

2-Port Multiprotocol PCI Adapter Installation and User's Guide

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1. Cover to be self cover, no graphics.
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2-Port Multiprotocol PCI Adapter Installation and User's Guide

Note

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

First Edition (April 1997)

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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 communication lines.

Handling Static Sensitive Devices

Attention: Static electricity can damage this device and your system unit. To avoid damage, keep this device in its static protective bag until you are ready to install it. To reduce the possibility of electrostatic discharge, follow the precautions listed below.

Electrostatic Discharge Protection

To prevent electrostatic discharge:

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and possibly damage the device.
- While the device is still in its anti-static package, touch it to an unpainted metal part of the system unit for at least two seconds. (This drains static electricity from the package and from your body.)
- Remove the device from its package and install it directly into your system unit without setting it down. If it is necessary to set the device down, place it on its static-protective package. (If your device is an adapter, place it component side up.) Do not place the device on your system unit cover or on a metal table.
- Take additional care when handling devices during cold weather as heating reduces indoor humidity and increases static electricity.

About This Book

Use this book with your system unit documentation to install a 2-Port Multiprotocol PCI Adapter in a system unit with a PCI-compatible bus.

Related Publications

This book refers to the documentation that came with your system unit and to the documentation that came with your operating system.

ISO 9000

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

Trademarks

AIX is a registered trademark of International Business Machines Corporation.

Chapter 1. Overview

Use a 2-Port Multiprotocol PCI Adapter to make high speed connections between stand alone system units on a Wide Area Network (WAN). To access WAN lines, the 2-Port Multiprotocol PCI Adapter connects via external communications equipment including Channel Service Units, Data Service Units, and synchronous modems.

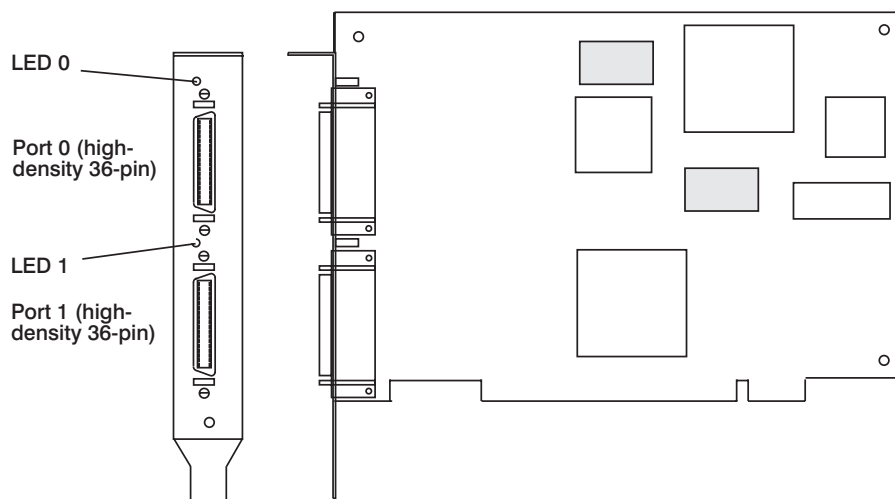
Adapter Features:

- A 10MHz controller.
- 512 KB on-board RAM.
- Two independent Very High-Speed Interface (VHSI) ports.

Ports support full duplex communications over a V.24/EIA-232, V.35, V.36/EIA-449, or X.21 interface. Port supports speeds up to 2 Mbps per port depending on the type of interface selected.

- An intelligent controller.

The controller determines which interface your cable supports and automatically configures the relevant port.



Software Requirements

The 2-Port Multiprotocol PCI Adapter is supported on AIX Version 4.2.1. If support is required on an AIX release other than AIX 4.2.1, please ensure this adapter is supported on that release of AIX prior to install. Contact your support representatives for assistance.

Chapter 2. Preparing for Installation

This section outlines the installation procedure for the 2-Port Multiprotocol PCI Adapter device driver and adapter.

The process includes:

- An inventory of installation materials.
- The installation of your device driver software.
- The installation of your adapter.

Note: If AIX is not installed on your system unit, install your adapter before you install the operating system. (See Chapter 4, “Installing Hardware” on page 4-1.) When you install AIX, your device driver software automatically installs.

If AIX is operating on your system, install your device driver software prior to installing your adapter. (See Chapter 3, “Installing Device Driver Software” on page 3-1.)

Inventory

To install the 2-Port Multiprotocol PCI Adapter, you need:

- The adapter.
- This document, *2-Port Multiprotocol PCI Adapter Installation and User's Guide*.
- The system unit User's Guide.
- The operating system documentation.
- A flat-blade screw driver.
- Media containing device driver software.

Chapter 3. Installing Device Driver Software

This section explains how to install device driver software.

Device Driver Software Installation

1. Be sure you have read Chapter 2, "Preparing for Installation" on page 2-1.
 - Determine if you should install your device driver software first.
 - Determine if you should install your adapter hardware first.
 - If you should install your device driver software first, go to step 2 and continue with this section.
 - If you should install your hardware first, go to Chapter 4, "Installing Hardware" on page 4-1. When you install AIX, your adapter device driver automatically installs.
2. Turn the system unit power on.
3. Log in as **root**.
4. Insert the media containing the device driver software (example: CD-ROM) into the appropriate media device.
5. Type the following
smit devinst
and press Enter.
6. The Install Additional Device Software screen highlights the **"INPUT device/directory for software"** option.
7. Select or type *your input device*:
 - Press **F4** to display the input device list. Select the *name of the device* (example: CD-ROM) that you are using and press Enter.
-- or --
 - In the Entry Field, type the *name of the input device* you are using and press Enter.
8. The Install Additional Device Software window highlights the **SOFTWARE to install** option.
9. Press **F4** to display the SOFTWARE to install window.

10. Type the following to display the Find window:

/

11. Type the following

`devices.pci.331121b9`

and press Enter. (The system finds and highlights this device driver software.)

12. Press **PF7** to select the highlighted device driver software.

Note: If synchronous data link control (SDLC) emulation is desired, repeat steps 10-12. Type: `devices.common.IBM.hd1c.sd1c`.

13. Press Enter.

Screen appears. Example:

4.2.1.0 `devices.pci.331121b9` ALL

14. The Install Additional Device Software screen displays. Entry data fields are automatically updated. Press Enter to accept the data.

15. The ARE YOU SURE window displays. Press Enter to accept the data.

16. The **COMMAND STATUS** screen appears.

- The term RUNNING is highlighted to indicate that the install and configure command is in progress.
- When RUNNING changes to OK, scroll down to the bottom of the page and locate the Installation Summary.
- After a successful installation, SUCCESS appears in the Result column of the summary at the bottom of the page.

17. Remove the installation media from the drive.

18. Press **F10** to exit SMIT.

19. Refer to your system unit documentation to shutdown your system unit.

20. Go to the adapter install procedure, Chapter 4, "Installing Hardware" on page 4-1.

Chapter 4. Installing Hardware

This section provides the guidance necessary to install an adapter. Before you begin, be sure you have read “Handling Static Sensitive Devices” on page vii.

Attention: Do not remove the 2-Port Multiprotocol PCI Adapter from its anti-static package at this time.

Installing the Adapter

1. Be sure you have read Chapter 2, “Preparing for Installation” on page 2-1.
 - Determine if you should install your adapter hardware first.
 - Determine if you should install your device driver software first.
 - If you should install your adapter hardware first, go to Step 2 and continue with this section.
 - If you should install your device driver software first, go back to Chapter 3, “Installing Device Driver Software” on page 3-1. Return here to install your hardware.
2. Refer to the User's Guide that shipped with your system unit to perform the following:
 - Shutdown your system unit.
 - Install the adapter in your system unit in any available slot.
 - Secure the adapter to the system unit chassis using the bracket screw.
3. After the basic installation is complete, connect your keyboard and mouse to the system unit and connect the cable to the adapter.
4. Turn on your system unit. Go to “Verify AIX Hardware Installation” on page 4-2.

Troubleshooting

Initial installation problems are often resolved using a few basic troubleshooting steps:

- Check Installed Hardware (lsdev)
- Check Installed Software (lspp)

Verify AIX Hardware Installation

1. To verify your system unit recognizes the 2-Port Multiprotocol PCI Adapter:

- If necessary, login as **root**.
- Type:

```
lsdev -Cs pci | grep 331121b9
```


and press Enter.

2. Possible Results:

- If the 2-Port Multiprotocol PCI Adapter did install, the following is an example of the data that appears on your screen:

```
dpmpa0 Available 04-05 IBM 2-Port Multiprotocol Adapter
```

If you get the above message, go to “Verify Adapter Ports” on page 4-3.

- If the message on your screen indicates your adapter is Defined instead of Available, shut down your machine. Check the 2-Port Multiprotocol PCI Adapter to insure it is installed correctly. Go to Chapter 4, “Installing Hardware” on page 4-1, and return here and repeat step 1.

Note: If the message on your screen indicates your adapter is Defined a second time, it may be necessary to contact your service representative.

- If no data appears on your screen, two possible problems exist:
 - Device drivers did not install.
 - Adapter did not install correctly.

If that is not the problem, check your adapter installation. Go to Chapter 3, “Installing Device Driver Software” on page 3-1.

Verify Adapter Ports

1. To verify your system unit recognizes the ports:

- If necessary, login as **root**.
- Type:

```
lsdev -Cs 331121b9
```

and press Enter.

2. If the ports are active, the following is an example of the data that appears on your screen:

```
hdlc0 Available 04-05-00 IBM HDLC Network Device Driver
hdlc1 Available 04-05-01 IBM HDLC Network Device Driver
```

Verify AIX Software Installation

1. Verify the device driver for the 2-Port Multiprotocol PCI Adapter is installed.

- If necessary, login as **root**.
- Type:

```
lslpp -l a11 | grep 331121b9
```

and press Enter.

2. Possible Results:

- If the 2-Port Multiprotocol PCI Adapter device driver is installed, the following is an example of the data that appears.

```
devices.pci.331121b9.com 4.2.1.0 COMMITTED IBM PCI 2-Port Multiprotocol
devices.pci.331121b9.diag 4.2.1.0 COMMITTED IBM PCI 2-Port Multiprotocol
                           Adapter (331121b9) Diagnostics
devices.pci.331121b9.rte 4.2.1.0 COMMITTED IBM PCI 2-Port Multiprotocol
devices.pci.331121b9.com 4.2.1.0 COMMITTED IBM PCI 2-Port Multiprotocol
devices.pci.331121b9.rte 4.2.1.0 COMMITTED IBM PCI 2-Port Multiprotocol
```

If this appears when your device drivers are installed, but you continue to have problems, go to Chapter 4, “Installing Hardware” on page 4-1.

- If no data appears on your screen, the 2-Port Multiprotocol PCI Adapter device driver did not install, return to Chapter 3, “Installing Device Driver Software” on page 3-1.

If you continue to experience problems, it may be necessary to call your system support organization. Refer to your operating system documentation for directions.

Chapter 5. Selecting an Interface

The 2-Port Multiprotocol PCI Adapter connects like data terminal equipment (DTE) to devices such as data service units (DSUs) or data communications equipment (DCEs), that support one of the following interfaces: V.24/EIA-232, V.35, V.36/EIA-449, or X.21. Each very high speed integrated port (VHSI) is configured independently.

The Standard Interface Cable list below describes the most common connections for each interface. To make your own cable, see “Interface Specifications” on page 5-3.

Standard Interface Cables

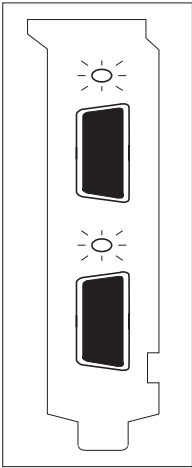
- V.24/EIA-232 for the 2-Port Multiprotocol PCI Adapter
- V.35 for the 2-Port Multiprotocol PCI Adapter
- V.36/EIA-449 for the 2-Port Multiprotocol PCI Adapter
- X.21 for the 2-Port Multiprotocol PCI Adapter

To use one of the above interfaces, install the appropriate cable. The 2-Port Multiprotocol PCI Adapter recognizes the cable and automatically prepares the port for that interface.

Refer to the documentation that came with your networking software for additional port configuration information.

Connection Status Indicators

The green LED adjacent to each port on the 2-Port Multiprotocol PCI Adapter (below) indicates port connection status.



LED status explanations follow:

Table 5-1. Explanation of LED States		
LED State	Connection Status	Action
Off	The port is not loaded (the configuration file describing protocol and interface parameters was not read by the device driver on the system unit.)	Consult your networking software for instructions to load a configuration file and to start a connection.
Flash	The connection is up and data is being transmitted or received.	
On	The port is active and the connection is good.	

Interface Specifications

The standards, compliant with each interface supported on the VHSI ports, are listed below. (See Table, Table 5-2.)

The remainder of this section describes the allocation of pins used to implement the electrical and signalling requirements of each interface. A wiring diagram shows the correspondence of the interface pinout to the VHSI port.

<i>Table 5-2. Interface Compatibility</i>		
Interface	Standard	Compatibility
V.24/EIA-232	CCITT V.24	Signalling
	CCITT V.28	Electrical
	CCITT X.21bis	Electrical and signalling
	EIA-232-E	Electrical and signalling
	ISO 2110	Connector type for the DCE side of a V.24 VHSI Modem Cable
V.35	CCITT V.28	Some signals for electrical
	CCITT V.35	Some signals for electrical and signalling
	ISO 2593	Connector type for the DCE side of a V.35 VHSI Modem Cable
V.36/EIA-449	CCITT V.10	Electrical
	CCITT V.11	Electrical
X.21	CCITT X.21	Signalling
	CCITT V.11	Electrical
	CCITT X.27	Electrical
	EIA-422-A	Electrical
	ISO 4903	Connector type for the DCE side of an X.21 VHSI Modem Cable

V.24/EIA-232 Interface

A pin-out diagram for the V.24 interface is shown. (See Table, Table 5-3.) Signal definitions and names are listed.

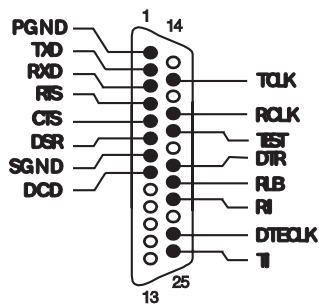
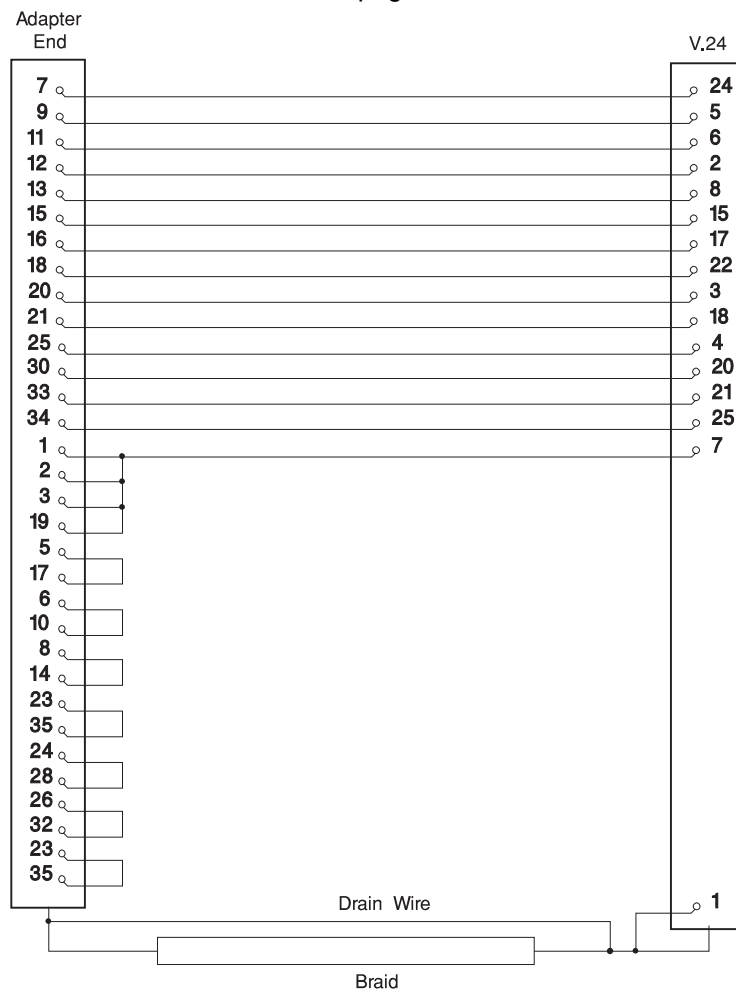


Table 5-3. V.24 Interface Signals

Pin No.	Signal	Name	Direction	CCITT No.
1	PGND	Protective Ground	Common	101
2	TXD	Transmit Data	Output	103
3	RXD	Receive Data	Input	104
4	RTS	Request to Send	Output	105
5	CTS	Clear to Send	Input	106
6	DSR	Data Set Ready	Input	107
7	SGND	Signal Ground	Common	102
8	DCD	Data Carrier Detect	Input	109
15	TCLK	Transmit Clock (DCE)	Input	114
17	RCLK	Receive Clock	Input	115
18	TEST	Local Loopback Activation	Output	141
20	DTR	Data Terminal Ready	Output	108
21	RLB	Remote Loopback	Output	140
22	RI	Ring Indicator	Input	125
24	DTECLK	Transmit Clock (DTE)	Output	113
25	TI	Test Indicator	Input	142

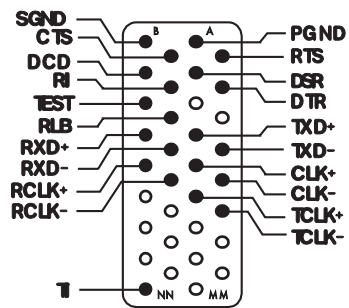
VHSI V.24 Connections

The wiring diagram below shows the connections required to construct a VHSI V.24 cable. For additional information to construct your own cable, see “Cable Construction Information” on page 5-14.



The V.35 Interface

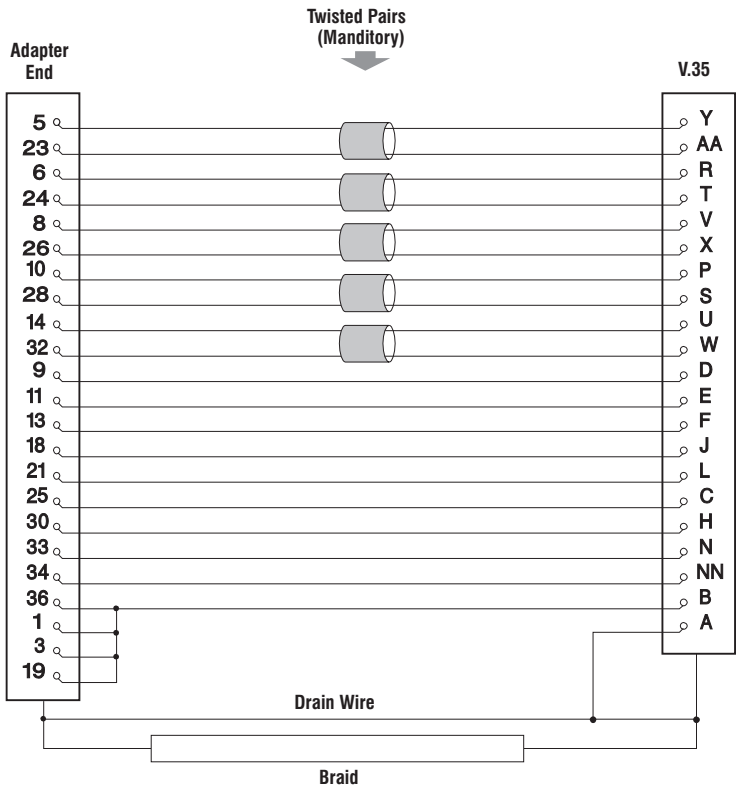
A pin-out diagram for the V.35 interface is shown. (See Table, Table 5-4 on page 5-7.) Signal definitions and names are listed.



<i>Table 5-4. V.35 Interface Signals</i>				
Pin No.	Signal	Name	Direction	CCITT No.
A	PGND	Protective Ground	Common	101
B	SGND	Signal Ground	Common	102
C	RTS	Request to Send	Output	105
D	CTS	Clear to Send	Input	106
E	DSR	Data Set Ready	Input	107
F	DCD	Data Carrier Detect	Input	109
H	DTR	Data Terminal Ready	Output	108
J	RI	Ring Indicator	Input	125
L	TEST	Local Loopback Activation	Output	141
N	RLB	Remote Loopback	Output	140
P	TXD+	Transmit Data	Output	103A
R	RXD+	Receive Data	Input	104A
S	TXD-	Transmit Data	Output	103B
T	RXD-	Receive Data	Input	104B
U	CLK+	Transmit Clock (DTE)	Output	113A
V	RCLK+	Receive Clock (DCE)	Input	115A
W	CLK-	Transmit Clock (DTE)	Output	113B
X	RCLK-	Receive Clock (DCE)	Input	115B
Y	TCLK+	Transmit Clock (DCE)	Input	114A
AA	TCLK- Transmit Clock (DCE)	Output	114B	
NN	TI	Test Indicator	Input	142

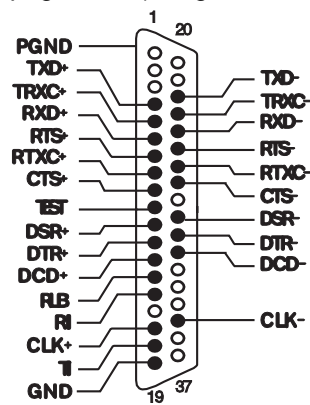
VHSI V.35 Connections

The wiring diagram below shows the connections required to construct a VHSI V.35 cable. For additional information to construct your own cable, see “Cable Construction Information” on page 5-14.



V.36/EIA-449 Interface

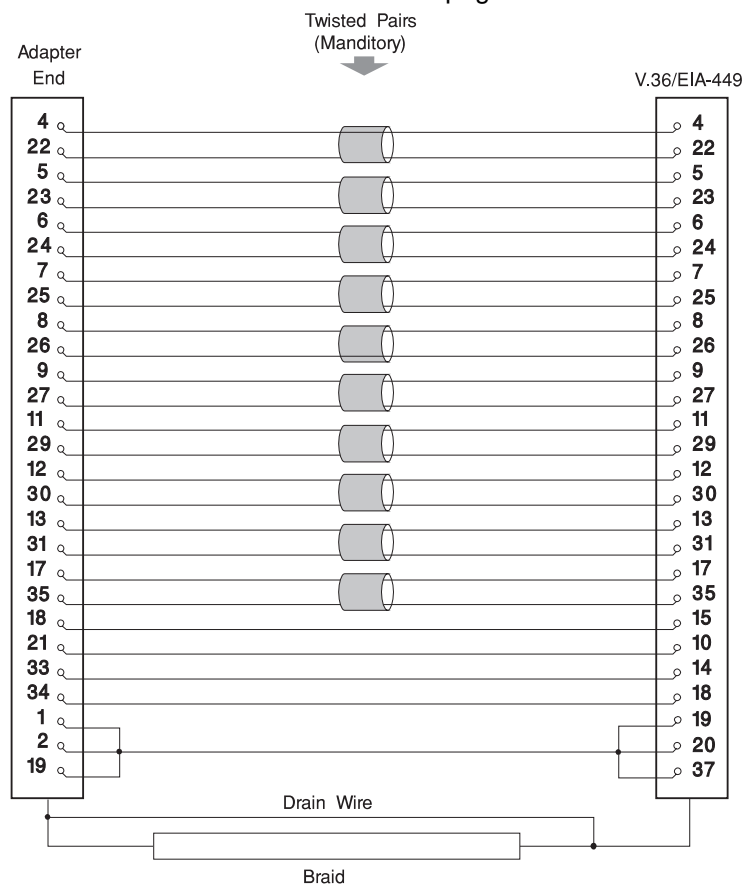
A pin-out diagram for the V.36/EIA-449 interface is shown. (See Table, Table 5-5 on page 5-10.) Signal definitions and names are listed.



<i>Table 5-5. V.36/EIA-449 Interface Signals</i>				
Pin No.	Signal	Name	Direction	CCITT No.
Case	PGND	Protective Ground	Common	101
4	TXD+	Transmit Data	Output	103A
5	TRXC+	Transmit Clock (DCE)	Input	114A
6	RXD+	Receive Data	Input	104A
7	RTS+	Request to Send	Output	105A
8	RTXC+	Receive Clock (DCE)	Input	115A
9	CTS+	Clear to Send	Input	106A
10	TEST	Local Loopback Activation	Output	141A
11	DSR+	Data Set Ready	Input	107A
12	DTR+	Data Terminal Ready	Output	108A
13	DCD+	Data Carrier Detect	Input	109A
14	RLB	Remote Loopback	Output	140A
15	RI	Ring Indicator	Input	125A
17	CLK+	Transmit Clock (DTE)	Output	113A
18	TI	Test Indicator	Input	142A
19	GND	DTE Common Return	Common	102A/B
22	TXD-	Transmit Data	Output	103B
23	TRXC-	Transmit Clock (DCE)	Output	114B
24	RXD-	Receive Data	Input	104B
25	RTS-	Request to Send	Output	105B
26	RTXC-	Receive Clock (DCE)	Input	115B
27	CTS-	Clear to Send	Output	106B
29	DSR-	Data Set Ready	Input	107B
30	DTR-	Data Terminal Ready	Output	108B
31	DCD-	Data Carrier Detect	Input	109B
35	CLK-	Transmit Clock (DTE)	Output	113B

VHSI V.36/EIA-449 Connections

The wiring diagram below shows the connections required to construct a VHSI V.36/EIA-449 cable. For additional information to construct your own cable, see “Cable Construction Information” on page 5-14.



X.21 Interface

A pin-out diagram for the X.21 interface is shown. (See Table, Table 5-6.) Signal definitions and names are listed.

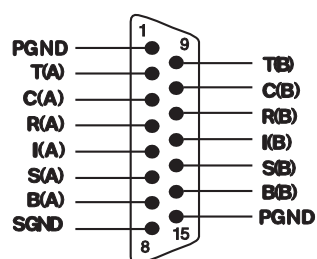
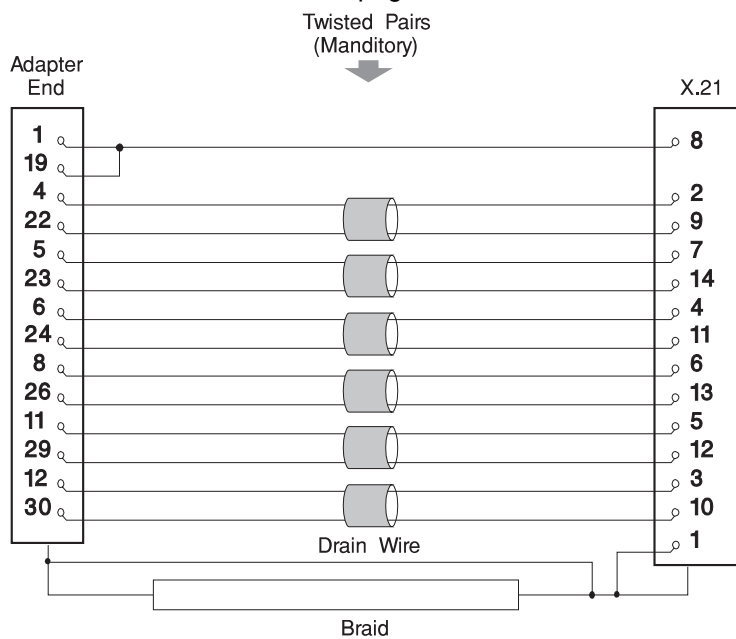


Table 5-6. X.21 Interface Signals

Pin No.	Signal	Name	Direction	CCITT No.
1/15	PGND	Protective Ground	Common	101
2	T(A)	Transmit Data (+)	Output	103A
3	C(A)	Control Signal (+)	Output	105A
4	R(A)	Receive Data (+)	Input	104A
5	I(A)	Indication (+)	Input	109A
6	S(A)	Signal Element Timing (+)	Input	115A
7	B(A)	Byte Timing (+)	Input	114A
8	SGND	Signal Ground	Common	102
9	T(B)	Transmit Data (-)	Output	103B
10	C(B)	Control Signal (-)	Output	105B
11	R(B)	Receive Data (-)	Input	104B
12	I(B)	Indication (-)	Input	109B
13	S(B)	Signal Element Timing (-)	Input	115B
14	B(B)	Byte Timing (-)	Input	114B

VHSI X.21 Connections

The wiring diagram below shows the connections required to construct a VHSI X.21 cable. For additional information to construct your own cable, see “Cable Construction Information” on page 5-14.



Cable Construction Information

If you plan to construct your own VHSL cables, be sure to observe the guidelines below.

Wire Gauge, Grounding, and Pairing

- Use 28 AWG 7-strand wire with 0.020--0.028 inch insulation.
- The chassis must be grounded both by a drain wire and by the braid; both must be connected to the connector case and shell at each end of the cable. The braid must be connected through its full circumference.
- Wires identified under the heading "Twisted Pairs" must be paired. If you do not install twisted pairs correctly, the cable does not work.

Type of Connectors: The VHSL port accepts a high density 36-pin male cable connector. The types of connector used on the interface-specific end of the cable are:

Table 5-7. Connector Types	
Interface	Connector
V.35	Type M
V.24	DB25
V.36/EIA-449	DB37
X.21	DB15

Appendix A. Technical Specifications

Technical Data

- PCI bus compatible (32-bit slot)
- Hitachi 64570 HDLC controller at 10 MHz
- 512 KB of DRAM

Hardware Installation

- Automatic configuration of interrupt request level setting and memory address
- 32-bit memory access
- External Interface
- Two 36-pin female VHSL ports connect to 36-pin high-density male connectors
- Support for V.24/EIA-232, V.35, and V.36/EIA-449
- X.21 with V.11 (X.27) signalling
- External clocking

Performance

- 2 Mbps full duplex per physical port
- Power Requirements
- 1.25 A @ +5V
- 50 mA @ +12V
- 25 mA @ -12V

Environmental Requirements

- Operating temperature: 0DEGC to 50DEGC
- Operating humidity: 0 to 90% (non-condensing)
- Barometric operating pressure: 86 to 106 kPascals
- Maximum tolerance in power supply variation: +5% to -5%

Appendix B. 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: The 2-Port Multiprotocol PCI Adapter 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 respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

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 is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

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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