Connector and Cable Specifications

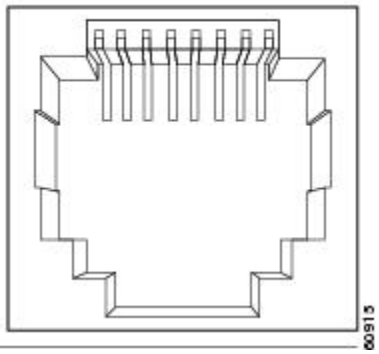
This appendix contains these topics:

Connector Specifications

10/100/1000 Ports (Including PoE)

All 10/100/1000 ports use standard RJ-45 connectors and Ethernet pinouts.

Figure 1: 10/100/1000 Port Pinouts

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

60915

SFP Module Connectors

Figure 2: Duplex LC Cable Connector

Figure 3: Simplex LC Cable Connector

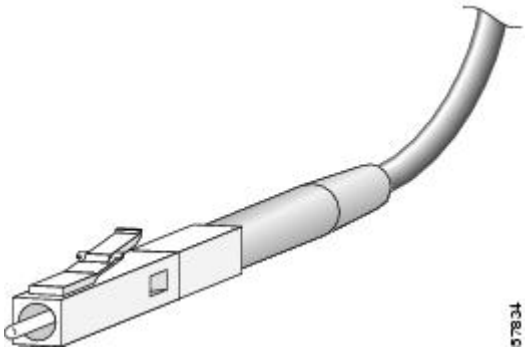


Figure 4: Copper SFP Module RJ-45 Connector

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

Cables and Adapters

SFP Module Cables

Each port must match the wave-length specifications on the other end of the cable, and the cable must not exceed the stipulated cable length. Copper 1000BASE-T SFP module transceivers use standard four twisted-pair, Category 5 cable at lengths up to 328 feet (100 meters).

Table 1: Fiber-Optic SFP Module Port Cabling Specifications

SFP Module	Wavelength (nanometers)	Cable Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)[1]	Cable Distance
GLC-GE-100FX	1310	MMF	50/125 62.5/125	500 500	6,562 feet (2 km) 6,562 feet (2 km)
GLC-BX-D	1490 TX 1310 RX	SMF	G.652[2]	—	32,810 feet (10 km)
GLC-BX-U	1310 TX 1490 RX	SMF	G.6522	—	32,810 feet (10 km)
GLC-EX-SMD	1310	SMF	G.6522		24.9 miles (40 km)
GLC-SX-MM GLC-SX-MMD	850	MMF	62.5/125 62.5/125 50/125 50/125	160 200 400 500	722 feet (220 m) 902 feet (275 m) 1,640 feet (500 m) 1,804 feet (550 m)
GLC-T	Standard 4 twisted-pair Category 5 cable	—	—	—	328 feet (100 m)
GLC-LH-SM GLC-LH-SMD	1310	MMF[3] SMF	62.5/125 50/125 50/125 G.6522	500 400 500	1,804 feet (550 m) 1,804 feet (550 m) 1,804 feet (550 m) 32,810 feet (10 km)
GLC-ZX-SM GLC-ZX-SMD	1550	SMF	G.6522	—	43.4 to 62 miles (70 to 100 km)[4]

SFP Module	Wavelength (nanometers)	Cable Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)[1]	Cable Distance
CWDM	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	SMF	G.6522	—	62 miles (100 km)
SFP-10G-LR	1310	SMF	G.6522		6.21 miles (10 km)
SFP-10G-SR	850	MMF	62.5/125 62.5/125 50/125 50/125 50/125	160 200 400 500 2000	85 feet (26 m) 108 feet (33 m) 216 feet (66 m) 269 feet (82 m) 6,561 feet (2000 m)
SFP-10G-ER	1550	SMF	G.6522		24.86 miles (40 km)[5]
SFP-10G-LRM	850	MMF	62.5/125 62.5/125 50/125 50/125 50/125	160 200 400 500 2000	722 feet (220 m) 722 feet (220 m) 328 feet (100 m) 722 feet (220 m) 722 feet (220 m)
SFP-H10GB-CU1M SFP-H10GB-CU1.5M SFP-H10GB-CU2M SFP-H10GB-CU2-5M SFP-H10GB-CU3M SFP-H10GB-CU5M	—	Twinax cable, 30-AWG cable assembly Twinax cable, 30-AWG cable assembly Twinax cable, 30-AWG cable assembly Twinax cable, 30-AWG cable assembly Twinax cable, 30-AWG cable assembly Twinax cable, 24-AWG cable assembly	—	—	3 feet (1 m) 5 feet (1.5 m) 6.5 feet (2.0 m) 8 feet (2.5 m) 9 feet (3 m) 16 feet (5 m)

1 Modal bandwidth applies only to multimode fiber.

2 A mode-field diameter/cladding diameter = 9 micrometers/125 micrometers.

3 A mode-conditioning patch cord is required. Using an ordinary patch cord with MMF, or 1000BASE-LX/LH SFP modules and a short link distance can cause transceiver saturation, and an elevated bit error rate (BER). When using the LX/LH SFP module with 62.5-micron diameter MMF, you must also install a mode-conditioning patch cord between the SFP module and the MMF cable on both the sending and receiving ends of the link. The mode-conditioning patch cord is required for link distances greater than 984 feet (300 m).

4 1000BASE-ZX SFP modules can send data up to 62 miles (100 km) by using dispersion-shifted SMF or low-attenuation SMF; the distance depends on the fiber quality, the number of splices, and the connectors.

5 For distances up to 30 km, no special link design rules need to be considered. Link distances beyond 30 km require that you verify the cable characteristics, especially the cable's loss value.

Cable Pinouts

Figure 5: Four Twisted-Pair Straight-Through Cable Schematic

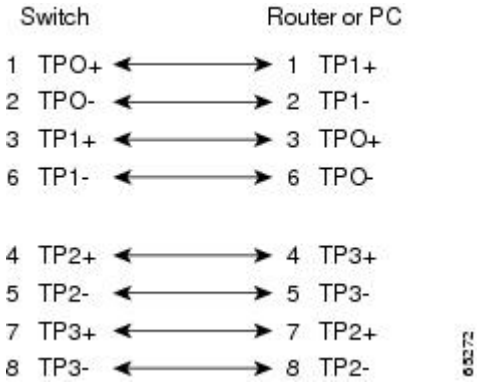


Figure 6: Four Twisted-Pair Crossover Cable Schematic

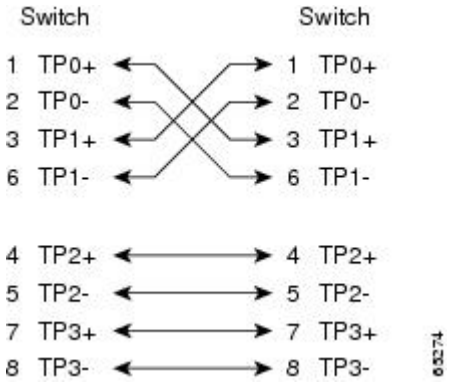


Figure 7: Two Twisted-Pair Straight-Through Cable Schematic

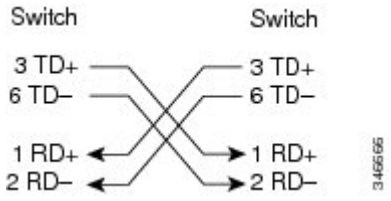


Figure 8: Two Twisted-Pair Crossover Cable Schematic

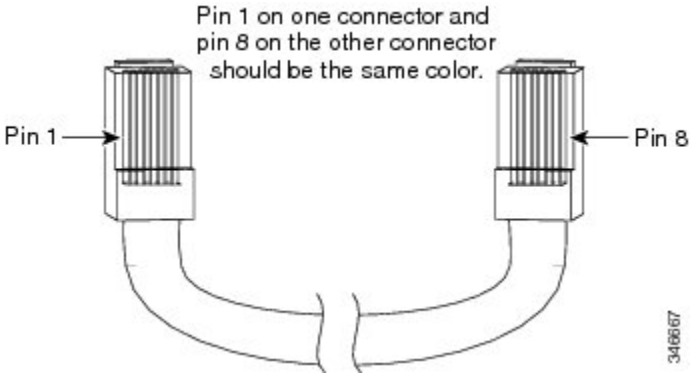
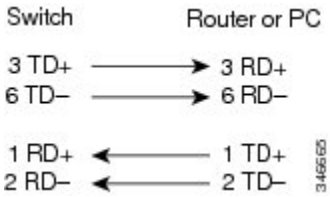


Figure 9: Identifying a Crossover Cable



Console Port Adapter Pinouts

The RS-232 console port uses an 8-pin RJ-45 connector. Use an RJ-45-to-DB-9 adapter cable to connect the switch console port to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter to connect the switch console port to a terminal. You can order the kit (part number ACS-DSBUASYN=) from Cisco.

Table 2: Console Port Signaling with a DB-9 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	**DB-9 Pin**	**Signal**
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD
GND	5	GND
GND	5	GND
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

Table 3: Console Port Signaling with a DB-25 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	**DB-25 Pin**	**Signal**
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS