



APPENDIX **A**

Specifications

This appendix provides router specifications and cable assemblies and pinouts for the cables shipped with the Cisco 7201 router, as well as power supply information and SFP module information.

For additional information on how the cables are physically connected to the devices, see, [Chapter 1, “Overview,”](#) and [Chapter 2, “Installing the Cisco 7201 Router.”](#)

This appendix includes the following information:

- [Cisco 7201 Router Specifications, page A-1](#)
- [Power Supply Product Numbers, page A-2](#)
- [Software Requirements, page A-3](#)
- [Processor and Memory Specifications, page A-3](#)
- [SFP Module Specifications and Configurations, page A-4](#)
- [Gigabit Ethernet RJ-45 Port Pinouts, page A-6](#)
- [Gigabit Ethernet Flow Control Information, page A-9](#)
- [Console Port and Auxiliary Port Signals and Pinouts, page A-10](#)

Cisco 7201 Router Specifications

The specifications for the Cisco 7201 router are listed in [Table A-1](#).

Table A-1 Cisco 7201 Router Specifications

Description	Specification
Dimensions (H x W x D)	1.73 in. x 17.3 in. x 16.2 in. (4.39 cm x 43.94 cm x 41.20 cm)
Weight	Chassis fully configured with a port adapter ~ 16.5 lb (7.48 kg)
Heat dissipation	290 BTU ¹ /hr at 85W typical input power 512 BTU/hr at 150W maximum input power
Temperature	32° to 104°F (0° to 40° C) operating; -4° to 149° F (-20° to 65° C) nonoperating
Humidity	10% to 90% noncondensing
Dual AC Power Supply Information	
AC-input power	150W maximum
AC-input power (typical)	85W

Table A-1 Cisco 7201 Router Specifications (continued)

Description	Specification
Dual AC Power Supply Information (continued)	
AC-input voltage rating	100–240 VAC ²
AC-input current rating	2A ³ maximum
AC-input current (typical)	0.85A at 100 VAC 0.35A at 240 VAC
AC-input frequency rating	50 to 60 Hz ⁴
AC-input cable	Use only Cisco Agency-approved power cords
Dual DC Power Supply Information	
DC-input power	150W maximum
DC- input power (typical)	85W
DC-input nominal voltage rating	–48 VDC ⁵ to –60 VDC
DC-rated input voltage	–40 VDC to –72 VDC
DC-input current rating	6A maximum
DC-input current (typical)	1.8A at –48 VDC, 1.4A at –60 VDC
DC-input cable	16-AWG ⁶ (1.0 mm ²) or 18-AWG (0.75 mm ²) wire with a circuit breaker rating of 20A maximum. The ground wire must be at least as large as the supply wires.

1. BTU = British thermal units
2. VAC = volts alternating current
3. A = amperes
4. Hz = hertz
5. VDC = volts direct current
6. AWG = American Wire Gauge

Power Supply Product Numbers

Table A-2 Power Supply Product Numbers

Power Supply	Product Number
AC power supply	PWR-7201-AC= ¹
DC power supply	PWR-7201-DC= ²

1. This product number provides a single AC power supply.
2. This product number provides a single DC power supply.

Software Requirements

The minimum software requirement for the Cisco 7201 router is Cisco IOS Release 12.4(4)XD7, Cisco IOS Release 12.2(31)SB5, or Cisco IOS Release 12.4(15)T1.

To check the minimum software requirements of Cisco IOS software with the hardware installed on your router, Cisco maintains the Software Advisor tool on Cisco.com. This tool does not verify whether modules within a system are compatible, but it does provide the minimum Cisco IOS requirements for individual hardware modules or components.

To access Software Advisor, go to Cisco.com. From the top of the page, choose Support. From the Support drop-down menu, Tools and Resources, click the Software Advisor link. You can also access the tool by pointing your browser directly to

http://www.cisco.com/en/US/support/tsd_most_requested_tools.html.


Note

Access to this tool is limited to users with Cisco.com login accounts.

Choose a product family or enter a specific product number to search for the minimum supported software release needed for your hardware.

Processor and Memory Specifications

Table A-3 Processor and Memory Specifications

Memory Type	Size	Quantity	Description
SDRAM	1 GB	1	SDRAM DIMM
	2 GB	1	SDRAM DIMM
Boot ROM	3 MB	1	Flash PROM for the ROM monitor program
Primary cache	64 KB (32 KB instruction, 32 KB data)	—	Freescale 7448 processor, internal cache
Secondary cache	1 MB	—	Freescale 7448 processor, internal cache
Flash memory	64 MB	1	Contains the default boot helper (boot loader) image
NVRAM	2 MB	1	Battery-backed SRAM for the system configuration file

Table A-4 CompactFlash Disk Configuration

Memory Size	Product Number
256 MB	MEM-7201-FLD256=

Table A-5 USB Flash Memory Module Specifications

Memory Module Size	Product Number
128-MB USB Flash Token for Cisco 1800/2800/3800/7200	MEMUSB-128FT=
256-MB USB Flash Token for Cisco 1800/2800/3800/7200	MEMUSB-256FT=

Aladdin USB eToken Pro keys are not available from Cisco.

Table A-6 DIMM Configurations

Total SDRAM	Quantity/Description	Product ID
1 GB	1 1-GB DIMM	MEM-7201-1GB=
2 GB	1 2-GB DIMM	MEM-7201-2GB=

SFP Module Specifications and Configurations

Table A-7 SFP Module Configurations

Product ID	Type
SFP-GE-F=	Medium wavelength (100BASE-FX)
SFP-GE-L=	Long wavelength/long haul (1000BASE-LX)
SFP-GE-S=	Short wavelength (1000BASE-SX)
SFP-GE-T=	RJ-45 copper SFP module (1000BSET)
SFP-GE-Z=	Extended distance wavelength (1000BASE-ZX)

Table A-8 provides SFP specifications.

Table A-8 SFP Specifications

Specification	Description
Optical SFP module dimensions	Height: 0.33 in. (8.5 mm) Width: 2.22 in. (56.5 mm) Depth: 0.53 in. (13.4 mm)
Optical connectors	Multimode fiber-optic: LC Single-mode fiber-optic: LC
RJ-45 (copper) SFP module maximum dimensions	Height: 0.55 in. (14.0 mm) Width: 0.54 in. (13.7 mm) Depth: 2.8 in. (71.1 mm)
RJ-45 (copper) SFP module connector	RJ-45

Table A-9 provides SFP port cabling specifications.

Table A-9 SFP Port Cabling Specifications

SFP Module	Wavelength (nm)	Fiber Type	Core Size (microns)	Modal Bandwidth (MHz/km)	Cable Distance
100BASE-FX SFP-GE-F=	1270 1300 1380	MMF	62.5 2.5 50.0 50.0	500	6562 ft. (2 km)
1000BASE-LX/LH SFP-GE-L=	1300	MMF ¹ SMF	62.5 50.0 50.0 9/10	500 400 500 —	1804 ft (550 m) 1804 ft (550 m) 1804 ft (550 m) 6.2 miles (10 km)
1000BASE-SX SFP-GE-S=	850	MMF	62.5 62.5 50.0 50.0	160 200 400 500	722 ft (220 m) 902 ft (275 m) 1640 ft (500 m) 1804 ft (550 m)
1000BASE-ZX SFP-GE-Z=	1550	SMF	9/10	—	229670 ft (70 km)
1000BASE-T SFP-GE-T=	N/A	Copper	N/A	N/A	328 ft. (100 m)

1. A mode-conditioning patch cord is required. Using an ordinary patch cord with MMF, 1000BASE-LX/LH SFP modules, and a short link distance (tens of meters) can cause transceiver saturation resulting in an elevated bit error rate (BER). In addition, when using the LX/LH SFP module with 62.5-micron diameter MMF, you must install a mode-conditioning patch cord between the SFP module and the MMF cable on both the transmit and receive ends of the link. The mode-conditioning patch cord is required for link distances greater than 984 ft (300 m).

Table A-10 provides SFP module power budget information.

Table A-10 SFP Module Transmit Power, Receive Power, and Power Budget

SFP Module	Transmit Power		Receive Power		Power Budget
	Minimum	Maximum	Minimum	Maximum	
SFP-GE-F= For 50/125 cabling For 62.5/125 cabling	-23.5 dBm -20 dBm	-14 dBm -14 dBm	-33.5 dBm -33.5 dBm	-11.8 dBm -11.8 dBm	10 dBm 13.5 dBm
SFP-GE-L=	-9.5 dBm ¹ -11.5 dBm ²	-3 dBm ³	-20 dBm	-3 dBm	7.5 dBm ⁴ and 8.0 dBm ⁵
SFP-GE-S=	-9.5 dBm ⁶	-4 dBm ⁶	-17 dBm	0 dBm	7.5 dBm ⁷
SFP-GE-Z=	0 dBm	5 dBm	-23 dBm	0 dBm	-24 dBm

1. For fiber types 9/125 μm SMF.
2. For fiber types 62.5/125 μm MMF and 50/125 μm MMF.
3. For fiber types 9/125 μm SMF, 62.5/125 μm MMF, and 50/125 μm MMF.
4. For fiber types 50/125 μm MMF and 62.5/125 μm MMF.
5. For fiber type 10 μm SMF.

6. For fiber types 50/125 μm , NA = 0.20 fiber and 62.5/125 μm , NA = 0.275 fiber.
7. For fiber types 50/125 μm MMF and 62.5/125 μm MMF.

For related documentation, see the following documents:

- [Gigabit Interface Converter \(GBIC\) Module and Small Form-Factor Pluggable \(SFP\) GBIC Module Installation Information and Specifications](#)
- [Cisco SFP Optics for Gigabit Ethernet Applications Data Sheet](#)
- [Cisco 1000BASE-T SFP Data Sheet](#)

Gigabit Ethernet RJ-45 Port Pinouts

The Cisco 7201 router has RJ-45 ports for the two 10/100/1000 Gigabit Ethernet/Fast Ethernet/Ethernet connections. In addition, the Cisco 7201 router has an RJ-45 Fast Ethernet Management port. The RJ-45 ports support IEEE 802.3ab (Gigabit Ethernet) and IEEE 802.3u (Fast Ethernet) interfaces compliant with 10BASET, 100BASETX, and 1000BASET specifications.

The RJ-45 ports support standard straight-through and crossover Category 5 UTP cables with RJ-45 connectors. Cisco does not supply Category 5 UTP cables; these cables are available commercially.

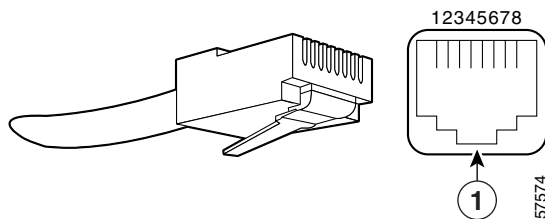


Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables. Statement 1021

Figure A-1 shows an RJ-45 port and connector. Table A-11 lists the pinouts and signals for the RJ-45 port.

Figure A-1 RJ-45 Port and Connector



1	RJ-45 connector		
---	-----------------	--	--

Table A-11 RJ-45 Receptacle Pinouts

Pin	FE Signal	GE Signal
1	TX DATA+ ¹	Tx A+
2	TX DATA–	Tx A–
3	RX DATA+ ²	Rx B+
4	N/C	Tx C+
5	N/C	Tx C–

Table A-11 RJ-45 Receptacle Pinouts (continued)

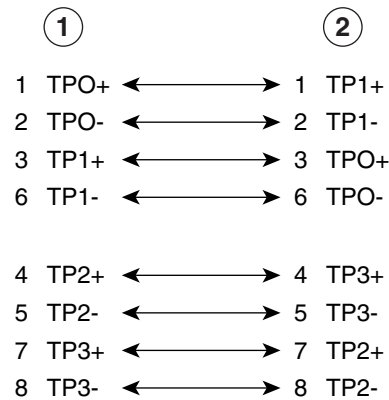
Pin	FE Signal	GE Signal
6	RX DATA-	Rx B-
7	N/C	Rx D+
8	N/C	Rx D-

1. TX DATA = Transmit Data
2. RX DATA = Receive Data

**Note**

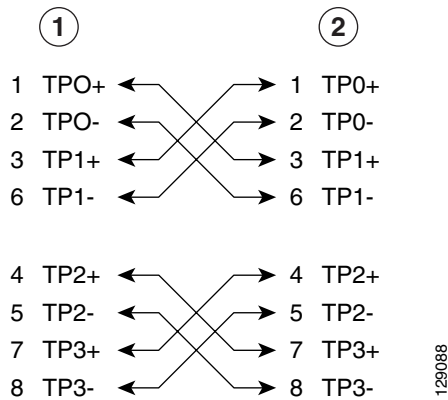
With reference to the RJ-45 pinouts in [Table A-11](#), proper common-mode line terminations should be used for the unused Category 5 UTP cable pairs 4/5 and 7/8. Common-mode line termination reduces electromagnetic interference (EMI).

Depending on your RJ-45 interface cabling requirements, use the pinouts shown in [Figure A-2](#) and [Figure A-3](#) for Gigabit Ethernet straight-through and crossover twisted-pair cable connections. Use [Figure A-4](#) for Ethernet/Fast Ethernet straight-through and crossover twisted-pair cable connections.

Figure A-2 Four Twisted-Pair Straight-Through Cable Schematics for 10/100/1000 and 1000BASE-T SFP Module Ports

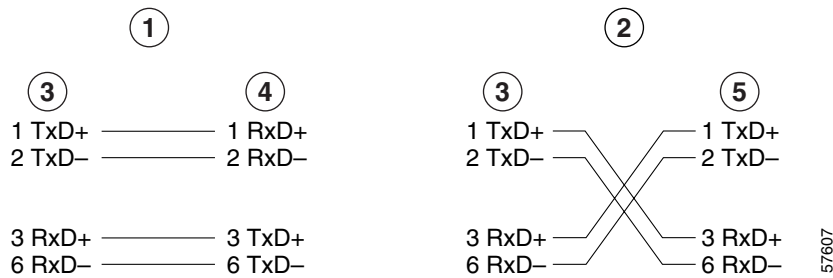
1	Router	2	Hub
----------	--------	----------	-----

Figure A-3 Four Twisted-Pair Crossover Cable Schematics for 10/100/1000 and 1000BASE-T SFP Module Ports



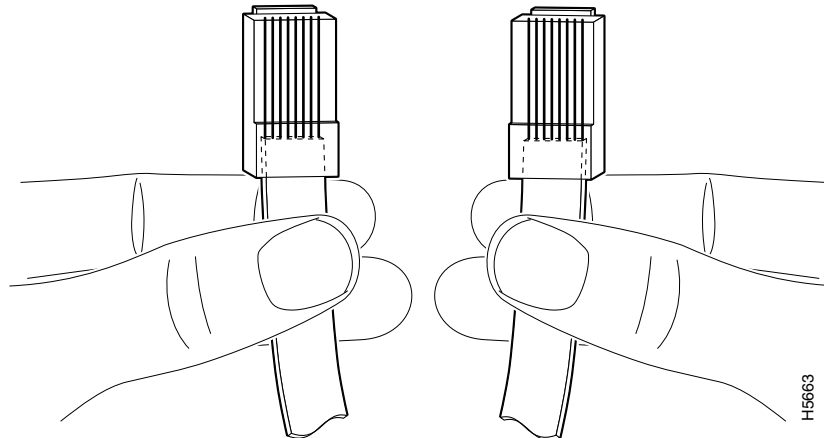
1	Router	2	Hub
----------	--------	----------	-----

Figure A-4 Ethernet, Fast Ethernet Pinouts—Straight-Through or Crossover Cable



1	Straight-through cable pinout, Ethernet port to a hub or repeater	4	Hub
2	Crossover cable pinout, Ethernet port to a DTE	5	DTE
3	Ethernet port		

To determine whether a UTP cable is a crossover cable or a straight-through cable, hold the two RJ-45 connectors next to each other so you can see the colored wires inside the ends, as shown in [Figure A-5](#).

Figure A-5 Identifying a Crossover or Straight-Through Cable

Examine the sequence of colored wires to determine the type of cable, as follows:

- Straight-through—The colored wires are in the same sequence at both ends of the cable.
- Crossover—The first (far left) colored wire at one end of the cable is the third colored wire at the other end of the cable.

You can identify a crossover cable by comparing the two modular ends of the cable. Holding the cables in your hand, side-by-side, with the tab at the back, the wire connected to the pin on the outside of the left connector (pin 1) should be the same color as the pin on the outside of the right connector (pin 8).

Table A-12 provides information about asynchronous device cabling options.

Table A-12 Asynchronous Device Cabling Options

Cable	Adapter	End Device
Crossover	RJ-45-to-DB-25M	Terminal or DTE
Crossover	RJ-45-to-DB-9M	Terminal or DTE
Straight-through	RJ-45-to-DB-25F	Modem or DCE

Gigabit Ethernet Flow Control Information

Flow control is not configurable. The information in this section explains some of the parameters of flow control.

GE port 0/3:

- When the Cisco 7201 GE 0/3 port is set to **no negotiation auto**, it does not advertise anything in regard to flow control. The Cisco 7201 GE 0/3 port responds to pause frames if the other side makes the request, but will not send pause frames.
- When the Cisco 7201 GE 0/3 port is set to **negotiation auto**, flow control is enabled, which means the peer accepts symmetrical or asymmetrical flow control, and sends pause frames. If the peer does not accept flow control requests, the Cisco 7201 router does not send pause frames. (The Cisco 7201 router always accepts pause frames, whether in fixed mode or auto mode.)

GE ports 0/0, 0/1, and 0/2:

These interfaces function the same as above with the exception that there will never be a pause request transmitted regardless of mode.

Console Port and Auxiliary Port Signals and Pinouts

**Note**

The console cable kit product number is ACS-2500ASYN.

The Cisco 7201 router does not support Data Carrier Detect (DCD).

Table A-13 Console Port Signals

Pin	Signal	Direction	Description
1	CTS	Out	Clear to Send (tied to pin 8)
2	DSR	Out	Data Set Ready
3	RXD	Out	Receive Data
4	GND	—	Signal Ground
5	GND	—	Signal Ground
6	TXD	In	Transmit Data
7	DTR	In	Data Terminal Ready
8	RTS	In	Ready to Send (tied to pin 1)

Table A-14 lists the RJ-45 auxiliary port signals.

Table A-14 Auxiliary Port Signals

Pin	Signal	Direction	Description
1	RTS	Out	Ready to Send
2	DTR	Out	Data Terminal Ready
3	TXD	Out	Transmit Data
4	RING ¹	In	Ring Indication
5	GND	—	Signal Ground
6	RXD	In	Receive Data
7 ²	DSR/DCD (RLSD)	In	Data Set Ready/Data Carrier Detect (Receive Line Signal Detect)
8	CTS	In	Clear to Send (tracks RTS)

1. RING is not supported on Cisco-supplied adapters. To use this pin, you must create a customized cable.
2. Pin 7 can be used as a DCD input for connection to a modem. The RJ-45-to-DB-25F adapter maps DCD to this pin when used with a straight-through cable.