Overview

This chapter describes the PA-4T port adapter and contains the following sections:

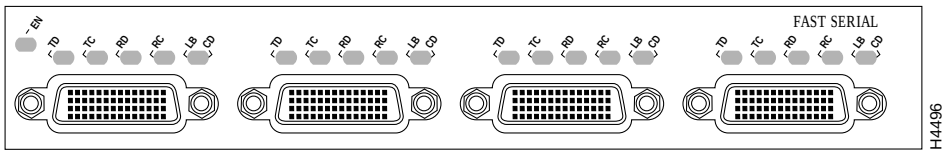
Port Adapter Overview

The PA-4T, shown in Figure 1-1, provides four channel-independent, synchronous serial ports that support full-duplex operation at T1 (1.544 Mbps) and E1 (2.048 Mbps) speeds. Each port supports any of the available interface types: Electronics Industries Association/Telecommunications Industries Association (EIA/TIA)-232, EIA/TIA-449, V.35, X.21, and EIA-530. The cable attached to each PA-4T interface port determines its type (EIA/TIA-232, and so forth) and its mode (DCE or DTE).

Note Although the VIP supports online insertion and removal (OIR), individual port adapters do not. To replace port adapters, you must first remove the VIP from the chassis, and then replace port adapters as required.

Cisco 7200 series routers support OIR of all port adapter types.

Figure 1-1 PA-4T—Faceplate View



Synchronous Serial Overview

The PA-4T supports the following interface types: EIA/TIA-232, EIA/TIA-449, V.35, X.21, and EIA-530. EIA/TIA-232, which is by far the most common interface standard in the United States, supports unbalanced circuits at signal speeds up to 64 kbps. EIA/TIA-449, which supports balanced (EIA/TIA-422) and unbalanced (EIA/TIA-423) transmissions, is a faster (up to 2 Mbps) version of EIA/TIA-232 that provides more functions and supports transmissions over greater distances. The EIA/TIA-449 standard was intended to replace EIA/TIA-232, but it was not widely adopted.

Note The EIA/TIA standards were referred to as recommended standards called RS-232 and RS-449 prior to their acceptance by the ANSI committee.

The resistance to convert to EIA/TIA-449 was due primarily to the large installed base of DB-25 hardware and to the larger size of the 37-pin EIA/TIA-449 connectors, which limited the number of connections possible (fewer than are possible with the smaller, 25-pin EIA/TIA-232 connector).

EIA-530, which supports balanced transmission, provides the increased functionality, speed, and distance of EIA/TIA-449 on the smaller, DB-25 connector used for EIA/TIA-232. The EIA-530 standard was created to support the more sophisticated circuitry of EIA/TIA-449 on the large number of existing EIA/TIA-232 (DB-25) hardware instead of the larger, 37-pin connectors used for EIA/TIA-449. Like EIA/TIA-449, EIA-530 refers to the electrical specifications of EIA/TIA-422 and EIA/TIA-423. The specification recommends a maximum speed of 2 Mbps. EIA-530 is used primarily in the United States.

The V.35 interface is most commonly used in the United States and throughout Europe, and is recommended for speeds up to 48 kbps. The X.21 interface uses a 15-pin connection for balanced circuits and is commonly used in the United Kingdom to connect public data networks. X.21 relocates some of the logic functions to the DTE and DCE interfaces and, as a result, requires fewer circuits and a smaller connector than EIA/TIA-232.

All interface types except EIA-530 can be individually configured for operation with either external (DTE mode) or internal (DCE mode) timing signals; EIA-530 operates with external timing only. In addition, all VIP serial interface types support non-return to zero (NRZ) and non-return to zero inverted (NRZI) format, and both 16-bit and 32-bit cyclic redundancy checks (CRCs). The default configuration is for NRZ format and 16-bit CRC. You can change the default settings with software commands. (For more information, see Chapter 4, “Configuring the PA-4T.”)

There is no default mode or clock rate set on the VIP serial ports, although an internal clock signal is present on all ports for DCE support. Using the internal clock, you can also perform local loopback tests without having to terminate the port or connect a cable. (All interface types except X.21 DTE support loopback.) To use the port as a DCE interface, you must set the clock rate and connect a DCE adapter cable. To use the port as a DTE interface, you need only connect a DTE adapter cable to the port. Because the serial adapter cables determine the mode and interface type, the PA-4T interface becomes a DTE when a DTE cable is connected to it.

If a DTE cable is connected to a port with a clock rate set, the DTE ignores the clock rate and uses the external clock signal that is sent from the remote DCE.

For a brief description of the **clock rate** command, see Chapter 4, “Configuring the PA-4T.” For complete command descriptions and instructions, see the publications listed in the “Related Documentation” section on page vi.

Synchronous Serial Specifications

The PA-4T provides up to four synchronous serial interfaces. Each interface allows a maximum bandwidth of 2.048 Mbps; the speed depends on the type of electrical interface used. Use EIA/TIA-232 for speeds of 64 kilobits per second (kbps) and below, and use X.21, EIA/TIA-449, V.35, or EIA-530 for higher speeds.

Serial signals can travel a limited distance at any given bit rate; generally, the slower the baud rate, the greater the distance. All serial signals are subject to distance limits beyond which a signal degrades significantly or is completely lost.

Table 1-1 lists the recommended (standard) maximum speeds and distances for each PA-4T serial interface type. The recommended maximum rate for V.35 is 2,048 Mbps.

Table 1-1 Standards for Transmission Speed Versus Distance

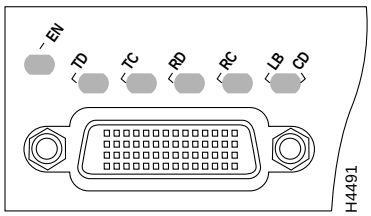
	EIA/TIA-232 Distances			EIA/TIA-449, X.21, V.35, EIA-530 Distances	
Rate (bps)	**Feet**	**Meters**		**Feet**	**Meters**
2400	200	60		4,100	1,250
4800	100	30		2,050	625
9600	50	15		1,025	312
19200	25	7.6		513	156
38400	12	3.7		256	78
56000	8.6	2.6		102	31
1544000 (T1)	–	–		50	15

Balanced drivers allow EIA/TIA-449 signals to travel greater distances than EIA/TIA-232. The recommended distance limits for EIA/TIA-449 shown in Table 1-1 are also valid for V.35, X.21, and EIA-530. EIA/TIA-449 and EIA-530 support 2.048-Mbps rates, and V.35 supports 2.048-Mbps rates without any problems; we do not recommend exceeding published specifications for transmission speed versus distance. Do so at your own risk.

LEDs

The PA-4T contains the enabled LED, standard on all port adapters, and a one status LED for each port. After system initialization, the enabled LED goes on to indicate that the PA-4T has been enabled for operation. The LEDs are shown in Figure 1-2.

Figure 1-2 LEDs on the PA-4T—Horizontal Orientation Shown



The green enabled LED on the port adapter indicates that the motherboard is enabled and receiving power, and that the port adapter is ready for operation.

The following conditions must be met before the enabled LED goes on:

- The PA-4T interface is correctly connected and receiving power
- The PA-4T-equipped card or router contains a valid microcode version that has been downloaded successfully
- The bus recognizes the PA-4T or PA-4T-equipped VIP

If any of these conditions is not met, or if the initialization fails for other reasons, the enabled LED does not go on.

Table 1-2 lists LED colors and indications.

Table 1-2 PA-4T LEDs

LED Label	DTE Function	DCE Function	Color and Function
TD	Transmit data out	Transmit data in	Green
TC	Transmit clock in	Transmit clock in (TXCE)	Green
RD	Receive data in	Receive data out	Green
RC	Receive clock in	Receive clock out	Green
LB/CD	–	–	Green: DTR, DSR, RTS, CTS, or DCD active Yellow: local loop or internal loop active
EN (enable)	–	–	Green: port adapter enabled

Cables, Connectors, and Pinouts

The following sections describe the serial receptacles on the PA-4T, and the cables and pinouts for the various serial interface cables.

PA-4T Port Adapter Receptacles and Cables

The PA-4T and adapter cables allow a high density of interface ports, regardless of the size of the connectors typically used with each electrical interface type. All ports use an identical 60-pin, D-shell receptacle that supports all interface types: EIA/TIA-232, V.35, EIA/TIA-449, X.21, and EIA-530. Each port requires a serial adapter cable, which provides the interface between the high-density serial port and the standard connectors that are commonly used for each electrical interface type.

Note The adapter cable determines the electrical interface type and mode of the port (DTE or DCE) to which it is connected.

The network end of the cable is an industry-standard connector for the type of electrical interface that the cable supports. For most interface types, the adapter cable for DTE mode uses a plug at the network end, and the cable for DCE mode uses a receptacle at the network end. Exceptions are V.35 adapter cables, which are available with either a V.35 plug or a receptacle for either mode, and the EIA-530 adapter cable, which is available only in DTE mode with a DB-25 plug at the network end. The mode is labeled on the molded plastic connector shell at the ends of all cables except V.35 (which uses the standard Winchester block-type connector instead of a molded plastic D-shell).

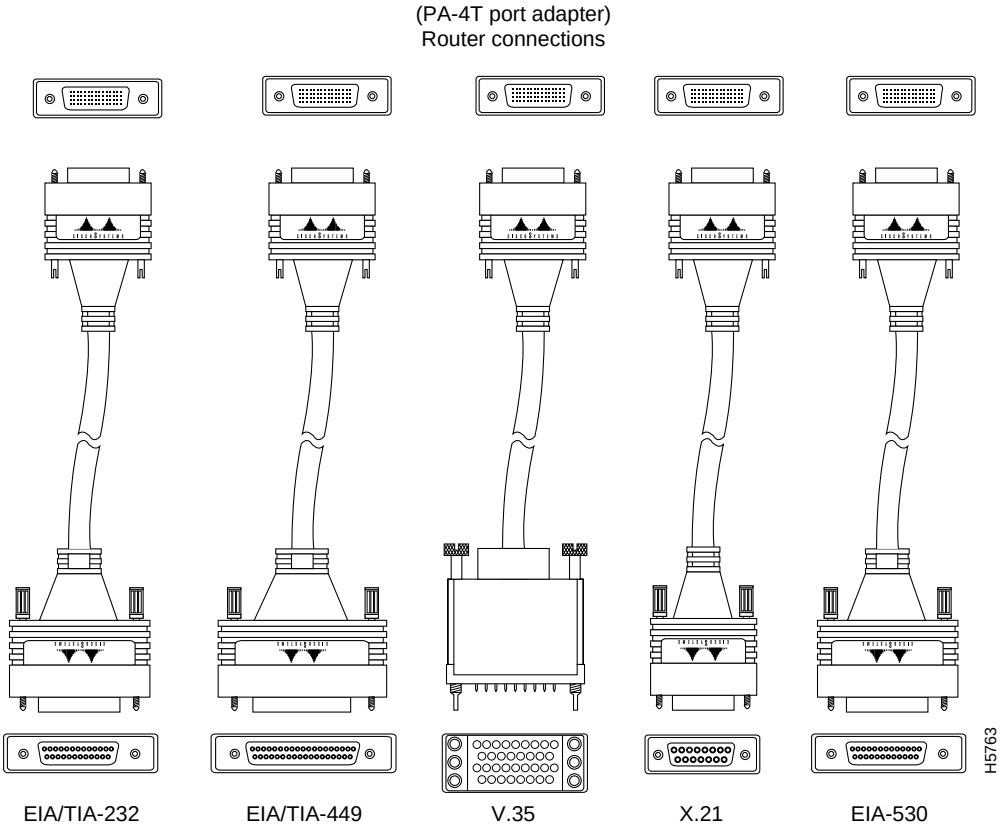
Following are the available interface cable options (and product numbers) for the mode and network-end connectors for each cable:

- EIA/TIA-232: DTE mode with a DB-25 plug (CAB-232MT=); DCE mode with a DB-25 receptacle (CAB-232FC=)
- EIA/TIA-449: DTE mode with a 37-pin D-shell plug (CAB-449MT=); DCE mode with a 37-pin D-shell receptacle (CAB-449C=)
- V.35: DTE mode or DCE mode with a 34-pin Winchester-type V.35 plug (CAB-V35MT= or CAB-V35MC=); DTE mode or DCE mode with a 34-pin Winchester-type V.35 receptacle (CAB-V35FT= or CAB-V35FC=). Also available is a cable with a male DB-60 plug on the router end and a male DB-34 shielded plug on the network end (CAB-V35MTS=).
- X.21: DTE mode with a DB-15 plug (CAB-X21MT=); DCE mode with a DB-25 receptacle (CAB-X21FC=)
- EIA-530: DTE mode with a DB-25 plug (CAB-530MT=)

Note For cable pinouts, refer to the "Cables, Connectors, and Pinouts" section on page 1-4.

Figure 1-3 shows the serial port adapter cables for connection from the PA-4T your network.

Figure 1-3 Serial Port Adapter Cables

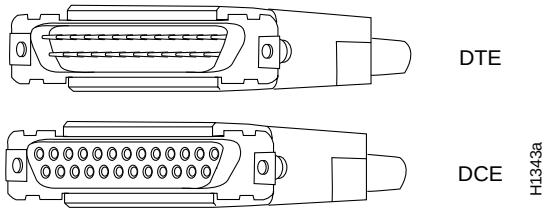


Metric (M3) thumbscrews are included with each port adapter cable to allow connections to devices that use metric hardware. Because the 4T port adapter uses a special, high-density port that requires special adapter cables for each electrical interface type, we recommend that you obtain serial interface cables from the factory.

EIA/TIA-232 Connections

The router (VIP) end of all EIA/TIA-232 adapter cables is a high-density 60-pin plug. The opposite (network) end of the adapter cable is a standard 25-pin D-shell connector (known as a DB-25) that is commonly used for EIA/TIA-232 connections. Figure 1-4 shows the connectors at the network end of the adapter cable. The system console and auxiliary ports on the Route Switch Processor (RSP) in the Cisco 7500 series also use EIA/TIA-232 connections; however, the 4T port adapter interfaces support synchronous serial connections, and the console and auxiliary ports only support asynchronous connections. Use caution when connecting EIA/TIA-232 cables to the 4T receptacles.

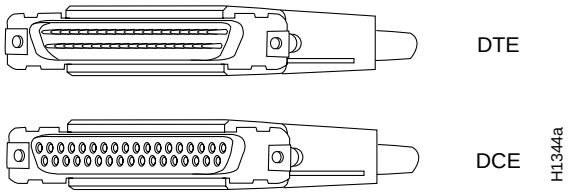
Figure 1-4 EIA/TIA-232 Adapter Cable Connectors



EIA/TIA-449 Connections

The router (VIP) end of all EIA/TIA-449 adapter cables is a high-density 60-pin plug. The opposite (network) end of the adapter cable provides a standard 37-pin D-shell connector, which is commonly used for EIA/TIA-449 connections. Figure 1-5 shows the connectors at the network end of the adapter cable. EIA/TIA-449 cables are available as either DTE (DB-37 plug) or DCE (DB-37 receptacle).

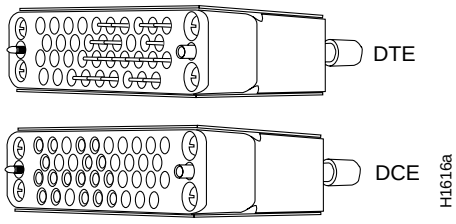
Figure 1-5 EIA/TIA-449 Adapter Cable Connectors



V.35 Connections

The router (VIP) end of all V.35 adapter cables is a high-density 60-pin plug. The opposite (network) end of the adapter cable provides a standard 34-pin Winchester-type connector commonly used for V.35 connections. Figure 1-6 shows the connectors at the network end of the V.35 adapter cable. V.35 cables are available with a standard V.35 plug for DTE mode (CAB-V35MT=) or a V.35 receptacle for DCE mode (CAB-V35FC=).

Figure 1-6 V.35 Adapter Cable Connectors

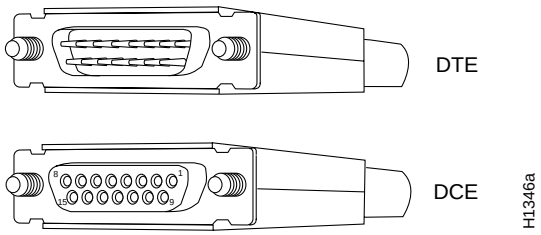


Note Also available, but not shown in Figure 1-6, are CAB-V35MC=, a V.35 cable with a plug on the network end for DCE mode, and CAB-V35FT=, a V.35 cable with a receptacle on the network end for DTE mode. These cables are used for connecting V.35-equipped systems back to back.

X.21 Connections

The router (VIP) end of all X.21 adapter cables is a high-density 60-pin plug. The opposite (network) end of the adapter cable is a standard DB-15 connector. Figure 1-7 shows the connectors at the network end of the X.21 adapter cable. X.21 cables are available as either DTE (DB-15 plug) or DCE (DB-15 receptacle).

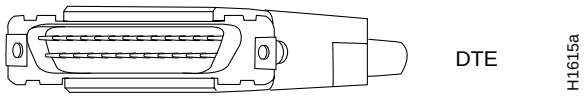
Figure 1-7 X.21 Adapter Cable Connectors



EIA-530 Connections

The EIA-530 adapter cable is available in DTE mode only. The router (VIP) end of the EIA-530 adapter cable is a high-density 60-pin plug. The opposite (network) end of the adapter cable is a standard DB-25 plug commonly used for EIA/TIA-232 connections. Figure 1-8 shows the DB-25 connector at the network end of the adapter cable.

Figure 1-8 EIA-530 Adapter Cable Connector



4T Port Adapter Cable Pinouts

The 4T port adapter supports EIA/TIA-232, EIA/TIA-449, X.21, V.35, and EIA-530 serial interfaces. All 4T ports use a a 60-pin receptacle that supports all available interface types. A special serial adapter cable, which is required for each port, determines the electrical interface type and mode of the interface. The router (VIP) end of all of the adapter cables is a 60-pin plug; the connectors at the network end are the standard connectors used for the respective interfaces.

All interface types except EIA-530 are available in DTE or DCE format: DTE with a plug connector at the network end and DCE with a receptacle at the network end. V.35 is available in either mode with either gender at the network end. EIA-530 is available in DTE only.

The tables that follow list the signal pinouts for both the DTE and DCE mode serial port adapter cables, for each of the following 4T port adapter interface types:

- EIA/TIA-232 pinouts, Table 1-3
- EIA/TIA-449 pinouts, Table 1-4
- EIA-530 pinouts, Table 1-5
- V.35 pinouts, Table 1-6
- X.21 pinouts, Table 1-7

Table 1-3 EIA/TIA-232 Adapter Cable Signals

DTE Cable (CAB-232MT=)					DCE Cable (CAB-232FC=)				
VIP End, HD[1] 60-Position Plug				Network End, DB-25 Plug	VIP End, HD 60-Position Plug				Network End, DB-25 Receptacle
Signal	**Pin**		**Pin**	**Signal**	**Signal**	**Pin**		**Pin**	**Signal**
Shield ground	46		1	Shield ground	Shield ground	46		1	Shield ground
TxD/RxD	41	—>	2	TxD	RxD/TxD	36	<—	2	TxD
RxD/TxD	36	<—	3	RxD	TxD/RxD	41	—>	3	RxD
RTS/CTS	42	—>	4	RTS	CTS/RTS	35	<—	4	RTS
CTS/RTS	35	<—	5	CTS	RTS/CTS	42	—>	5	CTS
DSR/DTR	34	<—	6	DSR	DTR/DSR	43	—>	6	DSR
Circuit ground	45		7	Circuit ground	Circuit ground	45		7	Circuit ground
DCD/LL	33	<—	8	DCD	LL/DCD	44	—>	8	DCD
TxC/NIL	37	<—	15	TxC	TxCE/TxC	39	—>	15	TxC
RxC/TxCE	38	<—	17	RxC	NIL/RxC	40	—>	17	RxC
LL/DCD	44	—>	18	LTST	DCD/LL	33	<—	18	LTST
DTR/DSR	43	—>	20	DTR	DSR/DTR	34	<—	20	DTR
TxCE/TxC	39	—>	24	TxCE	RxC/TxCE	38	<—	24	TxCE
Mode 0 Ground Mode_DCE	50 51 52			Shorting group	Mode 0 Ground	50 51			Shorting group

1. HD = high density.

Table 1-4 EIA/TIA-449 Adapter Cable Signals

DTE Cable (CAB-449MT=)					DCE Cable (CAB-449C=)				
VIP End, HD[1] 60-Position Plug				Network End, DB-37 Plug	VIP End, HD 60-Position Plug				Network End, DB-37 Receptacle
Signal	Pin		Pin	Signal	Signal	Pin		Pin	Signal
Shield ground	46		1	Shield ground	Shield ground	46		1	Shield ground
TxD/RxD+	11	—>	4	SD+	RxD/TxD+	28	<—	4	SD+
TxD/RxD–	12	—>	22	SD–	RxD/TxD–	27	<—	22	SD–
TxC/RxC+	24	<—	5	ST+	TxCE/TxC+	13	—>	5	ST+
TxC/RxC–	23	<—	23	ST–	TxCE/TxC–	14	—>	23	ST–
RxD/TxD+	28	<—	6	RD+	TxD/RxD+	11	—>	6	RD+
RxD/TxD–	27	<—	24	RD–	TxD/RxD–	12	—>	24	RD–
RTS/CTS+	9	—>	7	RS+	CTS/RTS+	1	<—	7	RS+
RTS/CTS–	10	—>	25	RS–	CTS/RTS–	2	<—	25	RS–
RxC/TxCE+	26	<—	8	RT+	TxC/RxC+	24	—>	8	RT+
RxC/TxCE–	25	<—	26	RT–	TxC/RxC–	23	—>	26	RT–
CTS/RTS+	1	<—	9	CS+	RTS/CTS+	9	—>	9	CS+
CTS/RTS–	2	<—	27	CS–	RTS/CTS–	10	—>	27	CS–
LL/DCD	44	—>	10	LL	NIL/LL	29	—>	10	LL
Circuit ground	45		37	SC	Circuit ground	30		37	SC
DSR/DTR+	3	<—	11	ON+	DTR/DSR+	7	—>	11	ON+
DSR/DTR–	4	<—	29	ON–	DTR/DSR–	8	—>	29	ON–
DTR/DSR+	7	—>	12	TR+	DSR/DTR+	3	<—	12	TR+
DTR/DSR–	8	—>	30	TR–	DSR/DTR–	4	<—	30	TR–
DCD/DCD+	5	<—	13	RR+	DCD/DCD+	5	—>	13	RR+
DCD/DCD–	6	<—	31	RR–	DCD/DCD–	6	—>	31	RR–
TxCE/TxC+	13	—>	17	TT+	RxC/TxCE+	26	<—	17	TT+
TxCE/TxC–	14	—>	35	TT–	RxC/TxCE–	25	<—	35	TT–
Circuit ground	15		19	SG	Circuit ground	15		19	SG
Circuit ground	16		20	RC	Circuit ground	16		20	RC
Mode 1 Ground	49 48			Shorting group	Mode 1 Ground	49 48			Shorting group
Ground Mode_DCE	51 52			Shorting group					

1. HD = high density.

Table 1-5 EIA-530 DTE Adapter Cable Signals (CAB-530MT=)

VIP End, HD[1] 60-Position Plug				Network End, DB-25 Plug
Signal	**Pin**		**Pin**	**Signal**
Shield ground	46		1	Shield ground
TxD/RxD+	11	—>	2	TxD+
TxD/RxD–	12	—>	14	TxD–
RxD/TxD+	28	<—	3	RxD+
RxD/TxD–	27	<—	16	RxC–
RTS/CTS+	9	—>	4	RTS+
RTS/CTS–	10	—>	19	RTS–
CTS/RTS+	1	<—	5	CTS+
CTS/RTS–	2	<—	13	CTS–
DSR/DTR+	3	<—	6	DSR+
DSR/DTR–	4	<—	22	DSR–
DCD/DCD+	5	<—	8	DCD+
DCD/DCD–	6	<—	10	DCD–
TxC/RxC+	24	<—	15	TxC+
TxC/RxC–	23	<—	12	TxC–
RxC/TxCE+	26	<—	17	RxC+
RxC/TxCE–	25	<—	9	RxC–
LL/DCD	44	—>	18	LL
Circuit ground	45		7	Circuit ground
DTR/DSR+	7	—>	20	DTR+
DTR/DSR–	8	—>	23	DTR–
TxCE/TxC+	13	—>	24	TxCE+
TxCE/TxC–	14	—>	11	TxCE–
Mode_1 Ground Mode_2	49 48 47			Shorting group
Ground Mode_DCE	51 52			Shorting group

1. HD = high density.

Table 1-6 V.35 Adapter Cable Signals

DTE Cable (CAB-V35FT= or CAB-V35MT=)					DCE Cable (CAB-V35FC= or CAB-V35MC=)				
VIP End, HD[1] 60-Position Plug				Network End, 34-Position Plug	VIP End, HD 60-Position Plug				Network End, 34-Position Receptacle
Signal	**Pin**		**Pin**	**Signal**	**Signal**	**Pin**		**Pin**	**Signal**
Shield ground	46		A	Frame ground	Shield ground	46		A	Frame ground
Circuit ground	45		B	Circuit ground	Circuit ground	45		B	Circuit ground
RTS/CTS	42	—>	C	RTS	CTS/RTS	35	<—	C	RTS
CTS/RTS	35	<—	D	CTS	RTS/CTS	42	—>	D	CTS
DSR/DTR	34	<—	E	DSR	DTR/DSR	43	—>	E	DSR
DCD/LL	33	<—	F	RLSD	LL/DCD	44	—>	F	RLSD
DTR/DSR	43	—>	H	DTR	DSR/DTR	34	<—	H	DTR
LL/DCD	44	—>	K	LT	DCD/LL	33	<—	K	LT
TxD/RxD+	18	—>	P	SD+	RxD/TxD+	28	<—	P	SD+
TxD/RxD–	17	—>	S	SD–	RxD/TxD–	27	<—	S	SD–
RxD/TxD+	28	<—	R	RD+	TxD/RxD+	18	—>	R	RD+
RxD/TxD–	27	<—	T	RD–	TxD/RxD–	17	—>	T	RD–
TxCE/TxC+	20	—>	U	SCTE+	RxC/TxCE+	26	<—	U	SCTE+
TxCE/TxC–	19	—>	W	SCTE–	RxC/TxCE–	25	<—	W	SCTE–
RxC/TxCE+	26	<—	V	SCR+	NIL/RxC+	22	—>	V	SCR+
RxC/TxCE–	25	<—	X	SCR–	NIL/RxC–	21	—>	x	SCR–
TxC/RxC+	24	<—	Y	SCT+	TxCE/TxC+	20	—>	Y	SCT+
TxC/RxC–	23	<—	AA	SCT–	TxCE/TxC–	19	—>	AA	SCT–
Mode 1 Ground	49 48			Shorting group	Mode 1 Ground	49 48			Shorting group
Mode 0 Ground Mode_DCE	50 51 52			Shorting group	Mode 0 Ground	50 51			Shorting group
TxC/NIL RxC/TxCE RxC/TxD Ground	53 54 55 56			Shorting group	TxC/NIL RxC/TxCE RxC/TxD Ground	53 54 55 56			Shorting group

1. HD = high density.

Table 1-7 X.21 Adapter Cable Signals

DTE Cable (CAB-X21MT=)					DCE Cable (CAB-X21FC=)				
VIP End, HD[1] 60-Position Plug				Network End, DB-15 Plug	VIP End, HD 60-Position Plug				Network End, DB-15 Receptacle
Signal	**Pin**		**Pin**	**Signal**	**Signal**	**Pin**		**Pin**	**Signal**
Shield ground	46		1	Shield ground	Shield ground	46		1	Shield ground
TxD/RxD+	11	—>	2	Transmit+	RxD/TxD+	11	—>	2	Transmit+
TxD/RxD–	12	—>	9	Transmit–	RxD/TxD–	12	—>	9	Transmit–
RTS/CTS+	9	—>	3	Control+	CTS/RTS+	9	—>	3	Control+
RTS/CTS –	10	—>	10	Control–	CTS/RTS –	10	—>	10	Control–
RxD/TxD+	28	<—	4	Receive+	TxD/RxD+	28	<—	4	Receive+
RxD/TxD–	27	<—	11	Receive–	TxD/RxD–	27	<—	11	Receive–
CTS/RTS+	1	<—	5	Indication+	RTS/CTS+	1	<—	5	Indication+
CTS/RTS –	2	<—	12	Indication–	RTS/CTS–	2	<—	12	Indication–
RxC/TxCE+	26	<—	6	Timing+	TxC/RxC+	26	<—	6	Timing+
RxC/TxCE–	25	<—	13	Timing–	TxC/RxC –	25	<—	13	Timing–
Circuit ground	15		8	Circuit ground	Circuit ground	15		8	Circuit ground
Ground Mode_2	48 47			Shorting group	Ground Mode_2	48 47			Shorting group
Ground Mode_DCE	51 52			Shorting group	Ground Mode_DCE	51 52			

1. HD = high density.

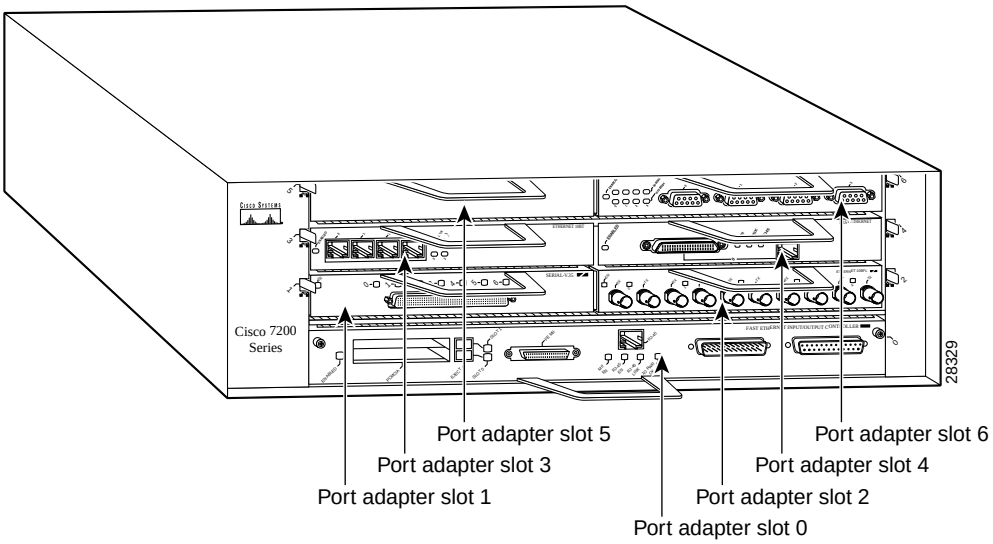
Port Adapter Slot Locations on the Supported Platforms

This section discusses port adapter slot locations on the supported platforms. The illustrations that follow summarize slot location conventions on each platform.

Cisco 7200 Series Router Slot Numbering

Figure 1-9 shows a Cisco 7206 with port adapters installed. In the Cisco 7206, port adapter slot 1 is in the lower left position, and port adapter slot 6 is in the upper right position. (The Cisco 7202 and Cisco 7204 are not shown; however, the PA-4T can be installed in any available port adapter slot.)

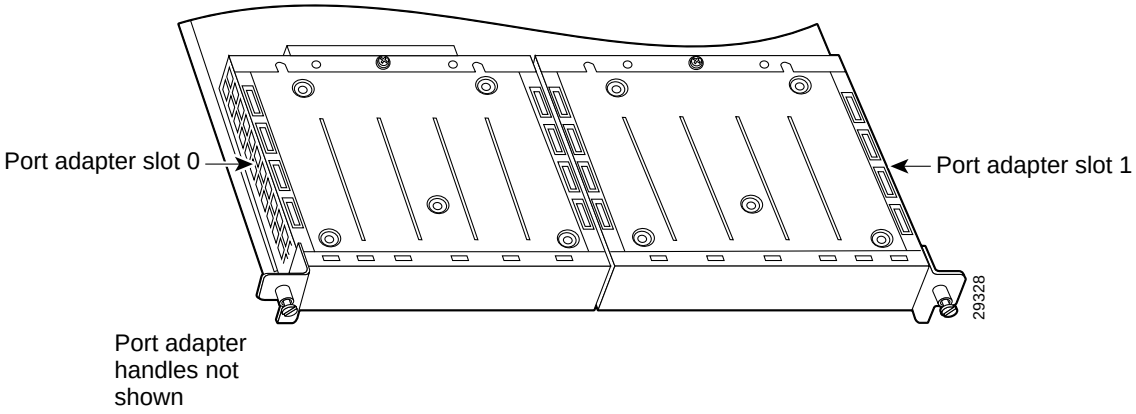
Figure 1-9 Port Adapter Slots in the Cisco 7206



VIP Slot Numbering

Figure 1-10 shows a partial view of a VIP motherboard with installed port adapters. With the motherboard oriented as shown in Figure 1-10, the left port adapter is in port adapter slot 0, and the right port adapter is in port adapter slot 1.

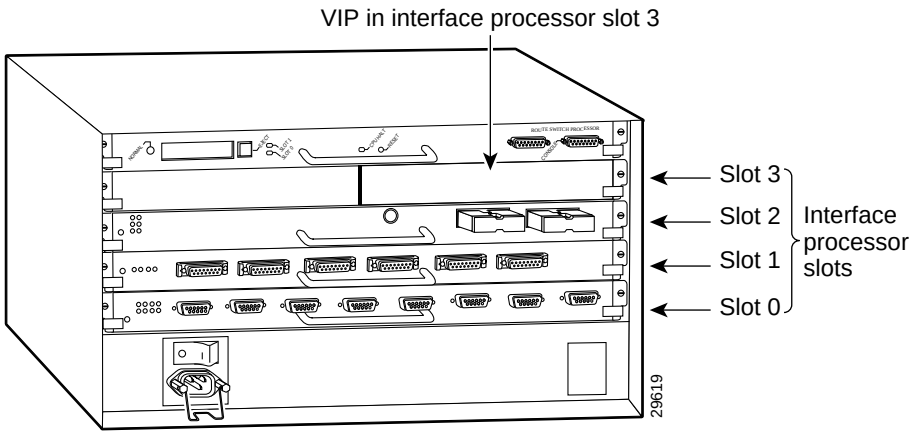
Figure 1-10 VIP Motherboard with Two Port Adapters Installed—Horizontal Orientation



Note In the Cisco 7507, and Cisco 7513 chassis, the VIP motherboard is installed vertically. In the Cisco 7505 chassis, the VIP motherboard is installed horizontally.

Interface processor slots are numbered as shown in Figure 1-11.

Figure 1-11 Interface Slot Numbers—Cisco 7505 Shown



Identifying Interface Addresses

This section describes how to identify interface addresses for the PA-4T in supported platforms. Interface addresses specify the actual physical location of each interface on a router or switch.

Interfaces on the PA-4T installed in a router maintain the same address regardless of whether other port adapters are installed or removed. However, when you move a port adapter to a different slot, the first number in the interface address changes to reflect the new port adapter slot number.

Interfaces on a PA-4T installed in a VIP maintain the same address regardless of whether other interface processors are installed or removed. However, when you move a VIP to a different slot, the interface processor slot number changes to reflect the new interface processor slot.

Note Interface ports are numbered from left to right starting with 0.

Table 1-8 explains how to identify interface addresses.

Table 1-8 Identifying Interface Addresses

Platform	Interface Address Format	Numbers	Syntax
Cisco 7200 series routers	Port-adapter-slot-number/interface-port-number	Port adapter slot—0 through 6 (depends on the number of slots in the router)[1] Interface port—0 through 3	`1/0`
VIP in Cisco 7500 series routers	Interface-processor-slot-number/ port-adapter-slot-number/interface-port-number	Interface processor slot—0 through 12 (depends on the number of slots in the router) Port adapter slot—always 0 or 1 Interface port—0 through 3	`3/1/0`

1. Port adapter slot 0 is reserved for the Fast Ethernet port on the I/O controller (if present).

Cisco 7200 Series Routers Interface Addresses

This section describes how to identify the interface addresses used for the PA-4T in Cisco 7200 series routers. The interface address is composed of a two-part number in the format *port-adapter-slot-number/interface-port-number.* See Table 1-8 for the interface address format.

In Cisco 7200 series routers, port adapter slots are numbered from the lower left to the upper right, beginning with port adapter slot 1 and continuing through port adapter slot 2 for the Cisco 7202, slot 4 for the Cisco 7204, and slot 6 for the Cisco 7206. (Port adapter slot 0 is reserved for the optional Fast Ethernet port on the I/O controller—if present.)

The interface addresses of the interfaces on the PA-4T in port adapter slot 1 are 1/0 through 1/7 (port adapter slot 1 and interfaces 0 through 7). If the PA-4T was in port adapter slot 4, these same interfaces would be numbered 4/0 through 4/7 (port adapter slot 4 and interfaces 0 through 3).

VIP Interface Addresses

This section describes how to identify the interface addresses used for the PA-4T on a VIP in Cisco 7500 series routers.

Note Although the processor slots in the 7-slot Cisco 7507, the 13-slot, and the 13-slot Cisco 7576 are vertically oriented and those in the 5-slot Cisco 7505 are horizontally oriented, all Cisco 7500 series routers use the same method for slot and port numbering.

See Table 1-8 for the interface address format. The interface address is composed of a three-part number in the format *interface-processor-slot-number/port-adapter-slot-number/interface-port-number.*

If the VIP is inserted in interface processor slot 3, then the interface addresses of the *PA-4T* are 3/1/0 through 3/1/3 (interface processor slot 3, port adapter slot 1, and interfaces 0 through 3). If the port adapter was in port adapter slot 0 on the VIP, these same interface addresses would be numbered 3/0/0 through 3/0/3.

Note If you remove the VIP with the PA-4T (shown in Figure 1-11) from interface processor slot 3 and install it in interface processor slot 2, the interface addresses become 2/1/0 through 2/1/3.