



# APPENDIX **C**

## Cable Specifications

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This appendix contains cable and cable pinout information for the Cisco uBR7200 series universal broadband routers.

- [Coaxial Cables, page C-1](#)
- [Console and Auxiliary Port Cables and Pinouts, page C-2](#)
- [Fast Ethernet Port Cables and Pinouts, page C-4](#)
- [Fiber-Optic Cables and Connectors, page C-6](#)



**Note**

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This appendix specifies pinouts only for the pins used. Pins not listed in the tables are not connected.

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## Coaxial Cables

The coaxial cable used to connect the Cisco uBR7200 series universal broadband routers at the headend should be very high-quality cable.

Cisco recommends that you use a headend-grade coaxial cable or a quad-shield coaxial cable to connect the cable modem cards to the hybrid fiber-coaxial (HFC) network. The center conductor must be straight and extend 1/8 inch (3.2 mm) beyond the end of the connector, and the connector should be securely crimped to the cable. The following headend cables are recommended:

- 59-series cable (preferred)—20 AWG (0.032 inch/0.81 mm diameter) silver plated, copper-clad, steel center conductor; bonded foil inner shield; 95 percent braid second shield; nonbonded foil third shield; 95 percent braid fourth shield.
- 59-series quad shield—20 AWG (0.032 inch/0.81 mm diameter) copper-clad steel center conductor; bonded foil inner shield; 53 percent braid second shield; nonbonded foil third shield; 34–35 percent braid fourth shield.
- 6-series quad shield—18 AWG (0.0359 inch/0.91 mm diameter) copper-clad steel center conductor; bonded foil inner shield; 60 percent braid second shield; nonbonded foil third shield; 40–42 percent braid fourth shield.



**Note**

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Any of the three of the coaxial cables listed can be used to connect a Cisco cable interface line card to the HFC network; however, the consistent use of 59-series cable is preferred. If you connect a 59-series cable to a cable interface line card that was previously connected using 6-series cable, the difference in the center connector diameter might cause intermittent connectivity loss.

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If you use different types of coaxial cable, the following problems can appear:

- Damage to Cisco uBR7200 series cable interface line card connectors—Cable interface line card connectors are designed for 59-series or 6-series cable and connectors. Larger cables can damage the connectors.
- Poor return loss—High-quality cable and correct connectors help to ensure an optimal return loss of 16 dB or more.



**Caution**

Poorly shielded coaxial cable may result in undesired signal leakage (egress), interference from over-the-air signals (ingress), or crosstalk between cables in close physical proximity.

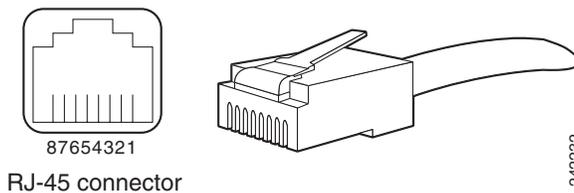
## Console and Auxiliary Port Cables and Pinouts

The router arrives with a console and auxiliary cable kit, which contains the cable and adapters you need to connect a console (an ASCII terminal or PC running terminal emulation software) or modem to the router. The console and auxiliary cable kit includes:

- RJ-45-to-RJ-45 rollover cable
- RJ-45-to-DB-9 female data terminal equipment (DTE) adapter labeled **TERMINAL**
- RJ-45-to-DB-25 male data communications equipment (DCE) adapter labeled **MODEM**

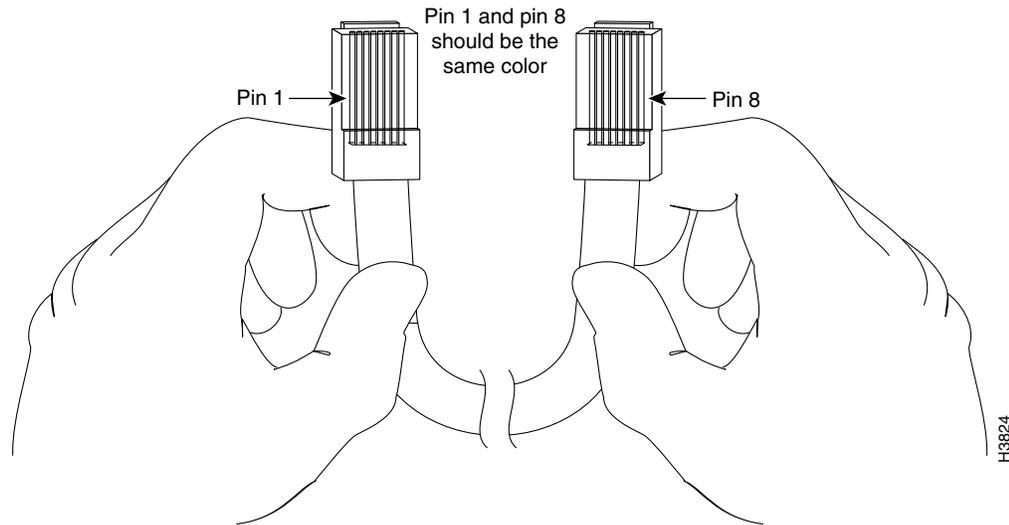
Figure C-1 shows the RJ-45 cable connector.

**Figure C-1** RJ-45 Plug and Receptacle



## Identifying an RJ-45 Rollover Cable

You can identify a rollover cable by holding the two ends of the cable next to each other, with the tab at the back. The wire connected to the pin on the outside of the left hand plug should be the same color as as the wire connected to the pin on the outside of the right hand plug, as shown in Figure C-2.

**Figure C-2 RJ-45 Rollover Cable Identification**

The colored wires at one connector are in the reverse order at the other connector (reverses pins 1 and 8, 2 and 7, 3 and 6, 4 and 5, 5 and 4, 6 and 3, 7 and 2, 8 and 1).

The wires of the straight-through cable are in the same sequence at both ends of the cable.

**Note**

If your cable was purchased from Cisco Systems, pin 8 is white.

## Console Port Cables and Pinouts

Use the RJ-45-to-RJ-45 rollover cable and RJ-45-to-DB-9 female DTE adapter (labeled TERMINAL) to connect the console port to a PC running terminal emulation software. [Table C-1](#) lists the signals and pinouts for the asynchronous serial console port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-9 female DTE adapter.

**Table C-1 Console Port Signaling and Cabling Using a DB-9 Adapter**

Console Port (DTE)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-9 Terminal Adapter	Console Device
	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	
RTS	1 <sup>1</sup>	8	8	CTS
DTR	2	7	6	DSR
TxD	3	6	2	RxD
GND	4	5	5	GND
GND	5	4	5	GND
RxD	6	3	3	TxD
DSR	7	2	4	DTR
CTS	8 <sup>1</sup>	1	7	RTS

1. Pin 1 is connected internally to pin 8.

## Auxiliary Port Cables and Pinouts

Use the RJ-45-to-RJ-45 rollover cable and RJ-45-to-DB-25 male DCE adapter (labeled MODEM) to connect the auxiliary port to a modem. Table C-2 lists the signals and pinouts for the asynchronous serial auxiliary port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-25 male DCE adapter (labeled MODEM).

**Table C-2** Auxiliary Port Signaling and Cabling Using a DB-25 Adapter

AUX Port (DTE)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Modem Adapter	Modem (DCE)
	RJ-45 Pin	RJ-45 Pin	DB-25 Pin	
Signal				Signal
RTS	1	8	4	RTS
DTR	2	7	20	DTR
TxD	3	6	3	TxD
GND	4	5	7	GND
GND	5	4	7	GND
RxD	6	3	2	RxD
DSR	7	2	8	DCD
CTS	8	1	5	CTS

## Fast Ethernet Port Cables and Pinouts

The 10Base-T/100Base-TX Fast Ethernet ports support IEEE 802.3 and IEEE 802.3u specifications for 10-Mbps and 100-Mbps transmission over unshielded twisted-pair (UTP) cables. Each Fast Ethernet port on the router has an RJ-45 connector to attach to Category 3 or Category 5 UTP cables.

- Use a Category 3 UTP crossover cable when connecting 10Base-T port to a hub.
- Use a Category 3 UTP straight-through cable when connecting to a PC or other Ethernet device.
- Use a Category 5 UTP crossover cable when connecting 100Base-TX to a hub.
- Use a Category 5 UTP straight-through cable when connecting to a PC or other Ethernet device.

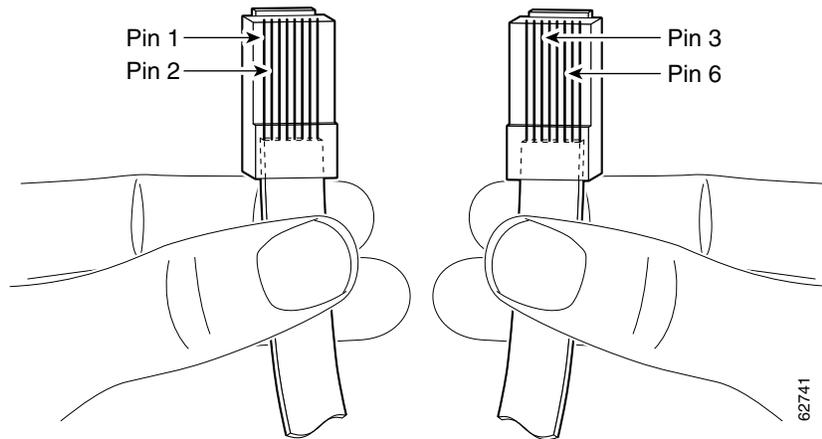


**Note**

Cisco Systems does not supply Category 3 or Category 5 UTP RJ-45 cables; these cables are available commercially.

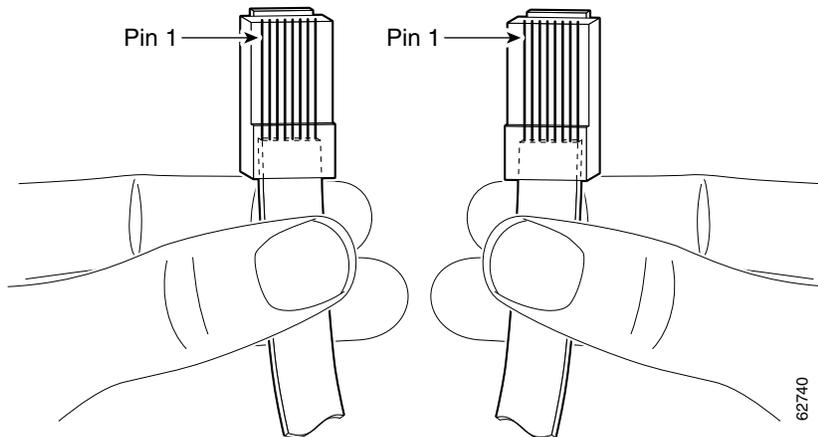
## Identifying an RJ-45 Crossover Cable

You can identify a crossover cable by comparing the two modular ends of the cable. Hold the cables side-by-side with the tab at the back. The first (far left) colored wire (pin 1) at one end of the cable is the third colored wire (pin 3) at the other end of the cable. The second colored wire (pin 2) at one end of the cable is the sixth colored wire (pin 6) at the other end of the cable. Pin 1 wire is white.

**Figure C-3 RJ-45 Crossover Cable Identification**

## Identifying an RJ-45 Straight-Through Cable

You can identify a straight-through cable by comparing the two modular ends of the cable. Hold the cables side-by-side with the tab at the back. The straight-through cable's wires are in the same sequence at both ends of the cable.

**Figure C-4 RJ-45 Straight-Through Cable Identification****Note**

If your cable was purchased from Cisco Systems, pin 1 is white.

Table C-3 lists the pinouts for the two Fast Ethernet ports.

**Table C-3 10BASE-T RJ-45 Connector Pinouts**

RJ-45 Pin	Description	RJ-45 Pin	Description
1	Tx+	3	Rx+
2	Tx-	6	Rx-

# Fiber-Optic Cables and Connectors



Warning

Because invisible radiation may be emitted from the aperture of the port when no fiber cable is connected, avoid exposure to radiation and do not stare into open apertures. Statement 1056

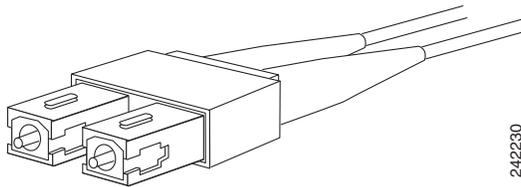


Warning

Class 1 laser product. Statement 1008

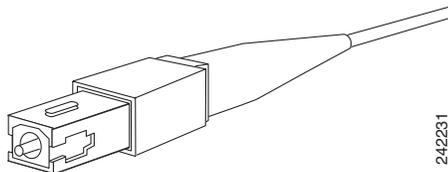
Use a single-mode or multimode fiber-optic interface cable to connect your Cisco uBR7200 router to another router or switch. In general, multimode cables are gray or orange, and single-mode cables are yellow. For SONET or synchronous digital hierarchy (SDH) single-mode and multimode fiber-optic connections, use one duplex SC-type connector (Figure C-5) or two simplex SC-type connectors. (See Figure C-6.)

**Figure C-5 Duplex SC Cable Connector**



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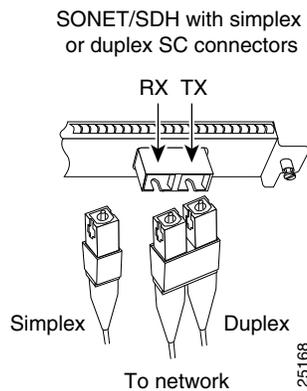
**Figure C-6 Simplex SC Cable Connector**



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Attach either one duplex fiber cable or two simplex fiber cables between the digital pulse terminator (DPT) port adapter and the device to which the DPT port adapter is connected. Observe the receive (RX) and transmit (TX) cable relationship shown in Figure C-7.

**Figure C-7 Attaching Simplex or Duplex Fiber-Optic Cables**



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