



Cable and Connectors

This section provides cable and connector specifications, including the following topics:

- [Connector Specifications, page 83](#)
- [Cables and Adapters, page 86](#)

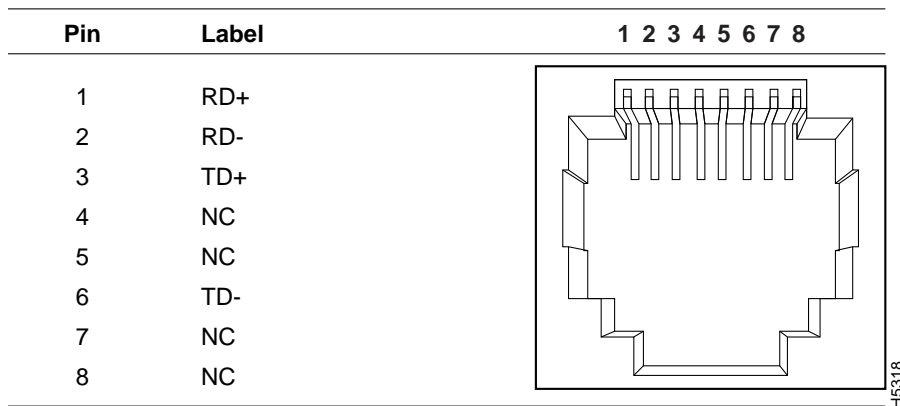
Connector Specifications

- [10/100 Ports, page 83](#)
- [SFP Module Connectors, page 83](#)
- [Dual-Purpose Ports, page 84](#)
- [Alarm Port, page 86](#)

10/100 Ports

The 10/100 Ethernet ports on switches use RJ-45 connectors. [Figure 50 on page 83](#) shows the pinouts.

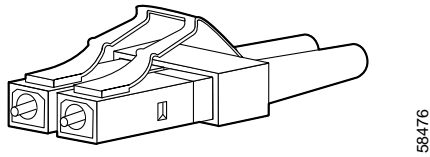
Figure 50 10/100 Port Pinouts



Note: For the IE 2000U model (IE 2000U-16TC-GP) that supports PoE, connector pins 3 and 6 supply +48/+54 VDC and pins 1 and 2 are the DC voltage return lines.

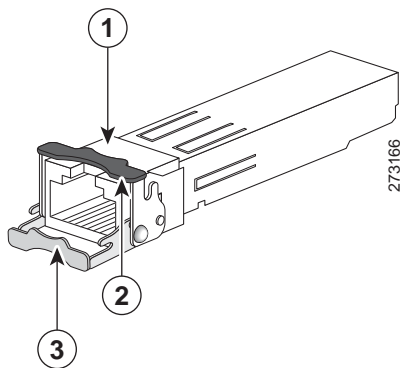
SFP Module Connectors

[Figure 51 on page 84](#) shows the MT-RJ SFP module fiber-optic connector.

Figure 51 Fiber-Optic SFP Module LC Connector

Warning: Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Figure 52 on page 84 shows the 1000BASE-T SFP module RJ-45 connector.

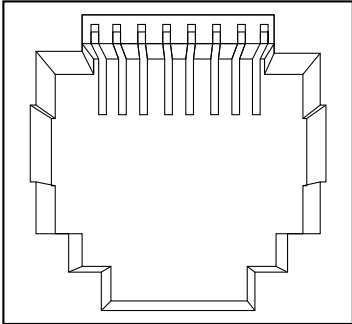
Figure 52 1000BASE-T SFP Module Connector

- 1 RJ-45 connector
- 2 Bale-clasp latching mechanism in the closed (locked) position
- 3 Bale-clasp latching mechanism in the open (unlocked) position

Dual-Purpose Ports

The 10/100/1000 Ethernet ports on the dual-purpose ports use RJ-45 connectors. Figure 53 on page 85 shows the pinouts.

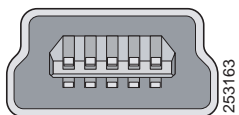
Figure 53 10/100/1000 Port Pinouts

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-	

Console Port

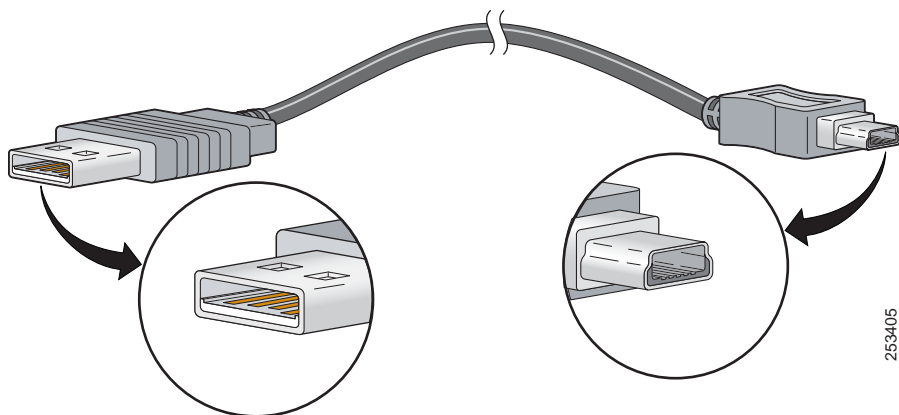
The switch has two console ports: a USB 5-pin mini-Type B port on the front panel (see [Figure 54 on page 85](#)) and an RJ-45 console port on the rear panel.

Figure 54 USB Mini-Type B Port



The USB console port uses a USB Type A to 5-pin mini-Type B cable, shown in [Figure 55 on page 85](#). The USB Type A-to-USB mini-Type B cable is not supplied. You can order an accessory kit (part number 800-33434) that contains this cable.

Figure 55 USB Type A-to-USB 5-Pin Mini-Type B Cable



The RJ-45 console port uses an 8-pin RJ-45 connector. (See [Table 21 on page 90](#) and [Table 22 on page 91](#).) The supplied RJ-45-to-DB-9 adapter cable is used to connect the console port of the switch to a console PC. You need to provide an RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order a kit (part number ACS-DSBUASYN=) containing that adapter. For console port and adapter pinout information, see [Table 21 on page 90](#) and [Table 22 on page 91](#).

Alarm Port

For information on alarm ratings, see the [Alarm Ratings, page 82](#).

The labels for the alarm connector pin-outs are on the switch panel and are displayed in [Table 19 on page 86](#).

Table 19 Alarm Connector Labels (Top to Bottom)

Label	Connection
NO	Alarm Output Normally Open (NO) connection
COM	Alarm Output Common connection
NC	Alarm Output Normally Closed (NC) connection
IN2	Alarm Input 2
REF	Alarm Input Reference Ground connection
IN1	Alarm Input 1

Cables and Adapters

- [SFP Module Cables, page 86](#)
- [Cable Pinouts, page 89](#)
- [Console Port Adapter Pinouts, page 90](#)

SFP Module Cables

Each port must match the wave-length specifications on each end of the cable, and for reliable communications, the cable must not exceed the allowable length. Copper 1000BASE-T SFP transceivers use standard four twisted-pair, CAT5 (or greater) cable at lengths up to 328 feet (100 meters).

Notes

- The maximum operating temperature of the switch varies depending on SFP module type. See [Table 2 on page 19](#) for supported temperature ranges.
- Modal bandwidth applies only to multimode fiber (MMF).
- A mode-field diameter/cladding diameter = 9 micrometers/125 micrometers.
- 1000BASE-LX/LH SFP modules connected with MMF over a short link distance require a mode-conditioning patch cord.

Ordinary patch cords can cause transceiver saturation, resulting in an elevated bit error rate (BER). Using the 1000BASE-LX/LH SFP module with 62.5-micron diameter multimode fiber (MMF) requires a mode-conditioning patch cord between the single mode fiber (SMF) SFP module and the MMF cable on both the send and receive link ends.

- Link distances greater than 984 feet (300 m) require a mode-conditioning patch cord.
- 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 fiber quality, the number of splices, and the connectors.
- Fiber-optic cable spans less than 15.43 miles (25 km) require a 5-decibel (dB) or 10-dB inline optical attenuator between the fiber-optic cable plant and the receiving port on the 1000BASE-ZX SFP module.

Table 20 Fiber-Optic SFP Module Port Cabling Specifications

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance
Industrial and Rugged SFPs					
1000BASE-SX (GLC-SX-MM-RGD)	850	MMF	62.5/125	160	722 feet (220 m)
			62.5/125	200	902 feet (275 m)
			50/125	400	1640 feet (500 m)
			50/125	500	1804 feet (550 m)
1000BASE-LX/LH (GLC-LX-SM-RGD)	1310	MMF	62.5	500	1804 feet (550 m)
			50.0	400	1804 feet (550 m)
			50.0	500	1804 feet (550 m)
		SMF	G.652	–	32,810 feet (10 km)
1000BASE-ZX (GLC-ZX-SM-RGD)	1550	SMF	G.652	–	43.4 to 62 miles (70 to 100 km)
100BASE-FX GLC-FE-100FX-RGD	1310	MMF	50/125	500	6,562 feet (2 km)
			62.5/125	500	6,562 feet (2 km)
100BASE-LX GLC-FE-100LX-RGD	1310	SMF	G.652	–	32,810 feet (10 km)
Commercial SFPs					
1000BASE-BX10-D (GLC-BX-D)	1490 TX	SMF	G.652	–	32,810 feet (10 km)
	1310 RX				
1000BASE-BX10-U (GLC-BX-U)	1490 TX	SMF	G.652	–	32,810 feet (10 km)
	1310 RX				
100BASE-FX GLC-FE-100FX	1310	MMF	50/125	500	6,562 feet (2 km)
			62.5/125	500	6,562 feet (2 km)
100BASE-LX GLC-FE-100LX	1310	SMF	G.652	–	32,810 feet (10 km)
100BASE-ZX GLC-FE-100EX	1310	SMF	G.652	–	131,240 feet (40 km)
100BASE-ZX GLC-FE-100ZX	1550	SMF	G.562	–	262,480 feet (80 km)

Table 20 Fiber-Optic SFP Module Port Cabling Specifications (continued)

SFP Module	Wavelength (nanometers)	Fiber Type	Core Size/Cladding Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance
100BASE-BX GLC-FE-100BX-D GLC-FE-100BX-U	1310 TX 1550 RX	SMF	G.562	–	32,810 feet (10 km)
CWDM	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	SMF	G.652	–	62 miles (100 km)
Extended temperature SFPs					
100BASE-LX/LH (SFP-GE-L)	1300	MMF or SMF	62.2 50 50 9/10	500 400 500 –	1804 feet (550 m) 1804 feet (550 m) 1804 feet (550 m) 6.2 miles (10 km)
100BASE-SX (SFP-GE-S)	850	MMF	62.5 62.5 50.0 50.0	160 200 400 500	722 feet (220 m) 902 feet (275 m) 1640 feet (500 m) 1804 feet (550 m)
100BASE-ZX (SFP-GE-Z)	1550	SMF SMF	9/10 8	–	43.5 miles (70 km) 62 miles (100 km)
100BASE-EX (GLC-EX-SMD)	1310	SMF	G.652	–	24.9 miles (40 km)

View the CWDM data sheet at

http://www.cisco.com/en/US/prod/collateral/modules/ps5455/ps6575/product_data_sheet09186a00801a557c_ps4999_Products_Data_Sheet.html

Cable Pinouts

Figure 56 Two Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports

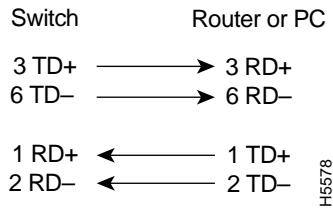


Figure 57 Two Twisted-Pair Crossover Cable Schematic for 10/100 Ports

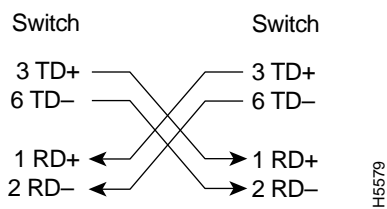


Figure 58 Four Twisted-Pair Straight-Through Cable Schematic for 1000BASE-T Ports

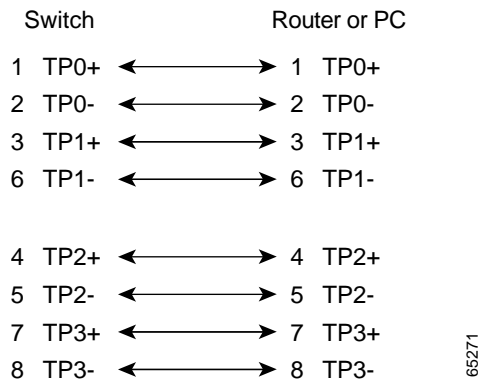
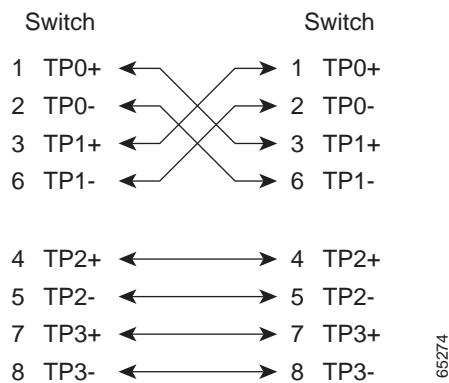
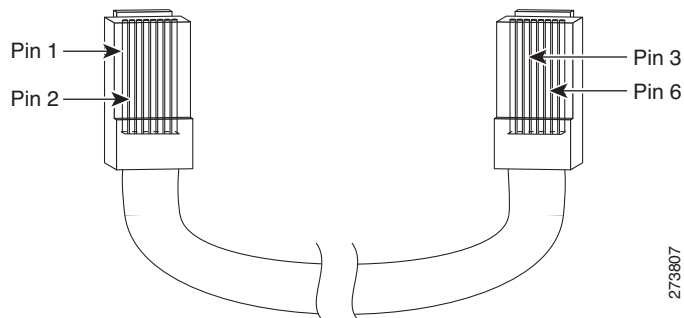


Figure 59 Four Twisted-Pair Crossover Cable Schematics for 1000BASE-T Ports



To identify a crossover cable, hold the cable ends side-by-side, with the tab at the back. The wire connected to pin 1 on the left end should be the same color as the wire connected to pin 3 on the right end. The wire connected to pin 2 on the left end should be the same color as the wire connected to pin 6 on the right end.

Figure 60 Identifying a Crossover Cable



Console Port Adapter Pinouts

The console port uses an 8-pin RJ-45 connector, which is described in [Table 21 on page 90](#) and [Table 22 on page 91](#). If you did not order a console cable, you need to provide an RJ-45-to-DB-9 adapter cable to connect the switch console port to a PC console port. You need to provide an RJ-45-to-DB-25 female DTE adapter if you want to connect the switch console port to a terminal. You can order an adapter (part number ACS-DSBUASYN=). For console port and adapter pinout information, see [Table 21 on page 90](#) and [Table 22 on page 91](#).

[Table 21 on page 90](#) lists the pinouts for the console port, the RJ-45-to-DB-9 adapter cable, and the console device.

Table 21 Console Port Signaling Using 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
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

[Table 22 on page 91](#) lists the pinouts for the switch console port, RJ-45-to-DB-25 female DTE adapter, and the console device.

Note: The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order this adapter from Cisco (part number ACS-DSBUASYN=).

Table 22 Console Port Signaling Using a DB-25 Adapter

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

