CHAPTER 3

Installing the Cisco 7206

This chapter explains the procedures for installing and starting the Cisco 7206. The chapter contains the following sections:

- Rack-Mounting the Cisco 7206
- General Installation
- Connecting Port Adapter Cables
- Connecting I/O Controller Cables
- Connecting Power
- Starting the Cisco 7206

A rack-mounting kit is included in the shipping container for mounting the Cisco 7206 in a standard 19-inch-wide equipment rack or in a 19-inch Telco-type rack. The kit is not suitable for use with other racks, such as 23-inch Telco racks. If you are installing an equipment shelf or using mounting hardware other than that supplied with the chassis, review the guidelines in the section “Equipment Racks” in the chapter “Preparing for Installation,” then proceed to the section “General Installation” in this chapter.

If you plan to install your Cisco 7206 in an equipment rack, proceed to the section “General Installation” later in this chapter.

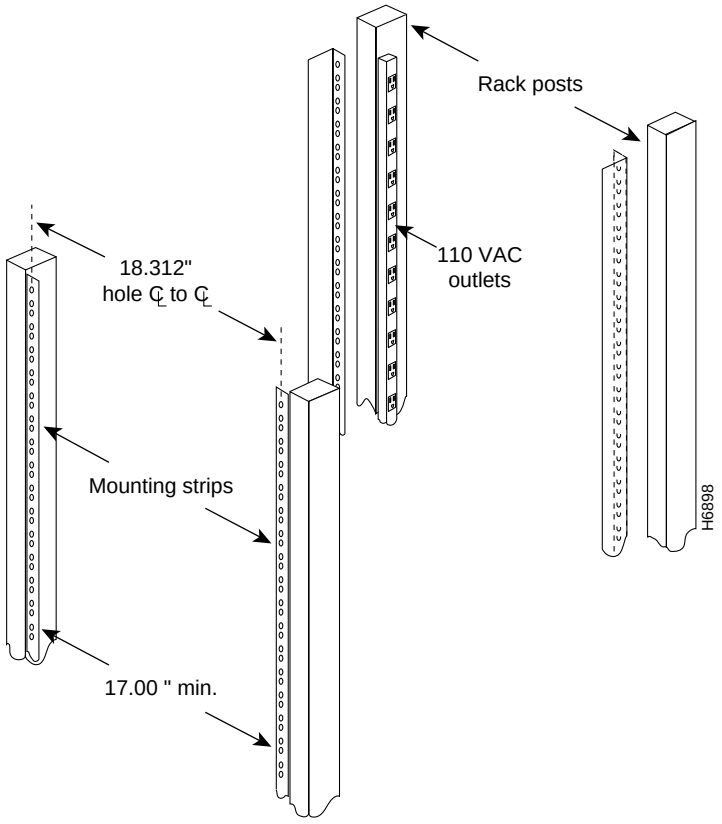
Rack-Mounting the Cisco 7206

The chassis mounts to two rack posts with brackets that attach to the sides of the chassis. The inside width between the two posts or mounting strips (left and right) must be at least 17.00 inches (43.18 cm).

Some equipment racks provide a power strip along the length of one of the mounting strips. Figure 3-1 shows a typical 19-inch equipment rack with a power strip along one of the back posts. If your rack has this feature, consider the position of the strip when planning fastener points and ensure that you will be able to pull port adapters and other FRUs straight out of their respective slots.

The inlet and exhaust ports for cooling air are located on the right and left of the chassis, respectively, so multiple routers can be stacked in a rack with little or no vertical clearance.

Figure 3-1 Typical 19-Inch Equipment Rack Posts and Mounting Strips



Installing the Brackets on the Chassis

Before you install the brackets, the chassis should be unpacked, and you should have already verified the router hardware configuration.

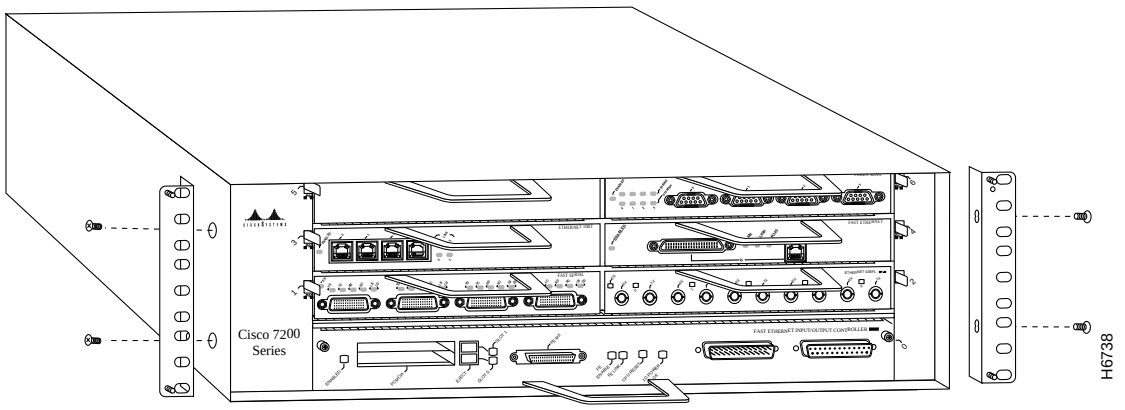
Warning After attaching the brackets, and to avoid injury, we recommend that two people install the chassis in the rack. (One person should support the chassis in the rack while the second person installs the fasteners.)

To install the brackets on the chassis, complete the following steps:

Step 1 Locate the threaded holes in the chassis sides (at the port adapter end of the chassis). (Refer to Figure 3-2.)

Step 2 Align the first bracket to the right side of the chassis. (The brackets are identical and can be mounted on either side of the chassis.) Hold the bracket in the orientation shown in the Figure 3-2.

Figure 3-2 Installing the Brackets on the Chassis



Step 3 Thread two M4 x 10-mm Phillips flathead screws through the bracket and into the side of the chassis. Use a number 2 Phillips screwdriver to tighten the screws.

Step 4 Repeat Step 1 through Step 3 for the other bracket.

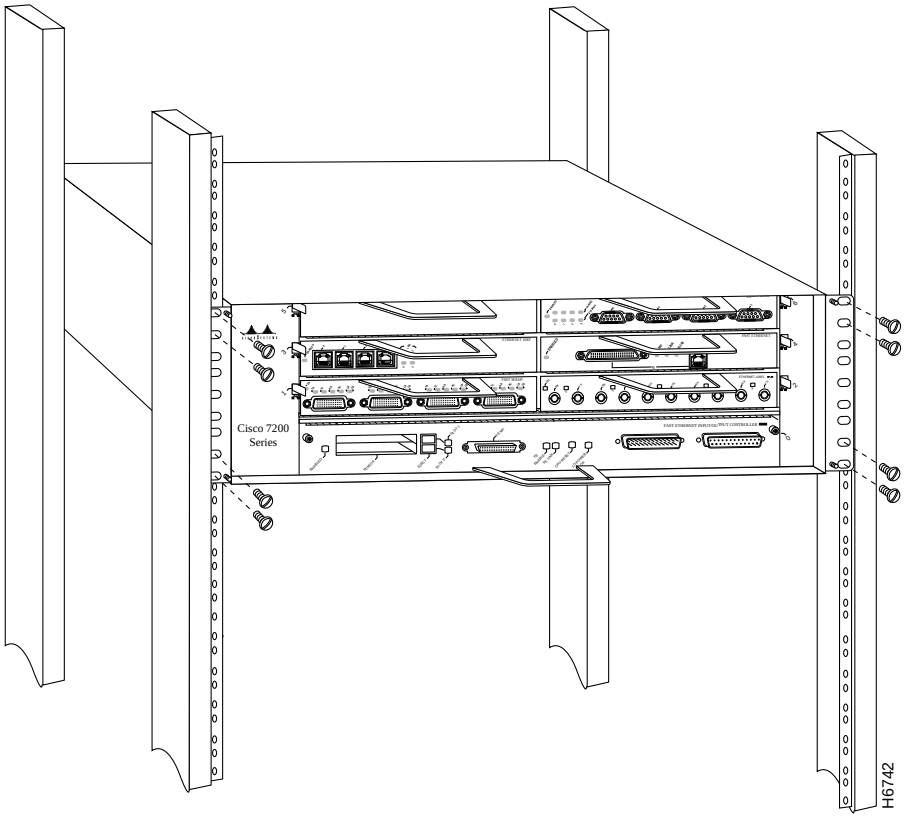
Step 5 Proceed to the next section to install the chassis in the rack.

Warning To prevent injury, review the safety precautions in the chapter "Preparing for Installation," before installing the router in a rack.

Installing the Chassis in the Rack

After installing the brackets on the chassis, mount the router by securing the brackets to two posts or mounting strips in the rack using the eight slotted screws provided. Because the brackets support the weight of the entire chassis, be sure to use all eight slotted screws to fasten the two chassis brackets to the rack posts. Figure 3-3 shows a typical installation in a standard, 19-inch equipment rack with four mounting posts. Figure 3-4 shows a typical installation in a Telco-type rack, which usually has two center posts and is bolted to the floor. If you are mounting the router in a rack with four posts, use all eight slotted screws to mount the chassis on the front posts.

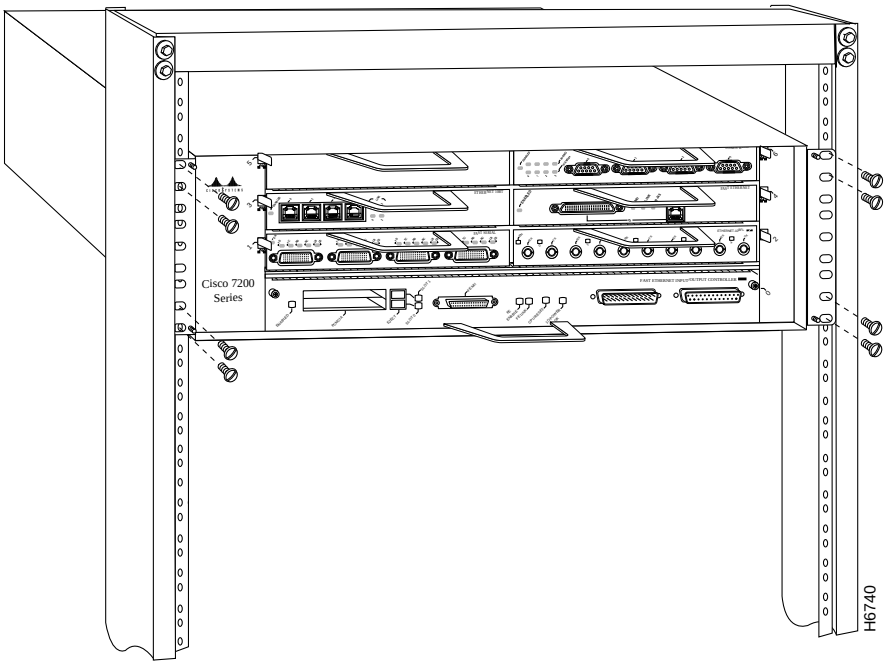
Figure 3-3 Installing the Chassis in a Four-Post 19-Inch Rack



We recommend that you allow at least one or two inches of vertical clearance between the router and any equipment directly above and below it.

Warning To maintain a low center of gravity, ensure that heavier equipment is installed near the bottom of the rack.

Figure 3-4 Installing the Chassis in a Telco-Type Rack



Warning To prevent the rack from tipping when installing the router in Telco-type racks, ensure that the rack is bolted to the floor and, if necessary, anchored with appropriate fixtures.

To install the chassis in the rack, complete the following steps:

Step 1 On the chassis, ensure that all captive screws on the network processing engine, the I/O controller, and each power supply are tightened and the port adapter levers are in the locked position.

Step 2 Make sure that your path to the rack is unobstructed. If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized.

Warning To prevent damage to the chassis or personal injury, never attempt to lift or tilt the Cisco 7206 using the port adapter handles or the I/O controller handle; they are not designed to support the weight of the router. *Always* have someone help you when installing the Cisco 7206.

Note *Two people should perform Step 3 through Step 6.*

Step 3 Position the chassis so that the end with the brackets attached is closest to you; then lift the chassis and move it to the rack. To prevent injury, avoid sudden twists or moves.

Step 4 Slide the chassis into the rack, pushing it back until the brackets meet the front mounting strips or posts on both sides of the equipment rack.

Step 5 While keeping the brackets flush against the posts or mounting strips, position the router so the holes in the brackets are aligned with those in the mounting strips.

Step 6 From the front of the rack, insert all eight 10-32 x 3/8 slotted screws (four on each side) through the brackets and into the mounting strip (use the top and bottom bracket holes, as shown in Figure 3-4). Using a 1/4-inch, flat-blade screwdriver, tighten all the screws.

This completes the rack installation. Proceed to “Connecting Port Adapter Cables” in this chapter to continue the installation.

General Installation

The router should already be in the area where you will install it, and your installation location should already be determined. If not, refer to the section “Site Requirements” in the chapter “Preparing for Installation.”

When installing the Cisco 7206 on a workbench or tabletop, ensure that the surface is clean and in a safe location and that you have considered the following:

- The router requires at least three inches of clearance at the inlet and exhaust vents (the right and left sides of the router).
- The router should be installed off the floor. (Dust that accumulates on the floor is drawn into the interior of the router by the cooling fans. Excessive dust inside the router can cause overtemperature conditions and component failures.)
- There must be approximately 19 inches of clearance at the front and rear of the router for installing and replacing router FRUs, or accessing network cables or equipment.
- Port adapter and power supply filler panels are installed.
- The router will receive adequate ventilation (it is not being installed in an enclosed cabinet where ventilation is inadequate).

Following are the steps for installing the Cisco 7206 on a workbench or tabletop:

Step 1 Remove any debris and dust from the tabletop or workbench, as well as the surrounding area. Also make sure your path between the router and its new location is unobstructed.

Step 2 On the chassis, ensure that all captive screws on the network processing engine, the I/O controller, and each power supply are tightened and the port adapter levers are in the locked position.

Warning To prevent damage to the chassis or personal injury, never attempt to lift or tilt the Cisco 7206 using the port adapter handles or the I/O controller handle; they are not designed to support the weight of the router. *Always* have someone help you when installing the Cisco 7206.

Step 3 Lift the chassis by placing your hands around the chassis sides and lifting the chassis from underneath. To prevent injury, avoid sudden twists or moves.

Step 4 Place the router on the tabletop or workbench.

Step 5 Ensure that there is at least three inches of clearance at the inlet and exhaust vents of the router and no exhaust air from other equipment will be drawn into the chassis. Also, ensure that there is approximately 19 inches of clearance at the front and rear of the chassis.

This completes the general installation. Proceed to the following section, "Connecting Port Adapter Cables," to continue the installation.

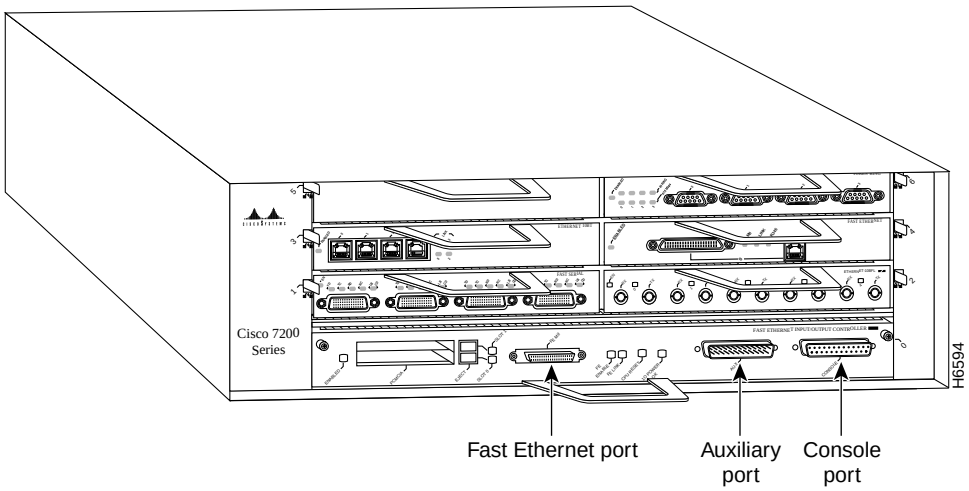
Connecting Port Adapter Cables

The instructions for connecting the cables for each port adapter installed in the Cisco 7206 are contained in the respective configuration note for each port adapter. For example, if you are connecting the cables for a Token Ring port adapter, refer the configuration note *PA-4R Token Ring Port Adapter Installation and Configuration* (Document Number 78-2661-xx). This configuration note accompanies every Token Ring port adapter that is shipped from the factory as an installed item in a Cisco 7206 or as a FRU. The document is also available on the Cisco Connection Documentation, Enterprise Series CD, and on Cisco Connection Online (CCO).

Connecting I/O Controller Cables

The console and auxiliary ports for the Cisco 7206 are located on the I/O controller. The I/O controller also has an optional Fast Ethernet port (refer to Figure 3-5.) This section contains connection equipment and pinout information for the console, auxiliary, and Fast Ethernet ports on the I/O controller.

Figure 3-5 Cisco 7206 I/O Controller Connections



Console and Auxiliary Port Connection Equipment

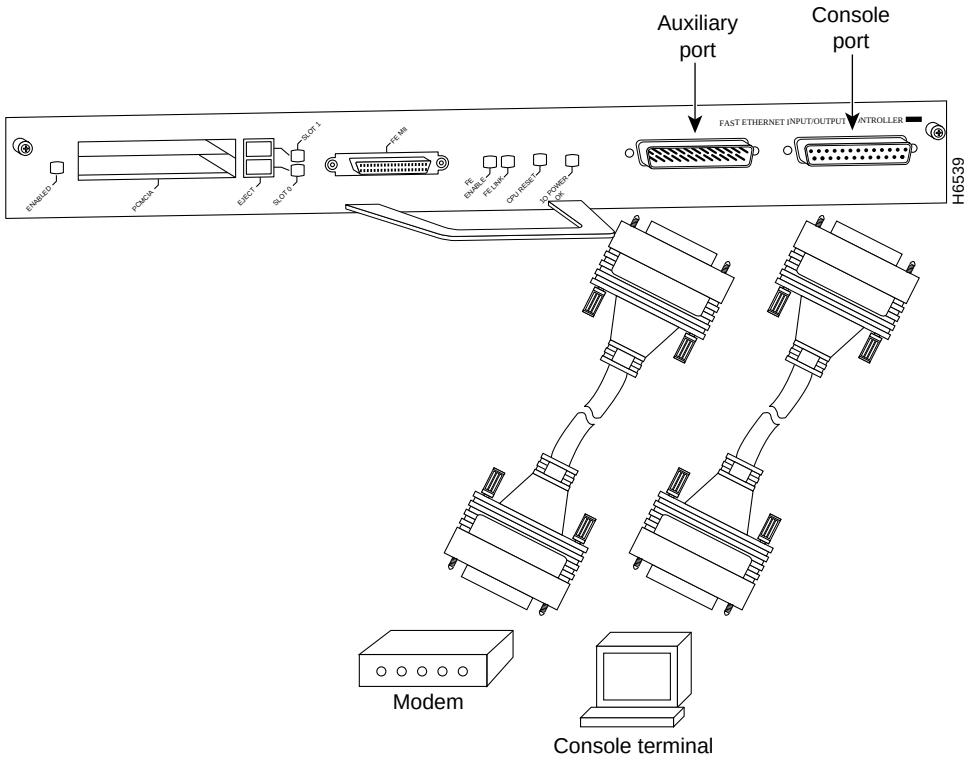
The I/O controller has two EIA/TIA-232 ports: a DCE-mode console port and a DTE-mode auxiliary port. The console port is a DCE DB-25 receptacle for connecting a data terminal, which you will use to configure the interfaces and bring up the router. The auxiliary port is a DTE DB-25 plug for connecting a modem or other DCE device (such as a CSU/DSU or other router) to the Cisco 7206 (refer to Figure 3-6).

Note Both the console and auxiliary ports are asynchronous serial ports; any devices connected to these ports must be capable of asynchronous transmission. (Asynchronous is the most common type of serial device; for example, most modems are asynchronous devices.)

Before connecting a terminal to the console port, configure the terminal to match the router console port as follows: 9600 baud, 8 data bits, no parity, 2 stop bits (9600 8N2). You need an EIA/TIA-232 DCE console cable to connect the terminal to the console port. After you establish normal router operation, you can disconnect the terminal.

You must supply your own interface cable between the auxiliary port and the equipment you are connecting. For console and auxiliary port pinouts, refer to the following sections "Console Port Signals" and "Auxiliary Port Signals."

Figure 3-6 Console and Auxiliary Port Connections



Console Port Signals

Both Data Set ready (DSR) and Data Carrier Detect (DCD) signals are active when the system is running. The Request To Send (RTS) signal tracks the state of the Clear to Send (CTS) input. The console port does not support modem control or hardware flow control. Table 3-1 lists the signals used on the console port. The console port requires a straight-through EIA/TIA-232 cable.

Table 3-1 Console Port Signals

Pin	Signal	Direction	Description
1	GND	–	Ground
2	TxD	<—	Transmit Data
3	RxD	—>	Receive Data
6	DSR	—>	Data Set Ready (always on)
7	GND	–	Ground
8	DCD	—>	Data Carrier Detect (always on)

Auxiliary Port Signals

Table 3-2 lists the signals used on the auxiliary port. The auxiliary port supports hardware flow control and modem control.

Table 3-2 Auxiliary Port Signals

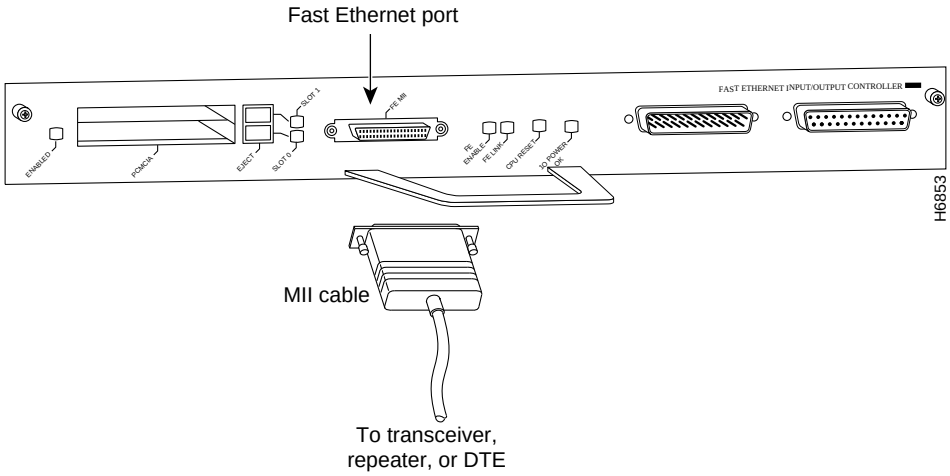
Pin	Signal	Direction	Description
2	TxD	—>	Transmit Data
3	RxD	<—	Receive Data
4	RTS	—>	Request To Send (used for hardware flow control)
5	CTS	<—	Clear To Send (used for hardware flow control)
6	DSR	<—	Data Set Ready
7	Signal Ground	–	Signal Ground
8	CD	<—	Carrier Detect (used for modem control)
20	DTR	—>	Data Terminal Ready (used for modem control only)

Fast Ethernet MII Connection Equipment

The Fast Ethernet port on the I/O controller has a single MII, 40-pin, D-shell type connector that is configurable for 100 megabits per second (Mbps). The MII connector supports IEEE 802.3u interfaces compliant with the 100BASE-X and 100BASE-T standards. The single MII connection requires an external transceiver that permits connection to multimode fiber for 100BASE-FX or 100BASE-T4 physical media (refer to Figure 3-7).

Caution Make sure input power to your Cisco 7206 is turned off and the router is completely powered down before connecting an external transceiver to the Fast Ethernet port on the I/O controller. If you connect an external transceiver to the Fast Ethernet port when the router is powered on, the system will reset and you could lose data.

Figure 3-7 Fast Ethernet Port Connection



Depending on the type of media you use between the MII connection and your switch or hub, the network side of your 100BASE-T transceiver should be appropriately equipped with ST-type connectors (for optical fiber), BNC connectors, and so forth.

Figure 3-8 shows the pin orientation of the female MII receptacle on the Fast Ethernet port.

The MII receptacle uses 2-56 screw-type locks, called jackscrews, to secure the cable or transceiver to the MII port. MII cables and transceivers have knurled thumbscrews that you fasten to the jackscrews on the MII connector and tighten with your fingers. Use the jackscrews to secure your MII cable to the MII receptacle.

Figure 3-8 MII Receptacle

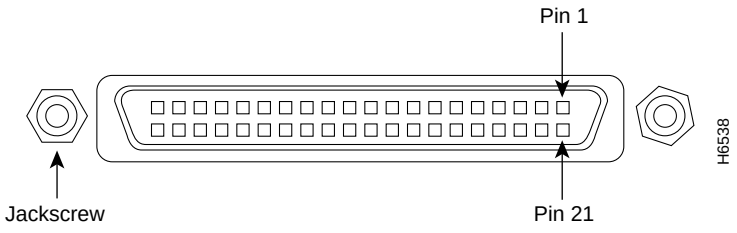


Table 3-3 lists the pinouts and signals for the I/O controller MII receptacle.

Table 3-3 MII Connector Pinout

Pin[1]	In	Out	I/O	Description
14–17	–	Yes	–	Transmit Data (TxD)
12	Yes	–	–	Transmit Clock (Tx_CLK)[2]
11	–	Yes	–	Transmit Error (Tx_ER)
13	–	Yes	–	Transmit Enable (Tx_EN)
3	–	Yes	–	MII Data Clock (MDC)
4–7	Yes	–	–	Receive Data (RxD)
9	Yes	–	–	Receive Clock (Rx_CLK
10	Yes	–	–	Receive Error (Rx_ER)
8	Yes	–	–	Receive Data Valid (Rx_DV)
18	Yes	–	–	Collision (COL)
19	Yes	–	–	Carrier Sense (CRS)
2	–	–	Yes	MII Data Input/Output (MDIO)
22–39	–	–	–	Common (ground)
1, 20, 21, 40	–	–	–	+5.0 volts (V)

1. Any pins not indicated are not used.
2. Tx_CLK and Rx_CLK are provided by the external transceiver.

Connecting Power

Following are the procedures for connecting AC-input power to your Cisco 7206.

Note Detailed instructions for handling and replacing the Cisco 7206 power supplies are contained in the configuration notes *Cisco 7206 280-Watt AC-Input Power Supply Replacement Instructions* (Document Number 78-3227-xx) and *Cisco 7206 280-Watt DC-Input Power Supply Replacement Instructions* (Document Number 78-3420-xx). These configuration notes accompany each power supply that is shipped from the factory as a FRU. These configuration notes are also available on the Cisco Connection Documentation, Enterprise Series CD, and on Cisco Connection Online (CCO).

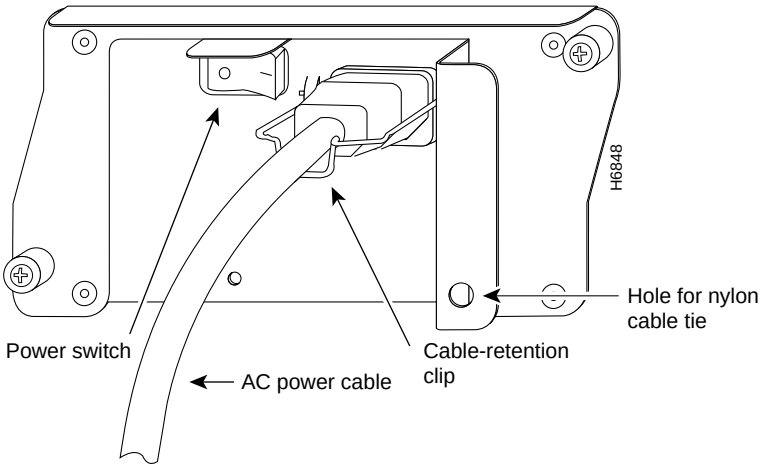
Connect a 280W AC-input power supply as follows:

Step 1 At the rear of the router, check that the power switch on the power supply is in the OFF (0) position.

Step 2 Slide the cable-retention clip down, away from the AC receptacle, and plug in the power cable.

Step 3 Secure the cable in the power supply AC receptacle by sliding the cable-retention clip up until it fits around the connector. The cable-retention clip provides strain relief for the AC power cable (refer to Figure 3-9).

Figure 3-9 Connecting AC-Input Power



Step 4 Plug the AC power supply cable into the AC power source.

Step 5 Repeat Step 1 through Step 4 for the second power supply (if present).

This completes the procedure for connecting power. Proceed to the following section "Starting the Cisco 7206" to start the router.

Starting the Cisco 7206

After installing your Cisco 7206 and connecting cables, start the router as follows:

Step 1 Check for the following:

- Each port adapter is inserted in its slot and its respective port adapter lever is in the locked position.
- The network processing engine and the I/O controller are inserted in their slots and their captive installation screws are tightened.
- All network interface cables are connected to the port adapters.
- A Flash memory card is installed in its PCMCIA slot.
- Each power cable is connected and secured with the cable-retention clip.
- The console terminal is turned on.

Step 2 At the rear of the router, place the power switch on the power supply in the ON (|) position. Repeat this if a second power supply is installed. The green OK LED on the power supply turns on.

Step 3 Listen for the fans; you should immediately hear them operating.

Step 4 During the boot process, observe the system LEDs. The LEDs on most of the port adapters go on and off in irregular sequence. Some may go on, go out, and go on again for a short time. On the I/O controller, the IO power OK LED comes on immediately.

Step 5 Observe the initialization process. When the system boot is complete (a few seconds), the network processing engine begins to initialize the port adapters and the I/O controller. During this initialization, the LEDs on each port adapter behave differently (most flash on and off). The enabled LED on each port adapter goes on when initialization is completed, and the console screen displays a script and system banner similar to the following:

```
Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-J-M), Version 11.1(271)[kpfjrgiu 100]
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Sun 21-Apr-96 04:10 by
```

Step 6 Configure the interfaces. When you start up the Cisco 7206 for the first time, the system automatically enters the **setup** command facility, which determines which port adapters are installed and prompts you for configuration information for each one. On the console terminal, after the system displays the system banner and hardware configuration, you will see the following System Configuration Dialog prompt:

```
        --- System Configuration Dialog ---

At any point you may enter a questions mark '?' for help.
Use ctrl-c to abort configuration dialof at any prompt.
Default settings are in square brackets '[]'.

continue with configuration dialog? [yes]:
```

You have the option of proceeding with the **setup** command facility to configure the interfaces, or exiting from setup and using configuration commands to configure global (system-wide) and interface-specific parameters. You do not have to configured the interfaces immediately; however, you cannot enable the interfaces or connect them to any networks until you have configured them.

Many of the port adapter LEDs will not go on until you have configured the interfaces. To verify correct operation of each interface, complete the first-time startup procedures and configuration, then refer to the configuration note for each port adapter for LED descriptions and to check the status of the interfaces.

Your installation is complete. Proceed to the chapter "Performing a Basic Configuration of the Cisco 7206" to perform a basic configuration for your Cisco 7206.

Note If the system does not complete each of the steps in the startup procedure, proceed to the chapter "Troubleshooting the Installation," for troubleshooting recommendations and procedures.
