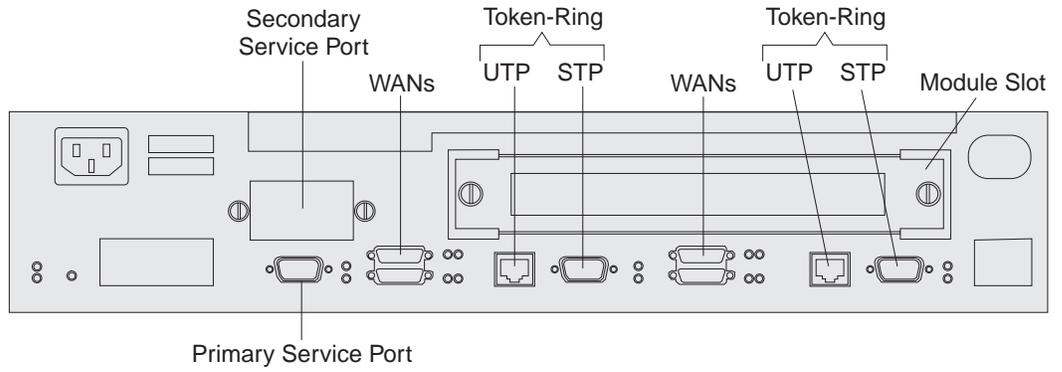


Figure 1-13. Model 24T

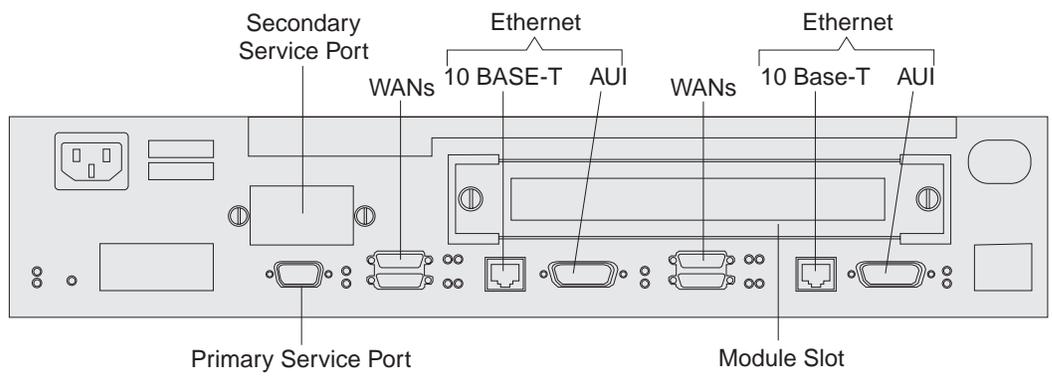


Figure 1-14. Model 24E

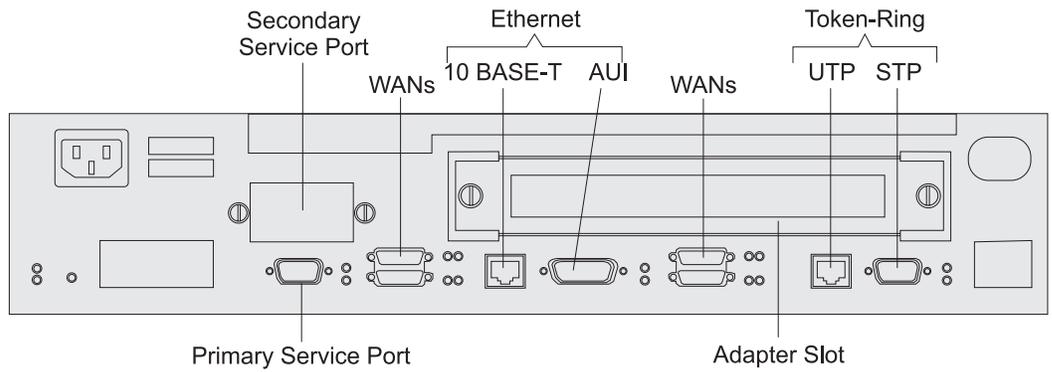


Figure 1-15. Model 24M

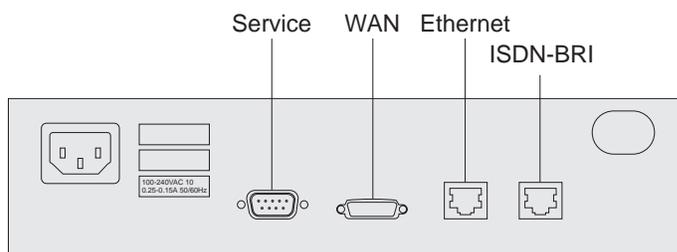


Figure 1-16. Models 1Sx and 1Ux

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## Connecting the Power Cord

Connect the power cord to the IBM 2210. Do not connect the power cord to the power outlet.

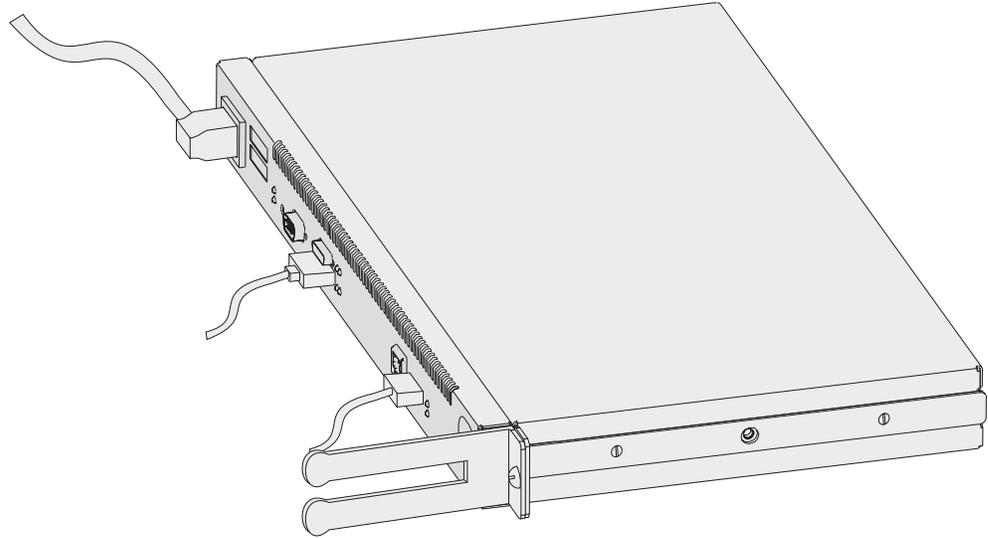


Figure 1-17. Connecting the Power Cord to the IBM 2210

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## Attaching the IBM 2210 to Devices

To connect each network interface cable to a device:

- 1** Identify the correct device.
- 2** Connect the network interface cable to the device.

**Note:** Always power off any peripheral device before connecting it to or disconnecting it from a network interface cable. If you connect or disconnect this cable while the peripheral device is powered on, the IBM 2210 may perform an initial program load (IPL).

## Verifying Operation

As soon as you plug in the IBM 2210, the power-on self-test (POST) begins. During the POST, the LEDs light in various combinations. The POST and boot will require about 1 minute. At the end of the boot, the green LEDs for the system (OK) and for any port that is active should be on or blinking. Figure 1-18 shows the LED states for a IBM 2210 Model 12T after a successful boot.

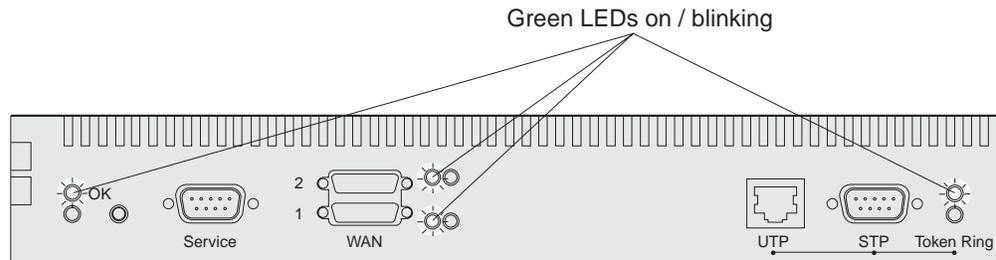


Figure 1-18. LEDs On or Blinking on Port Side after Successful Boot

**Note:** The port LEDs will not light for any port that is not being used.

An example of the LED states after a successful boot on the side of the machine opposite the ports is shown in Figure 1-19.

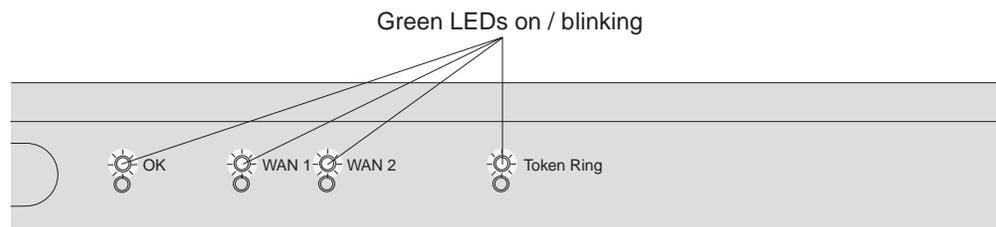


Figure 1-19. LEDs On or Blinking on Non-Port Side after Successful Boot

If the boot is successful, the green system OK LED is on and the amber system LED is off. Continue with Chapter 4, “Performing the Initial Configuration” on page 4-1.

If the LEDs do not indicate a successful power-on, continue with the Chapter 2, “Problem Solving” on page 2-1.

When power to the 2210 adapter slot fails, look at the adapter status LED located at the lower side of the adapter bracket near the right thumbscrew. If the adapter status LED is off, there is a slot power failure. Continue with the Chapter 2, “Problem Solving” on page 2-1.

---

## Chapter 2. Problem Solving

---

### LED Status and Trouble Shooting Checklist

#### LED Status

<b>Green</b>	<b>Amber</b>	<b>Action</b>
On	Off	Router loaded and operational.
On or Off	On	Replace the system board. If this is a 1Sx or 1Ux model, replace the unit.
Off	Blinking	Replace the DRAM SIMM. If this is a 1Sx or 1Ux model, replace the unit.
On	Blinking	Either: <ul style="list-style-type: none"><li>• There is no router load module available, no boot configuration has been entered, or the configured boot path is not available. Additional information can be obtained by attaching a service terminal to the IBM 2210. If the problem cannot be resolved locally, call the network administrator.</li><li>• The router is in the process of loading from the network. If this is the case, the green port LED on the port that is being used for the load will also be blinking.</li></ul>
Blinking	On	Replace the flash SIMM on models 14T and 24x. For 12x models, refer to the "Nways Multiprotocol Router Service and Maintenance Guide" publication. If this is a 1Sx or 1Ux model, replace the unit.
Blinking	Blinking	Load from the IBD is in process.

## Troubleshooting Checklist

Symptom	Action
No LEDs are on	<ul style="list-style-type: none"> <li>• Make sure the power cord is plugged into an outlet</li> <li>• Verify that your power outlet is good</li> </ul>
The system LED ( <b>OK</b> ) is green, but a port LED is amber	<p>If you are not using the port with the amber LED on, you may continue.</p> <p>If you are using the port:</p> <ul style="list-style-type: none"> <li>• Make sure the cable for that port is securely connected</li> <li>• Contact the network administrator to make sure the network is set up correctly</li> </ul>
Adapter status LED is OFF	<ul style="list-style-type: none"> <li>• Is the adapter enablement feature installed?</li> <li>• Check for correct power cables?</li> <li>• Check the adapter slot power supply.</li> <li>• Check the adapter.</li> <li>• Contact IBM service.</li> </ul>

If you locate the problem, execute the POST again by unplugging the power cord from the wall outlet and then plugging it in again. If the LEDs indicate a successful power-on continue with Chapter 4, "Performing the Initial Configuration" on page 4-1.

If you cannot determine the problem, call your service representative.

## Chapter 3. Accessing Your IBM 2210

If your router was not pre-configured, or if you did not use the EasyStart function, you will need to configure the router manually. To do this, you must first attach an ASCII terminal to the IBM 2210.

### Access Methods

The IBM 2210 software must be configured as part of the installation process. Therefore, you have to access the software in one of the following ways:

- Locally through a null-modem adapter and serial cables supplied with this product that are attached to the EIA-232 service port using an ASCII connection. See Figure 3-1.
- Remotely using dial-in (over telephone lines) through a modem attached to the EIA-232 primary service port or the secondary service port, if installed. You can use an ASCII connection. The secondary service port can be either an EIA-232 Service Port Feature or a 14.4 Kbps Modem Port Feature. See Figure 3-2 on page 3-2 and Figure 3-3 on page 3-2.

Table 3-1. User Console Attachment Options

Physical Attachment	Line Protocol	Access Protocol	Default IP Address
Service port + null modem Service port + external modem	Asynchronous characters	ASCII terminal emulation	Not applicable
Any IP network interface	IP	Telnet	No defaults

An ASCII connection requires an ASCII terminal or workstation running an ASCII terminal emulator.

Once the IBM 2210 is operational in the network, you can access the IBM 2210 by Telnetting from a network-connected workstation. This workstation must be attached to any of the IBM 2210's IP-capable network interfaces. The network interface can be on a LAN adapter or WAN adapter because both support IP routing. The Telnet workstation can be locally or remotely connected.

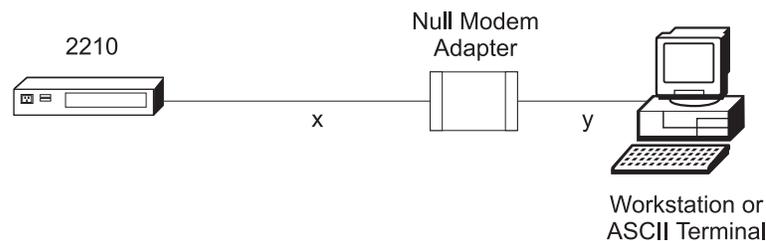


Figure 3-1. Local Terminal Connection to the EIA-232 Service Port

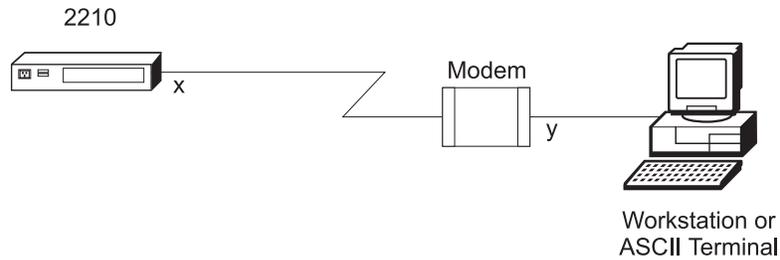


Figure 3-2. Remote Connection to 14.4 Kbps Modem Port Feature (14T and 24x Models)

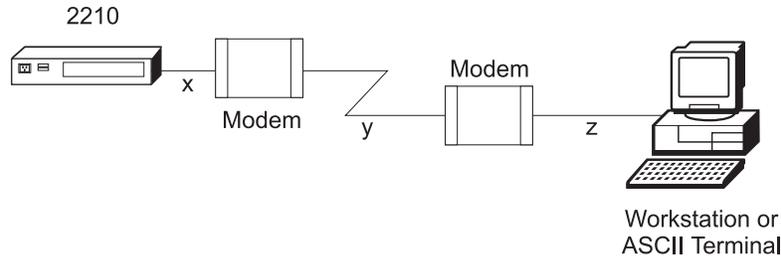


Figure 3-3. Remote Terminal Connection to the Primary or Secondary EIA-232 Service Port

## Service Port Default Settings

These are the default settings for the serial port:

<b>Speed</b>	9600 bps
<b>Parity</b>	None
<b>Data Bits</b>	8
<b>Stop Bits</b>	1

You can configure the service port speed for the following bit rates; however, the speed must match the speed configured for the ASCII terminal. The IBM 2210 also supports auto-baud.

300  
1200  
2400  
4800  
9600  
19 200  
38 400

## Modem Support

### Modem Requirements

The modem must be connected to the service port on the IBM 2210, use asynchronous operation, and be compatible with the Attention (AT) command set. A modem connected to a 2210 service port must be configured with the following characteristics:

- No echo
- Suppress results code
- Auto-answer

- Hardware (RTS/CTS) flow control
- Modem DTE speed fixed to match 2210 service port speed (9600 recommended).

Consult your modem documentation to find out how to configure and save these settings.

### **Remote Connection for Service**

To resolve a problem with your IBM 2210, IBM service personnel may request permission to establish a temporary, remote connection to the IBM 2210. In most situations, the IBM service personnel will not be at a remote workstation that is connected to your IP network. Consequently, remote access must be established using a modem. Whenever you authorize IBM service personnel to establish such a remote connection, you must:

- Connect and configure the modem before the remote service session can begin
- Provide the service personnel with the telephone number of a modem connected to the service port of the target IBM 2210 or to a modem that is connected to the service port on an IBM 2210 that is on the same network as the target IBM 2210
- Provide service personnel with the password or other necessary information for access to any security protection features

### **Modem Settings**

The following modems have been tested for use with the IBM 2210:

- IBM 7852, Model 400
- Zoom/FaxModem 56Kx
- Atlas 33.6 External PC Data/Fax Modem

For instructions on setting-up these and possibly other modems to operate with your IBM 2210, see: <http://www.networking.ibm.com/support/2210>

---

## **Attaching an ASCII Terminal to the Service Port**

Attach an ASCII terminal or emulator (with the appropriate emulation software) to the service port to provide local or remote access to the IBM 2210 as shown in Figure 3-4 on page 3-4.

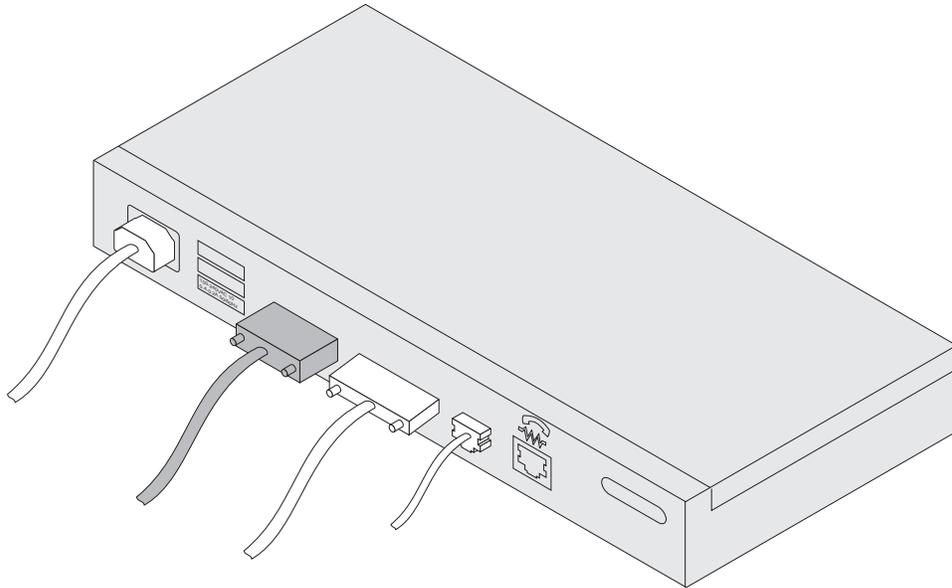


Figure 3-4. Attaching an ASCII Terminal to the Service Port

When locally attaching a terminal to the IBM 2210 service port, make sure that the speed (baud rate) configured for the service port matches the speed of the connected terminal if the IBM 2210 has been configured to use a specific baud rate. If the IBM 2210 is configured for auto-baud, the IBM 2210 learns the ASCII terminal's line speed when the user types the terminal break key sequence and presses Enter. A typical break key sequence for PC terminal emulators is Alt-B (refer to the terminal emulator documentation). Most ASCII terminals have a **Break** key (often used in conjunction with the **Ctrl** key).

**Note:** When using a locally attached terminal to run the IBM 2210 diagnostic programs, the service port line speed must be set to 9600 bps. This setting is a constant and cannot be changed.

When connecting a IBM 2210 to a remote terminal by two modems connected by telephone lines, you must follow these rules:

- If the modems are running at a speed of 9600 or lower and they do **not** support hardware compression, the IBM 2210 service port speed and the terminal speed must match the modems' line speed.
- If the modems are running hardware compression, the IBM 2210 service port speed and the terminal speed should exceed the modems' line speed.

**Note:** The IBM 2210 service port can be damaged by static electricity discharge. It is shipped with a plastic port cover to prevent such damage. Remove the plastic cover when you are attaching a terminal and store it in a safe place. When you disconnect the terminal, reinstall the plastic cover.

---

## ASCII Terminals and Setup Attributes

The DEC VT100 ASCII terminal is supported, as well as devices, such as personal computer systems, that are configured to emulate it. Configure a VT100 with:

- No parity
- 8-bit word length
- 1 stop bit

- See “Service Port Default Settings” on page 3-2 for the supported speeds.

The following terminals are also supported:

- IBM 3101 Display Terminal
- IBM 3151 ASCII Display Station
- IBM 3161 ASCII Display Station

Configure these terminals as shown in “Setup Attributes.”

## Setup Attributes

### IBM 3101 Setup Attributes

Use Figure 3-5 to determine the settings for the setup attributes for the IBM 3101 ASCII terminal.

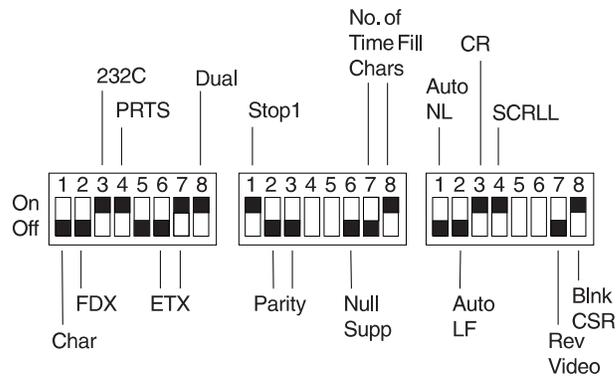


Figure 3-5. Setup Attributes for the IBM 3101 Display Terminal

See “Service Port Default Settings” on page 3-2 for the supported speeds.

### IBM 3151 Setup Attributes

Activate setup mode in the IBM 3151 terminal by pressing the **Ctrl** and **Setup** keys. The Ctrl key is located on the lower left of the keyboard. The Setup key is located on the upper right of the keyboard.

Use Table 3-2 on page 3-6 to help you determine the settings for the setup attributes.

Save the setup information by highlighting the **Save** function using the cursor keys.

Exit by pressing the **Ctrl** and **Setup** keys.

<i>Table 3-2. Setup Attributes for the IBM 3151</i>	
<b>Attribute</b>	<b>Setting</b>
Machine Mode	3151
Scroll	JUMP
Auto LF	OFF
Line Wrap	OFF
Operating Mode	ECHO
Word Length (bits)	8
Stop Bit	1
Turnaround Character	CR
Line Control	IPRTS
Break Signal (ms)	500
Send Null Suppress	ON

See “Service Port Default Settings” on page 3-2 for the supported speeds.

### **IBM 3161 Setup Attributes**

Activate setup mode in the IBM 3161 terminal by pressing the **Ctrl** and **Setup** keys. The Ctrl key is located on the lower left of the keyboard. The Setup key is located on the upper right of the keyboard. The terminal displays a setup attribute panel.

Change the attributes by moving the cursor to the various fields and typing over the information in the field. Use Table 3-3 to help you determine the settings for the setup attributes.

Press **Send** to save the attributes on this panel.

<i>Table 3-3. Setup Attributes for the IBM 3161</i>	
<b>Attribute</b>	<b>Setting</b>
Machine Mode	3161
Operating Mode	ECHO
Interface	RS-232C
Line Control	IPRTS
Turnaround Character	CR
Stop Bit	1
Word Length (bits)	8
Response Delay (ms)	100
Break Signal (ms)	500

See “Service Port Default Settings” on page 3-2 for the supported speeds.

You now need to set up additional attributes for the 3161. To set up the additional attributes:

1. Press **Select** to display the attribute selection bar.

2. Change the values on the selection bar to match the values in Table 3-4 on page 3-7.

To move between selections while on a selection bar, press **Tab**. To change a value for an attribute, press the spacebar.

3. Press **Send** to accept the current values for the attributes on the selection bar.
4. Continue with step 2 until you have set all the attributes in Table 3-4.
5. Press **Select** after the last selection bar to exit the 3161 setup function.

Table 3-4. Additional Setup Attributes for the IBM 3161

Attribute	Setting
Enter	Send
Return	Field
New Line	CR
Tab	Field
Line Wrap	On
Auto LF	Off
Send Null	On
Insert	Space
Trace	All
CRT Saver	No
Scroll	On
Print	Viewport
Print Null	On
Print EOL	On
Line End	CR-LF
Send	Line

## Bringing Up a Command Line Console

If you are at an IBM 2210 that has never been configured, the system presents the command prompt `Config (only)>`. You can then proceed with the initial configuration. If the IBM 2210 has been configured sufficiently, the system presents the `OPCON` command prompt (`*`).

## Configuration Methods

The IBM 2210 supports four types of configuration methods:

- Quick Configuration

Quick Configuration allows you to configure selected devices, bridging protocols, and routing protocols without entering a separate configuration environment to use the Configuration Program. After creating a minimal configuration, you must transfer a complete configuration to the IBM 2210 using TFTP or the configuration program's communications feature. To use Quick

Configuration for the initial configuration, you must attach an ASCII terminal to the IBM 2210.

- EasyStart

EasyStart mode automatically downloads the configuration of the router from a BOOTP server. During the process, the router displays the EasyStart> prompt and ELS messages that track the process. See the *Software User's Guide for Multiprotocol Routing Services* for more information about EasyStart.

- Configuration Program

The Configuration Program allows you to configure the IBM 2210 completely once Quick Configuration has taken place. The Configuration Program is run on a stand-alone workstation and has a graphical user interface. Once you have established remote access to the IBM 2210, you can transfer the complete configuration using TFTP or the send option of the configuration program's communication feature. The configuration program's communication feature uses SNMP to send the configuration data to the IBM 2210. It also has a restart router option that restarts the IBM 2210 and initializes it with the new configuration data.

Alternately, you can use the communication feature's timed configuration option to program a time at which the IBM 2210 will be restarted with the new configuration. For more information, see the *Configuration Program User's Guide for Multiprotocol Routing Services*.

- Command Line Interface

The IBM 2210's command line interface allows you to configure the router completely. You can access the command line interface by using one of the access methods described in "Access Methods" on page 3-1. You must use quick configuration to perform a basic IP configuration and restart the IBM 2210 before you can Telnet to access the command line interface.

Use either the IBM Multiprotocol Routing Services command line interface or the Configuration Program for Multiprotocol Routing Services to make changes to configuration parameters.

---

## Chapter 4. Performing the Initial Configuration

If you have a new router with no configuration, or if you have cleared the router's configuration, or encountered a problem that cleared the configuration, and you are not using EasyStart, you must perform the steps in this section before you can send an existing configuration to the router.

---

### Setting Up the Router (Initial Configuration)

To perform initial configuration on the router, you must first establish access to the router. You can establish access either locally or remotely as described in Chapter 3, "Accessing Your IBM 2210" on page 3-1. Then:

- 1 Perform an initial configuration to establish the IP address and IP mask for the primary interface for the router as follows:

#### **a** *Configure Interfaces*

- 1) Enter **Yes** to the Configure Interfaces question
- 2) Supply the interface information required for the interface which will communicate with the Configuration Program
- 3) Enter **Yes** to the Save this configuration question

#### **b** *Configure Bridging*

- 1) Enter **No** to the Configure Bridging question

#### **c** *Configure Protocols*

- 1) Enter **Yes** to the Configure Protocols question

#### **d** *Configuring IP*

- 1) Enter **Yes** to the Configure IP question
- 2) Enter **Yes** to the Configure IP on this interface question for the LAN interface that will communicate with the Configuration Program
- 3) Enter the IP address at the IP Address prompt
- 4) Enter the IP mask at the Address Mask prompt
- 5) Enter **No** to the Enable Dynamic Routing question
- 6) Enter **Yes** to the Define Community question
- 7) Enter the community name of your choice at the Community Name prompt
- 8) Enter **Yes** to the Save this configuration question
- 9) Enter **No** to the Configure IP on this interface question for the other router interfaces

#### **e** *Configuring IPX, DECnet, Booting, and Console Modem-Control*

- 1) Enter **No** to the Configure IPX question, if asked
- 2) Enter **No** to the Configure DNA question, if asked

- 3) Enter **No** to the Configure Booting question
- 4) Enter **No** to the Configure Console Modem-Control question

### **f** *Restarting the Router*

- 1) Enter **Yes** to the Restart the router question
- 2** Press **Ctrl-p** to exit Config
- 3** Enter **restart** to restart the router

When the router completes the restart sequence, it can communicate with the Configuration Program.

---

## After Initial Configuration

**Important:** After the router is configured and operational, **always** back up the active configuration file. Keeping this file enables you to re-establish the router on the network if the active configuration becomes corrupted.

You can back up the active configuration file by retrieving it and storing it in the workstation.

---

## Full Configuration

The initial configuration procedure you have just performed will enable you to access the router over the network if you configured an IP address for it.

The configuration provided by QCONFIG depends upon many default values for parameters, some of which may not be appropriate to your installation. You may need to modify the configuration that you have created using QCONFIG to customize the router to work on your network. You can do this using either of these methods:

- Configuration Program

The Configuration Program is the **recommended** configuration method for these reasons:

- 1** It enables centralized maintenance of configuration files for multiple IBM 2210's.
- 2** It provides table-oriented intuitive organization of data items.
- 3** It performs more input validation and cross-checking of the configuration parameters than the other methods.
- 4** It includes online help for individual data items.

For a description of system requirements, and instructions for installing and using the program see the *Configuration Program User's Guide for Multiprotocol Routing Services*.

- Command Line Interface (OPCON)

The command line interface causes certain parameters to be altered dynamically. The binary files that are created are saved in non-volatile storage

known as the Integrated Boot Device (IBD) on the router, not in the workstation. This characteristic makes it more difficult to manage the configuration of the router. However, the command line interface can be used to monitor the operations of the router, whereas the Configuration Program cannot.

The command line interface is also useful when you want to change one of the parameters that can be dynamically altered. For more information about the command line interface and the commands used to configure the IBM 2210 functions, refer to the *Software User's Guide for Multiprotocol Routing Services, Using and Configuring Features for Multiprotocol Routing Services*, and volumes one and two of the *Protocol Configuration and Monitoring Reference* publications.

---

## Managing Code Loads

If you want to load a code load other than the one pre-loaded at the factory, get the appropriate code load from the IBM 2210 Web site at:

<http://www.networking.ibm.com/support/downloads/2210> . Copy the code to a server that supports TFTP and is accessible through the IP network connected to the IBM 2210. After performing the initial configuration and restarting the IBM 2210:

1. Access the OPCON prompt.
2. Type **talk 6** and press **Enter**.
3. Type **boot** and press **Enter**.
4. Type **list ibd**, press **Enter**. Record the name of the current load stored in IBD and determine how many contiguous banks are not being used.
5. If there is not enough room for two images in IBD type **erase** and specify the load name from the previous step. Press **Enter** and type **delete boot-entry ibd/loadname**.

**Note:** To determine how many banks are needed for the image you want to load see the MRS sales pages available on the Web at:

<http://www.networking.ibm.com/220/220prod.html>

6. Type **TFTP get ibd/loadname** where *loadname* is the name that you want to use for the code load. You will be prompted for the address of the remote host (server) where the new code load is stored and the full pathname of the code load on the remote host (server).

If the TFTP is unsuccessful and you want to restore the image erased in step 5, type **store local**. The store command stores a compressed version of the code load from memory into IBD.

7. Type **add boot-entry ibd/loadname**.

To learn more about IBD and TFTP support, see the *Software User's Guide for Multiprotocol Routing Services*.

If you do not have a server that support TFTP you can use ZMODEM to load the code across the service port. See the *Software User's Guide for Multiprotocol Routing Services* for more information on ZMODEM.

If you want to backup the IBM 2210 code load stored in the IBD by transferring it to a server:

1. Access the OPCON prompt.
  2. Type **talk 6** and press **Enter**.
  3. Type **boot** and press **Enter**.
  4. Type **list ibd**, press **Enter**, and record the name of the load that you want to back up.
  5. Type **TFTP put ibd/loadname** where *loadname* is the name of the load recorded in the previous step.
- Note:** You will be prompted for the IP address of the remote host where you want to store the code load and the full pathname to be used for the code load on the remote host.

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## Chapter 5. Maintenance

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### Maintenance for 1Sx or 1Ux Models

If you have problems with your IBM 2210 Model 1Sx and 1Ux that require maintenance, call your network administrator or service representative. Models 1Sx and 1Ux have no field-replaceable parts.

---

### Maintenance for All Other Models

If you have problems with models 12T, 12E, 127, 128, 14T, 24T, 24E, or 24M, refer to the *IBM 2210 Nways Multiprotocol Router Service and Maintenance Manual*.



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## Appendix A. Installing Options

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### Installing Options in Models 12x

You can install the following options in the 12x models of the IBM 2210:

---

*Table A-1. Procedures for IBM 2210 Options*

---

Option	Installation and Removal Procedures
Memory Expansion Feature	"Replacing the DRAM SIMM for the 12x Models" on page A-9

---

---

### Installing Options in Models 14T and 24x

You can install the following options in the 14T and 24x models of the IBM 2210:

---

*Table A-2. Procedures for IBM 2210 Options*

---

Option	Installation and Removal Procedures
Memory Expansion Feature	"Removing the Flash and DRAM SIMMs in Model 14T and 24x" on page A-10
Additional Flash Feature	"Removing the Flash and DRAM SIMMs in Model 14T and 24x" on page A-10
Adapters	"Installing Optional Adapters" on page A-4
<ul style="list-style-type: none"><li>• 1-port ISDN BRI</li><li>• 4-port ISDN BRI</li><li>• 1-port T1/J1 ISDN PRI Adapter</li><li>• 1-port E1 120-ohm ISDN PRI Adapter</li><li>• 4-port WAN Concentration Adapter</li><li>• 8-port WAN Concentration Adapter</li><li>• 4-port Dial Access (Modem) Adapter</li><li>• 8-port Dial Access (Modem) Adapter</li><li>• 4-port Dial Access Modem Card Upgrade feature</li><li>• 1-port 25-Mbps ATM Interface Adapter</li></ul>	
EIA 232 Service Port Feature	"Removing the Cover" on page A-2 and "Installing the EIA 232 Service Port Feature in Models 14T and 24x" on page A-7
14.4 Kbps Modem Port Feature	"Removing the Cover" on page A-2 and "Installing the 14.4 Kbps Modem Port Feature in Models 14T and 24x" on page A-8

---

**Note:** If you upgrade the DRAM for x4x models up to 32 MB you must have or install the PROM Load/Dump Program revision level 2.34 or higher. If you use a 4- or 8-port Dial Access Adapter with the x4x model you must have or install the PROM Load/Dump Program revision level 2.40 or higher.

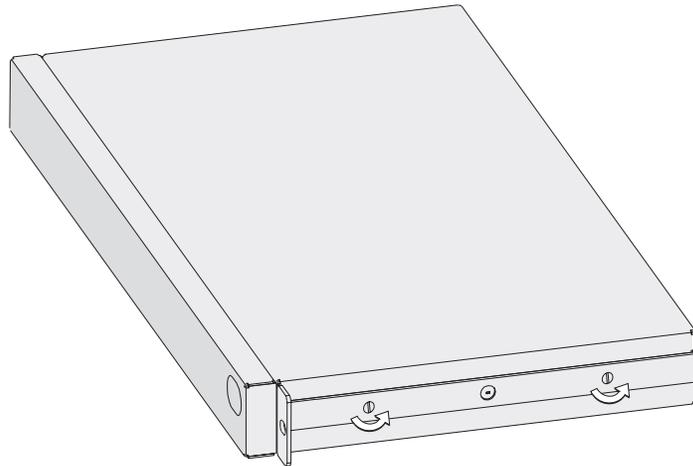
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## Removing the Cover

### DANGER

**Hazardous voltages exist inside this machine when it is powered on. Anytime you service this unit with the cover off, be sure to unplug the power cord.**

- 1** Unplug the power cord from the outlet.
- 2** If the IBM 2210 is installed in a rack, remove the screws attaching the IBM 2210 to the rack.
- 3** Remove the two screws that attach the mounting brackets to either side of the IBM 2210. Then remove the center screw that attaches the cover to the side of the IBM 2210. Note the position of the mounting bracket ears as you remove the mounting brackets.



*Figure A-1. Removing the Side Screws*

- 4** Position the IBM 2210 so that the port side is facing you. From this position, lift the rear portion of the cover and slide it away from you.

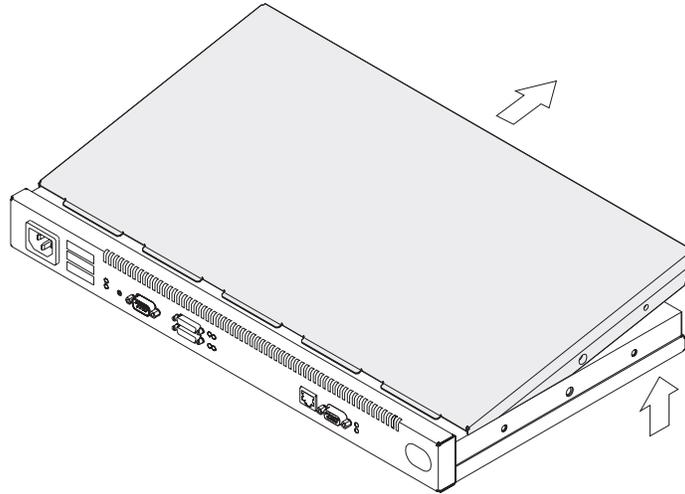


Figure A-2. Removing the Cover

- 5** Be sure to store the mounting brackets and screws with the cover.

---

## Reinstalling the Cover

- 1** Position the IBM 2210 so that the port side is facing you. From this position, elevate the rear portion of the cover and slide it onto the IBM 2210.

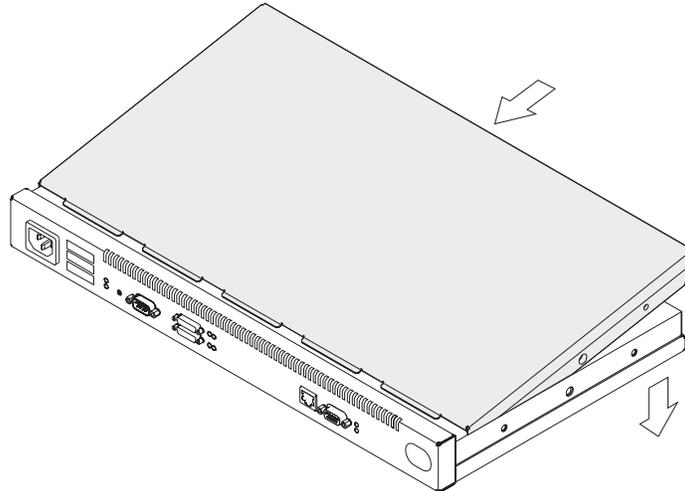


Figure A-3. Replacing the Cover

- 2 Replace the screws that attach the mounting brackets to each side of the machine. Be sure that the screw with the Phillips head is installed in the middle hole.

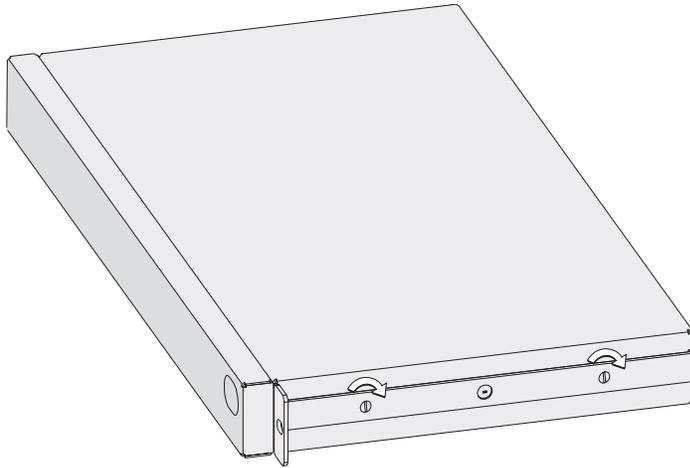


Figure A-4. Replacing the Screws and Mounting Bracket

- 3 If the IBM 2210 was mounted in a rack, return it to the rack.
- 4 Plug the power cord into the outlet.

## Installing Optional Adapters

Refer to “Handling Static-Sensitive Devices” on page A-9 before removing or installing any of the optional adapters.

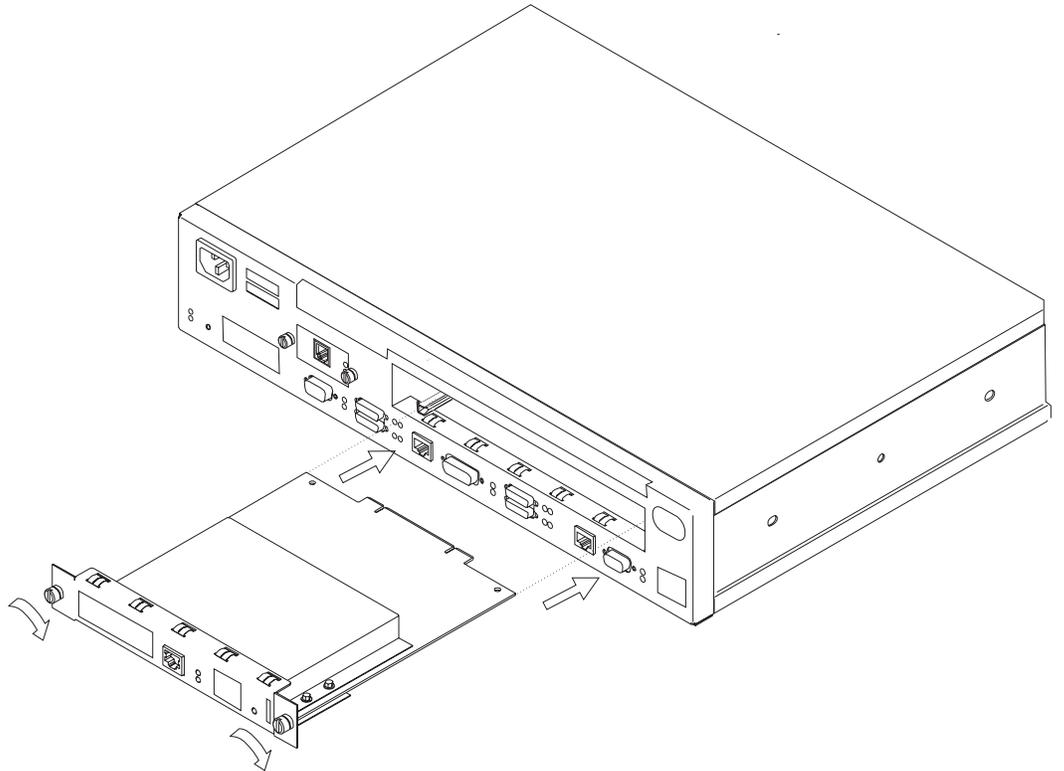


Figure A-5. Installing the Optional Adapter (Actual adapter may appear different.)

- 1** Unplug the power cord.
- 2** Remove the blank faceplate by loosening the two screws and pulling the plate toward you.
- 3** Check to ensure that the Adapter Enablement Feature is installed. Look inside the module slot and ensure that the guide rails for the card are present.  
  
If the guide rails are not visible, an authorized service representative must install the Adapter Enablement Feature. If you have not ordered the Adapter Enablement Feature, you should do so before proceeding.  
  
If the feature is not installed, refer to the *IBM 2210 Nways Multiprotocol Router Service and Maintenance Manual*.
- 4** Remove the adapter from the antistatic bag.
- 5** While holding the adapter carefully by the front plate insert it into the opening. Make sure that the edges of the adapter line up with the guide rails.
- 6** Press the adapter into the slot.
- 7** Secure the adapter in place by tightening the screws.
- 8** Plug the power cord into the outlet.

- 9 Verify that the IBM 2210 is functioning correctly by using “Verifying Operation” on page 1-12.

## Removing the Optional Adapter

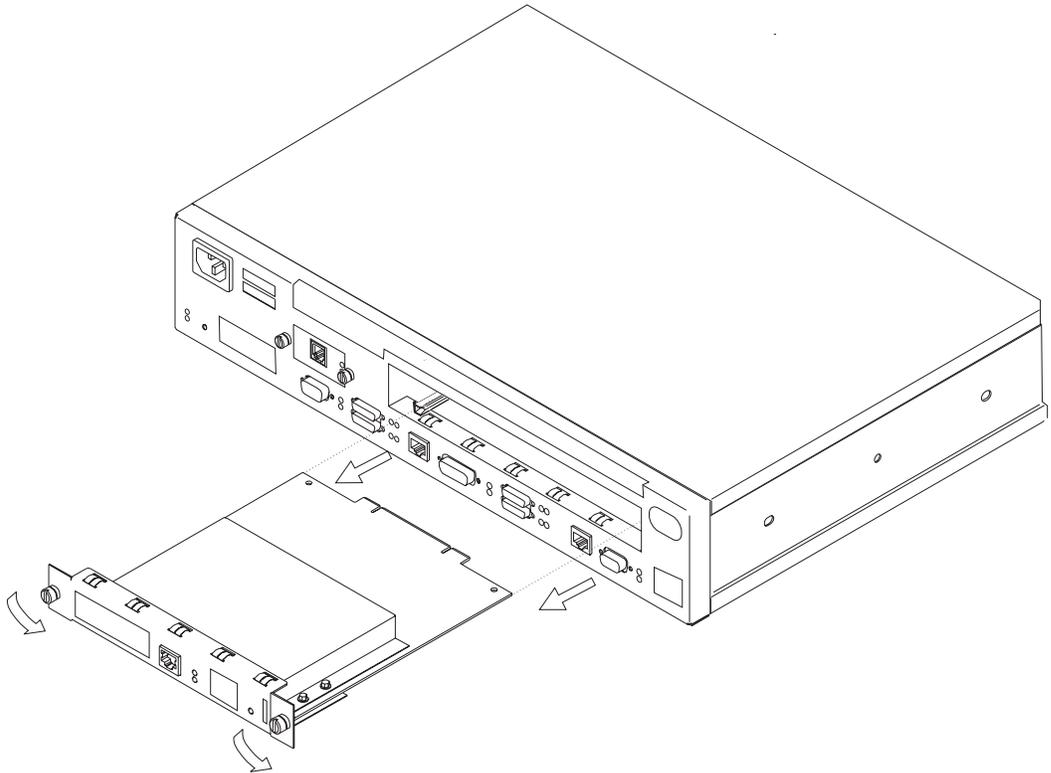


Figure A-6. Removing the Adapter (Actual adapter may appear different.)

- 1 Unplug the power cord.
- 2 Remove the screws holding the adapter in place.
- 3 Remove the adapter by gently pulling it toward you.
- 4 Replace the blank faceplate or install new adapter and tighten the two screws.
- 5 Plug the power cord into the outlet.
- 6 Verify that the IBM 2210 is functioning correctly by using “Verifying Operation” on page 1-12.

---

## Installing a Second Service Port in Models 14T and 24x

Refer to “Handling Static-Sensitive Devices” on page A-9 before removing or installing a second service port card.

## Installing the EIA 232 Service Port Feature in Models 14T and 24x

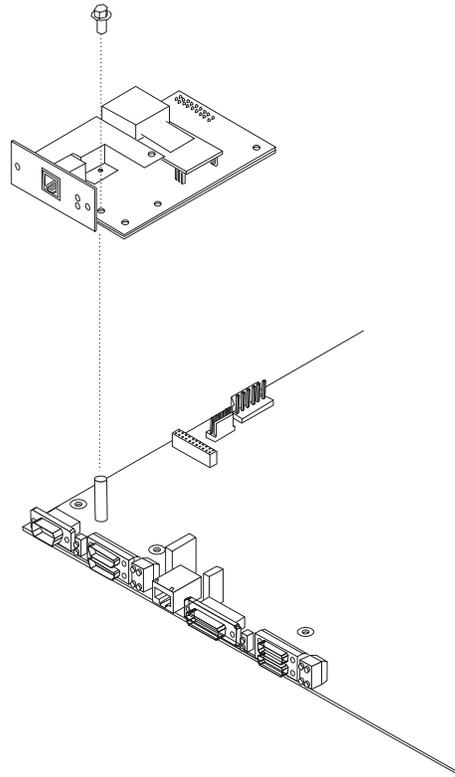


Figure A-7. Installing the EIA 232 Service Port Feature

- 1** Remove the cover from the IBM 2210 as described in “Removing the Cover” on page A-2.
- 2** Remove the blank Service Port faceplate by unscrewing the two screws.
- 3** Save the faceplate and screws.
- 4** Insert the EIA 232 Service Port Feature connection into the connector on the system board.
- 5** Using the two screws from the blank faceplate secure the front of the Service Port Card faceplate to the frame of the IBM 2210.
- 6** Fasten the middle of the EIA 232 Service Port Feature to the standoff on the system board using the supplied Philips-head screw.
- 7** Replace the cover as described in “Reinstalling the Cover” on page A-3.

- 8 Verify that the IBM 2210 is functioning correctly by using “Verifying Operation” on page 1-12.

## Removing the EIA 232 Service Port Feature in Models 14T and 24x

- 1 Remove the cover from the IBM 2210 as described in “Removing the Cover” on page A-2.
- 2 Remove the two screws that secure the EIA 232 Service Port Feature to the IBM 2210 frame.
- 3 Remove the Philips-head screw that attaches the middle of the EIA 232 Service Port Feature to the standoff on the system board.
- 4 Remove the EIA 232 Service Port Feature connection from the system board.
- 5 Lift the EIA 232 Service Port Feature out of the IBM 2210 chassis.

## Installing the 14.4 Kbps Modem Port Feature in Models 14T and 24x

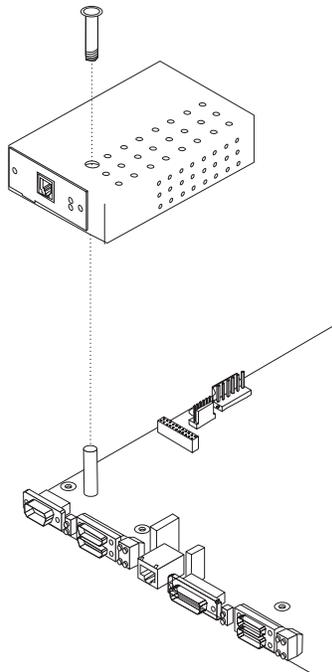


Figure A-8. Installing the 14.4 Kbps Modem Port Feature

- 1 Remove the cover from the IBM 2210 as described in “Removing the Cover” on page A-2.
- 2 Remove the blank Service Port faceplate by unscrewing the two screws.
- 3 Save the faceplate and screws.
- 4 Insert the 14.4 Kbps Modem Port Feature connection into the connector on the system board.

- 5** Attach the 14.4 Kbps Modem Port Feature to the system board by inserting the alignment post through the top of the modem and screwing in the post.
- 6** Using the two screws from the blank faceplate secure the front of the Modem Card faceplate to the frame of the 2210.
- 7** Replace the cover as described in “Reinstalling the Cover” on page A-3.
- 8** Verify the IBM 2210 is functioning correctly by using “Verifying Operation” on page 1-12.

## Removing the 14.4 Kbps Modem Port Feature in Models 14T and 24x

- 1** Remove the cover from the IBM 2210 as described in “Removing the Cover” on page A-2.
- 2** Remove the two screws that secure the 14.4 Kbps Modem Port Feature to the IBM 2210 frame.
- 3** Unscrew the alignment post and remove it from the modem.
- 4** Remove the 14.4 Kbps Modem Port Feature connection from the system board.
- 5** Lift the 14.4 Kbps Modem Port Feature out of the IBM 2210 chassis.

---

## Handling Static-Sensitive Devices

Certain components, such as planars and memory modules, can be damaged by static electricity discharge. These components are shipped in an antistatic bag to prevent such damage. An electrostatic discharge (ESD) protection device must be used when handling these components.

Take the following precautions:

- Do not remove the component from the antistatic bag until you are ready to in the IBM 2210.
- With the component still in its antistatic bag, touch the metal frame of the IBM 2210.
- Hold the component by its edges. Avoid touching solder joints or pins.
- Handle the components carefully in order to prevent permanent damage.

## Replacing the DRAM SIMM for the 12x Models

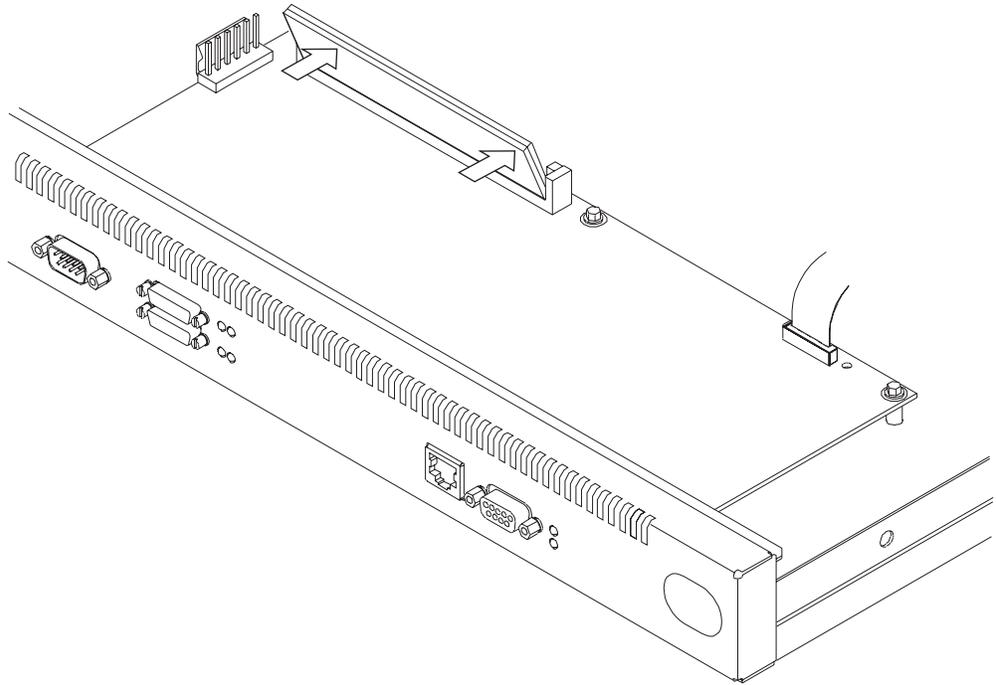


Figure A-9. Replacing the DRAM SIMM in 12x Models

- 1 Tilt the top of the SIMM toward you and slide it into the retainer.
- 2 Press the SIMM backward until the retaining tabs are holding it securely.

## Removing the Flash and DRAM SIMMs in Model 14T and 24x

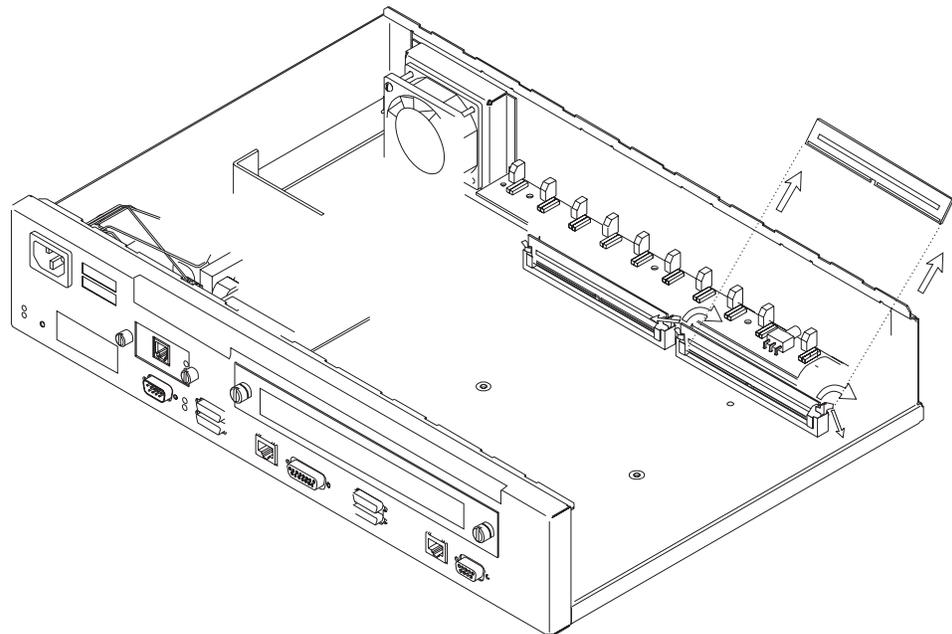


Figure A-10. Removing the Flash SIMM (14T and 24x Models)

- 1** Remove the cover from the IBM 2210 as described in “Removing the Cover” on page A-2.
- 2** As you face the machine the DRAM SIMM is located in the left slot. To replace the DRAM SIMM you must remove the existing DRAM SIMM and install the replacement. The Flash SIMM location is shown in Figure A-10 on page A-10
- 3** Push back the retaining tabs located at each end of the SIMM socket. The SIMM will fall backwards.
- 4** Remove the SIMM by gently pulling it away from you.
- 5** Replace the cover on the IBM 2210 as described in “Reinstalling the Cover” on page A-3.
- 6** Verify that the IBM 2210 is functioning correctly by using “Verifying Operation” on page 1-12.

## Installing the Flash and DRAM SIMMs in Models 14T and 24x

Refer to “Handling Static-Sensitive Devices” on page A-9 before removing or installing a flash SIMM.

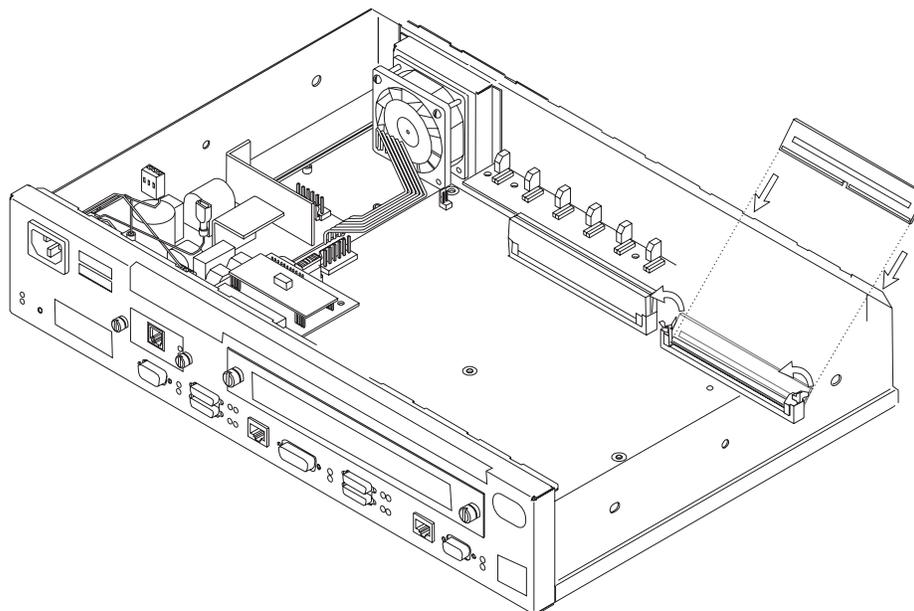


Figure A-11. Installing the Flash SIMM (14T and 24x Models)

- 1** Remove the cover from the IBM 2210 as described in “Removing the Cover” on page A-2.
- 2** Tilt the top of the SIMM away from you and slide it into the retainer.
- 3** Press the SIMM forward until the retaining tabs are holding it securely.

- 4 Replace the cover on the IBM 2210 as described in “Reinstalling the Cover” on page A-3.
- 5 Verify that the IBM 2210 is functioning correctly by using “Verifying Operation” on page 1-12.

EasyStart automatically downloads the router’s configuration file from a “BOOTP server.” During the process the router displays the EasyStart> prompt and ELS messages that track the process.

To prepare for automatic configuration using EasyStart, the network administrator must perform the following steps:

1. Set up the BOOTP server with records for downloading configurations.
2. Set up the BOOTP server with a valid configuration file for your router.

These steps are described in *Software User’s Guide for Multiprotocol Routing Services*.

If the BOOTP server is correctly set up, and if the router does not have a configuration record, the router will automatically go into EasyStart at power-on and will load its configuration record from the BOOTP server.

You can cause the router to go into EasyStart by typing the **clear all** and **clear device** commands at the Config> prompt, as shown in the following example:

```
Config>clear all
You are about to clear all non Device configuration information
Are you sure you want to do this (Yes or [No]): yes
non Device configuration cleared

Config>clear device
You are about to clear all Device configuration information
Are you sure you want to do this (Yes or [No]): yes
Device configuration cleared

*restart
Are you sure you want to restart the gateway? (Yes or [No]): yes
```

The following panel appears:

```

Copyright IBM Corp. 1994, 1996

MOS Operator Control
Entering EasyStart operation. Type 'stop' or ^C to terminate.
ELS messages are automatically displayed in this mode.
ISDN Install
EasyStart>
00:00:00 GW.001:
Copyright 1984 Massachusetts Institute of Technology,
Copyright 1989 The Regents of the University of California
00:00:00 GW.002: Portable CGW [not configured] Rel 16.0[R1] strtd
00:00:00 GW.005: Bffrs: 400 avail 400 idle fair 103 low 80
Top of xtp init
00:00:00 EZ.001: Starting.
00:00:01 EZ.007: Waiting up to 6 seconds for devices to pass self-test.
00:00:04 EZ.009: *** Restarting Router ***

No Protocols Configured. Entering Quick Config

Router Quick Configuration for the following:
o Interfaces
o Bridging
    Spanning Tree Bridge (STB)
    Source Routing Bridge (SRB)
    Source Routing/Transparent Bridge (SR/TB)
    Source Routing Transparent Bridge (SRT)
o Protocols
    IP (including OSPF, RIP and SNMP)
o Booting

Event Logging will be enabled for all configured subsystems
with logging level 'Standard'

Note: Please be warned that any existing configuration for a particular item
will be removed if that item is configured through Quick Configuration

```

### Notes:

1. If you are in EasyStart and you enter **stop** or press **Ctrl-c**, the router restarts and puts you into Quick Config automatically. For more information about Quick Config, refer to the *Nways Multiprotocol Routing Services Software User's Guide*.
2. If you are in EasyStart and you enter **pause**, the router suspends the EasyStart process. Enter **restart** to resume the process. Suspend EasyStart only for debugging purposes.



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## Appendix B. Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the user's responsibility.

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## Electronic Emission Notices

### Notices for Models 12x, 14T, and 24x

#### Federal Communications Commission (FCC) Statement

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in

accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not 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.

### **Industry Canada Class A Emission Compliance Statement**

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

### **Avis de conformité aux normes d'Industrie Canada**

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

## **Notices for Models 1Sx and 1Ux**

### **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 IBM 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 IBM authorized dealers. IBM is not 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.

## **Industry Canada Class B Emission Compliance Statement**

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

## **Avis de conformité aux normes d'Industrie Canada**

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

## **Notices for All Models**

### **Japanese Voluntary Control Council for Interference (VCCI) Statement**

This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Technology Equipment (VCCI). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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A情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

### **European Community (CE) Mark of Conformity Statement**

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

Properly shielded and grounded cables and connectors must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from IBM authorized dealers. IBM cannot accept responsibility for any interference caused by using other than recommended cables and connectors.

A Declaration of Conformity with the requirements of the Directive has been signed by IBM Spain, Division of Fabricacion, 46185 La Pobla de Vallbona, Valencia, Spain.

The product bears the Telecom CE mark (CE 168 X) for:

- V.24/V.28,V36 and X.21 electrical interfaces complying with NET 1 and with NET 2 physical level.
- ISDN Basic Rate complying with I-CTR3 (Bridging measures)

as per the European directive 91/263/EEC (TTE directive).

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.

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen. Der Außsteller der Konformitätserklärung ist die IBM Spain, Division of Fabricacion, 46185 La Pobra de Vallbona, Valencia, Spain.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

### **Notice about Lithium Battery**

The IBM 2210 contains a non-replaceable lithium battery that, if disposed of improperly, can cause a fire, an explosion, or a severe burn. At the end of the life of this machine, return the IBM 2210 to IBM or dispose of it according to local regulations.

### **U.K. Safety Approval**

The IBM 2210 is manufactured to the International Safety Standard EN 60950 and as such is approved in the U.K. under the General Approval number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

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## **Telecommunication Notices**

### **FCC Part 68 Compliance Information**

Features and optional adapters for the IBM 2210 comply with Part 68 of the FCC rules. The label included on the bottom of the IBM 2210 and the top of the features and adapters contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. If requested, provide this information to your telephone company.

The features and adapters include:

- 14.4 Kbps Modem Port Feature with REN # .6B and jack type RJ-11.
- T1/J1 ISDN PRI Adapter with interface code 04DU9-1SN, service code 6.0N and jack type RJ-48C.
- ISDN Quad BRI Adapter - U with interface code 021S5 service code 6.0F and jack type RJ-49C.
- Dial Access Adapter with REN # .6B and jack type RJ-11.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have those devices ring when your number is called. In most, but not all areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should call your local telephone company to determine the maximum REN for your calling area.

If the IBM 2210 causes harm to the telephone network, the Telephone Company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, in the United States, call IBM at **1-800-IBM-SERV**. In Canada, call IBM at **1-800-465-6600**.

No repairs can be performed by the customer.

## Industry Canada Information

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

The load number assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the load numbers of all the devices does not exceed 100. The load number of the 14.4 Kbps Modem Port Feature is 05.

AVIS : L'étiquette d'Industrie Canada permet d'identifier un équipement homologué. Cette homologation signifie que cet équipement satisfait certaines exigences en matière de protection, d'exploitation et de sécurité du réseau de télécommunications. Industrie Canada n'offre aucune garantie que le fonctionnement de cet équipement soit à la satisfaction de l'utilisateur.

Avant d'installer cet équipement, l'utilisateur doit s'assurer qu'il a la permission de le raccorder aux installations de l'entreprise de télécommunications. L'installation de cet équipement doit aussi se faire selon un mode de raccordement acceptable. Dans certains cas, le câblage interne de l'entreprise associé au service individuel offert par une ligne d'abonné peut être prolongé au moyen d'un connecteur homologué (prolongateur de téléphone). Le client devrait être informé que la

conformité de son équipement aux conditions susmentionnées n'est pas une prévention contre la dégradation du service dans certaines situations.

Toute réparation d'un équipement homologué devrait être effectuée par un service de maintenance canadien autorisé qui a été désigné par le fournisseur. Toute réparation ou modification d'équipement faite par l'utilisateur, ou tout mauvais fonctionnement, pourrait entraîner la déconnexion de cet équipement par l'utilisateur à la demande de l'entreprise de télécommunications.

Pour sa protection personnelle, l'utilisateur devrait s'assurer que les mises à la terre des services publics électriques, des lignes téléphoniques et du système interne des canalisations d'eau à tuyaux métalliques, advenant leur présence, sont interconnectées. Dans les zones rurales, il s'agit-là d'une précaution particulièrement importante à prendre.

**ATTENTION :** Toute tentative de connexion par l'utilisateur est à déconseiller. Il est préférable de communiquer avec le responsable de l'inspection en électricité ou un électricien, selon le cas.

Le NUMÉRO DE CHARGE (LN) attribué à chaque dispositif du terminal sert à indiquer le pourcentage de la charge totale qui doit être connecté à une ligne d'abonné utilisée par ce dispositif, afin de prévenir toute surcharge. Par terminaison de ligne, on entend toute combinaison de dispositifs qui satisfait l'exigence selon laquelle le total des NUMÉROS DE CHARGE de tous les dispositifs n'est pas supérieur à 100.

NUMÉRO DE CHARGE DE CETTE UNITÉ (14.4 Kbps Modem Port Feature) : 05

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## Safety Notices



**Danger:** Before you begin to install this product, read the safety information in *Caution: Safety Information—Read This First*, SD21-0030. This booklet describes safe procedures for cabling and plugging in electrical equipment.

**Danger:**

Hazardous voltages exist inside this machine when it is powered on. Anytime you service this unit with the cover off, be sure to unplug the power cord.



**Gevaar:** Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *PAS OP! Veiligheidsinstructies—Lees dit eerst*, SD21-0030. Hierin wordt beschreven hoe u elektrische apparatuur op een veilige manier moet bekabelen en aansluiten.

**Gevaar:**

Er bevindt zich gevaarlijke spanning binnenin deze machine, wanneer ze is ingeschakeld. Telkens als u onderhoud uitvoert op deze eenheid, met de behuizing verwijderd, moet u het netsnoer loskoppelen.



**Danger:** Avant de procéder à l'installation de ce produit, lisez d'abord les consignes de sécurité dans la brochure *ATTENTION: Consignes de sécurité—A lire au préalable*, SD21-0030. Cette brochure décrit les procédures pour câbler et connecter les appareils électriques en toute sécurité.

**Danger:**

Une tension dangereuse existe dans cette machine lorsqu'elle est branchée. Déconnectez toujours le cordon d'alimentation avant de retirer le couvercle, lorsque vous effectuez des procédures de maintenance.



Opasnost: Prije nego što počnete sa instalacijom produkta, pročitajte naputak o pravilima o sigurnom rukovanju u Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo, SD21-0030. Ovaj privitak opisuje sigurnosne postupke za priključivanje kabela i priključivanje na električno napajanje.

**OPASNO**

Unutar ovog uređaja prilikom njegovog uključivanja u mrežu nastaje opasan napon. Svaki put kad radite s ovim uređajem s otvorenim poklopcem morate biti sigurni da mrežna žica nije spojena s priključnicom.



**Pericolo:** prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Attenzione: Informazioni di sicurezza — Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

**Pericolo:**

Quando la macchina è alimentata, vi sono tensioni pericolose all'interno. Ogni volta che si effettuano interventi di manutenzione, se il coperchio non è inserito, scollegare il cavo di alimentazione.



**Vorsicht:** Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Achtung: Sicherheitsinformationen—Bitte zuerst lesen*, IBM Form SD21-0030. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschließen elektrischer Geräte.

**Vorsicht:**

Bei eingeschaltetem Gerät liegen im Innern gefährliche Spannungen an. Sicherstellen, daß bei Arbeiten an der geöffneten Maschine der Netzstecker gezogen ist.



**Perigo:** Antes de iniciar a instalação deste produto, leia as informações de segurança *Cuidado: Informações de Segurança — Leia Primeiro*, SD21-0030. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

**Perigo:**

Este equipamento, quando ligado, apresenta tensões perigosas no seu interior. Sempre que proceda a assistência nesta unidade com a cobertura retirada, certifique-se que o cabo de alimentação da unidade se encontra desligado.



**Peligro:** Antes de empezar a instalar este producto, lea la información de seguridad en *Atención: Información de Seguridad — Lea Esto Primero*, SD21-0030. Este documento describe los procedimientos de seguridad para cablear y enchufar equipos eléctricos.

**Peligro:**

Aun cuando está apagada, hay voltajes peligrosos en esta máquina. Siempre que dé servicio a esta máquina sin la cubierta, asegúrese de desenchufar el cable de alimentación.



**Fare:** Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Advarsel: Sikkerhetsinformasjon — Les dette først*, SD21-0030 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

**Fare:**

Det er farlig spenning inni maskinen når den er slått på. Hver gang du utfører service på maskinen mens dekslet er tatt av, må du huske på å trekke ut nettkabelen.



**VAARA:** Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Varoitukset—Lue tämä ensin*, SD21-0030, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

### **Vaara:**

Virran ollessa kytkettynä koneen sisällä on vaarallisia jännitteitä. Muista aina irrottaa verkkojohto, jos huollat konetta sen suojakannen ollessa irrotettuna.



**Fare!** Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *NB: Sikkerhedsforskrifter—Læs dette først* SD21-0030. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

### **Fare!**

Der er høj spænding i denne maskine, når den er tændt. Træk derfor altid netledningen ud, når enheden skal efterses.



**Varning — livsfara:** Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dokumentet *Varning: Säkerhetsföreskrifter— Läs detta först*, SD21-0030. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

### **Varning — livsfara:**

Farliga spänningar i maskinen när den är påslagen. Se till att nätkabeln är urkopplad innan du öppnar enheten.



#### **ОПАСНОСТ**

Пред да почнете да го инсталирате овој продукт, прочитајте ја информацијата за безбедност:

"Предупредување: Информација за безбедност: Прочитајте го прво ова", SD21-0030.

Оваа брошура опишува безбедносни процедури за каблирање и вклучување на електрична опрема.

#### **ОПАСНОСТ**

Опасни напони постојат внатре во оваа машина кога е таа вклучена на напон.

Секогаш кога ја сервисирате оваа машина без поклопецот, не заборавете да го откачите кабелот за електрично напојување.



Nebezpečnostvo: Pred inštaláciou výrobku si prečítajte bezpečnosté predpisy v

Výstraha: Bezpečnosté predpisy - Prečítaj ako prvé, SD21 0030. V tejto brožúrke sú opísané bezpečnosté postupy pre pripojenie elektrických zariadení.

### **NEBEZPEČENSTVO!**

Keď je zariadenie pripojené na sieť, je vo vnútri nebezpečné napätie. Pred každým zásahom do odkrytého zariadenia je potrebné sa presvedčiť, že prívodný kábel je odpojený od siete.



危險：

開始安裝此產品之前，請先閱讀安全資訊。

注意：

請先閱讀 - 安全資訊 SD21-0030

此冊子說明插接電器設備之電纜線的安全程序。

危險：

當此機器的電源打開時，機器內部的電壓有危險性。因此每次您要打開機器



危險： 導入作業を開始する前に、安全に関する小冊子SD21-0030 の「最初にお読みください」(Read This First)の項をお読みください。この小冊子は、電気機器の安全な配線と接続の手順について説明しています。

危險：

電源投入中は、内部に危険な電圧がかかっています。カバーを開けて保守作業をする場合は、必ず電源コードを抜いてから行ってください。



위험: 이 제품을 설치하기 전에 반드시 "주의: 안전 정보-시작하기 전에" (SD21-0030) 에 있는 안전 정보를 읽으십시오.

위험:

기계를 켤때 위험한 전압이 흐를 수 있으니 조심하십시오.



**Perigo:** Antes de começar a instalar este produto, leia as informações de segurança contidas em *Cuidado: Informações Sobre Segurança—Leia Isto Primeiro*, SD21-0030. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

**Perigo:**

Existem voltagens perigosas no interior desta máquina quando ela está ligada. Toda vez que você for fazer a manutenção desta unidade com a tampa aberta, certifique-se de desconectar o cabo de força.



**Danger :** Avant d'installer le présent produit, consultez le livret *Attention : Informations pour la sécurité — Lisez-moi d'abord*, SD21-0030, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

## Danger:

Tension dangereuse à l'intérieur de la machine lorsque celle-ci est sous tension. Avant toute intervention à l'intérieur, débranchez le cordon d'alimentation.



**Upozornění:** než zahájíte instalaci tohoto produktu, přečtěte si nejprve bezpečnostní informace v pokynech „Bezpečnostní informace“ č. 21-0030. Tato brožurka popisuje bezpečnostní opatření pro kabeláž a zapojení elektrického zařízení.

## NEBEZPEČÍ!

Když je zařízení připojeno k síti, je uvnitř nebezpečné napětí. Před každým zásahem do odkrytého zařízení je třeba se přesvědčit, že je přívodní kabel od sítě odpojen.



**Vigyázat:** Mielőtt megkezdi a berendezés üzembe helyezését, olvassa el a "Caution: Safety Information— Read This First, SD21-0030 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

## VESZÉLY!

Bekapcsolt állapotban a gépen belül veszélyes feszültségek lépnek fel. Amikor a készüléket eltávolított fedél mellett javítja, feltétlenül húzza ki a hálózati csatlakozózsínort.



Uwaga:

Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją: "Caution: Safety Information - Read This First", SD21-0030. Zawiera ona warunki bezpieczeństwa przy podłączeniu do sieci elektrycznej i eksploatacji.

Uwaga wysokie napięcie!

Przed zdjęciem obudowy, należy wyłączyć przewód zasilający z gniazdka.



危險：安裝本產品之前，請先閱讀 "Caution: Safety Information--Read This First" SD21-0030 手冊中所提供的安全注意事項。這本手冊將會說明使用電器設備的纜線及電源的安全程序。

危險：

本機器電源開啓時有高壓電。如需打開機蓋維修機器，請務必先把電源線的插頭拔掉。



Pozor: Preden zaènete z instalacijo tega produkta preberite poglavje: "Opozorilo: Informacije o varnem rokovanju-preberi pred uporabo," SD21-0030. To poglavje opisuje pravilne postopke za kabliranje,

Nevarnost:

Visoka napetost pri vkljuèeni napravi!  
Pri servisiranju odprte naprave, se preprièajte, da je naprava izkljuèena iz omrežja.



**ОСТОРОЖНО:** Прежде чем устанавливать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочсть в первую очередь", SD21-0030. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.

**Осторожно:**

При включенном питании в устройстве имеется напряжение, опасное для жизни. При обслуживании устройства со снятой крышкой отсоедините кабель питания.

---

## UL Notices

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.

Do not use the telephone to report a gas leak in the vicinity of the leak.

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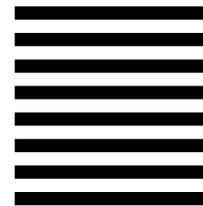
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