



# APPENDIX **B**

## Transceivers and Module Connectors

This appendix specifies the transceivers and module connectors used with the Cisco Nexus 7000 Series switches.

This appendix includes the following sections:

- [SFP+ Transceivers, page B-1](#)
- [SFP Transceivers, page B-2](#)
- [RJ-45 Connectors, page B-7](#)

### SFP+ Transceivers

This section provides brief descriptions of the 10-Gbps Ethernet (GE) SFP+ transceivers used with the 10 GE I/O module.

For the cable specifications of the 10-GE SFP+ transceivers, see [Table B-1](#). For the environmental specifications that apply to all these transceivers, see [Table B-2](#).

**Table B-1** Cable Specifications for the 10-GE SFP+ Transceivers

Transceiver	Cable Type	Connector Type	Wavelength (nm)	Core Size (microns)	Modal Bandwidth (MHz/km)	Cable Distance
SFP-10G-SR (short range)	MMF	Dual LC/PC	850	62.5	160	85 feet (26 meters)
				62.5	200	108 feet (33 meters)
				50.0	400	216 feet (66 meters)
				50.0	500	269 feet (82 meters)
				50.0	2000	984 feet (300 meters)
SFP-10G-LR (long range)	SMF	Dual LC/PC	1310	G.652 fiber	—	6.2 miles (10 km)

**Table B-2** Environmental and Power Specifications for the 10-GE SFP+ Transceivers

Parameter	Specification
Storage temperature	−40 to 185°F (−40 to 85°C)
Operating temperature	32 to 158°F (0 to 70°C)

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**Table B-2 Environmental and Power Specifications for the 10-GE SFP+ Transceivers (continued)**

Parameter	Specification
Case temperature	32 to 158°F (0 to 70°C)
Module supply voltage	3.1 to 3.5 V

## SFP Transceivers

This section provides brief descriptions of the 1-Gbps Ethernet (1-GE) SFP transceivers used with 1-GE I/O modules.

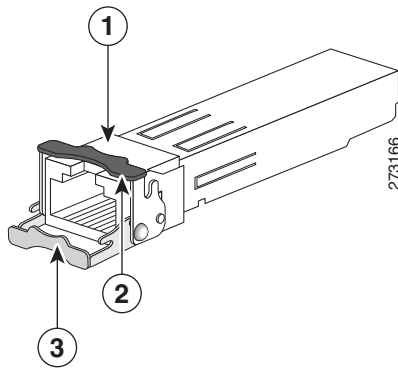
This section includes the following topics:

- [1000BASE-T and 1000BASE-X SFP Transceivers, page B-2](#)
- [1000BASE-CWDM SFP Transceiver Cables, page B-4](#)
- [1000BASE-DWDM SFP Transceivers, page B-5](#)

### 1000BASE-T and 1000BASE-X SFP Transceivers

The 1000BASE-T and 1000BASE-X SFPs are hot-swappable transceivers that you plug into SFP-compatible I/O modules. The 1000BASE-T transceiver, shown in [Figure B-1](#), provides an RJ-45 connection for copper cables, and the 1000BASE-X transceiver, shown in [Figure B-2](#), provides an optical connection for fiber-optic cables.

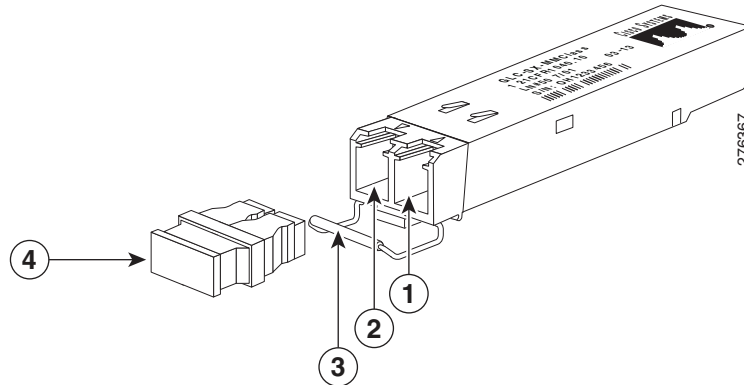
**Figure B-1 1000BASE-T SFP Transceiver**



<b>1</b>	RJ-45 connector	<b>3</b>	Bail clasp shown in the open (unlocked) position
<b>2</b>	Bail clasp shown in the closed (locked) position		

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**Figure B-2 1000BASE-X SFP Transceiver**



<b>1</b>	Receive optical bore	<b>3</b>	Bail clasp
<b>2</b>	Transmit optical bore	<b>4</b>	Dust plug

For the 1000BASE-T and 1000BASE-X transceiver cable specifications, see [Table B-3](#).

**Table B-3 Cable Specifications for 1000BASE-X and 1000BASE-T SFP Transceivers**

Transceiver Type	Cable Type	Connector Type	Wavelength (nm)	Core Size (microns)	Bandwidth	Cable Distance
1000BASE-SX	Multimode fiber optic (MMF)	LC duplex	850	62.5	160	722 feet (220 m)
				62.5	200	902 feet (275 m)
				50.0	400	1640 feet (500 m)
				50.0	500	1804 feet (550 m)
1000BASE-LX	Multimode fiber optic (MMF) <sup>1</sup>	LC duplex	1310	62.5	500	1804 feet (550 m)
				50.0	400	1804 feet (550 m)
				50	500	1804 feet (550 m)
	Single-mode fiber optic (SMF)	LC duplex	1310	G.652 <sup>2</sup>	—	6.2 miles (10 km)
1000BASE-ZX	Single-mode fiber optic (SMF)	LC duplex	1550	G.652 <sup>2</sup>	—	Approximately 43.4 to 60 miles (70 to 100 km) depending on link loss
1000BASE-T	Category 5, 5E, or 6 UTP/FTP	RJ45	—	—	—	328 feet (100 meters)

1. You must use a mode-conditioning patch cord, as specified by the IEEE standard, regardless of the amount of span.

2. ITU-T G.652 SMF as specified by the IEEE 802.32 standard.

The transceivers that support Digital Optical Monitoring have a greater range of temperatures for operations, as shown in [Table B-4](#).

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**Table B-4 Environmental Specifications for 1000BASE-X and 1000BASE-T Transceivers**

Transceiver Type	Part Number	Digital Optical Monitoring Support	Operating Temperature	Storage Temperature
1000BASE-SX	GLC-SX-MM	No	COM <sup>1</sup>	-40 to 185°F (-40 to 85°C)
	SFP-GE-S	Yes	EXT <sup>2</sup>	
1000BASE-LX	GLC-LH-SM	No	COM <sup>1</sup>	
	SFP-GE-L	Yes	EXT <sup>2</sup>	
1000BASE-ZX	GLC-ZX-SM	No	COM <sup>1</sup>	
	SFP-GE-Z	Yes	EXT <sup>2</sup>	
1000BASE-T	GLC-T	—	COM <sup>1</sup>	
	SFP-GE-T	—	EXT <sup>2</sup>	

1. Commercial (COM) temperature range is 32 to 158°F (0 to 70°C).
2. Extended (EXT) temperature range is 23 to 185°F (-5 to 85°C).

## 1000BASE-CWDM SFP Transceiver Cables

The Coarse Wavelength Division Multiplexing (CWDM) SFP transceivers are hot-swappable transceivers that you plug into SFP-compatible I/O modules. The CWDM SFP transceiver uses an LC optical connector to connect to single-mode fiber-optic (SMF) cable. You can connect the CWDM SFPs to CWDM passive optical system optical add/drop multiplexer (OADM) modules or multiplexer/demultiplexer plug-in modules using SMF cables. CWDM SFP transceivers can transmit and receive optical signals up to 61 miles (100 km) depending on the quality of the fiber-optic cable used.

CWDM SFP transceivers are color coded to indicate their designated optical wavelength. [Figure B-3](#) shows the CWDM transceiver, which looks like a standard 1000BASE-X SFP transceiver with a colored arrow and bail clasp to indicate the designated wavelength.

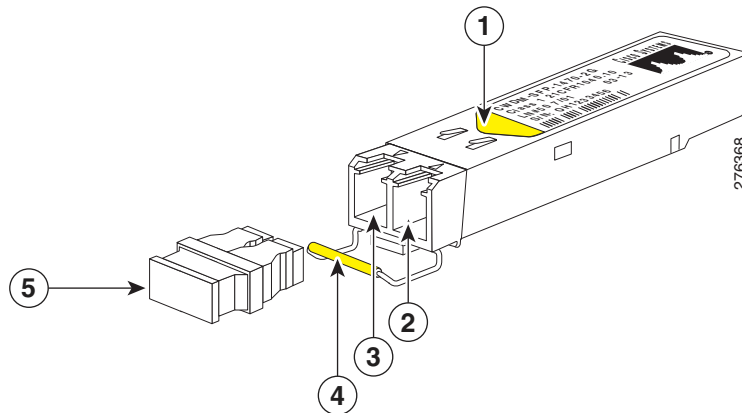


### Note

Whenever the transceiver receive optical bores are not filled with optical cables, you should minimize the chance of contamination by plugging the transceiver with its dust plug.

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**Figure B-3 CWDM SFP Transceiver (Yellow Color Code)**



<b>1</b>	Colored arrow on label specifies the wavelength	<b>4</b>	Bail clasp
<b>2</b>	Receive optical bore	<b>5</b>	Dust plug
<b>3</b>	Transmit optical bore		

For the specifications that differentiate the 1000BASE-CWDM SFP transceivers, see [Table B-5](#). For specifications and installation information that apply to all CWDM SFP transceivers, see the *Cisco SFP and SFP+ Transceiver Module Installation Notes*.

**Table B-5 CWDM SFP Transceivers**

Part Number	Color	Signal Specification
CWDM-SFP-1470	Gray	Longwave 1470 nm laser
CWDM-SFP-1490	Violet	Longwave 1490 nm laser
CWDM-SFP-1510	Blue	Longwave 1510 nm laser
CWDM-SFP-1530	Green	Longwave 1530 nm laser
CWDM-SFP-1550	Yellow	Longwave 1550 nm laser
CWDM-SFP-1570	Orange	Longwave 1570 nm laser
CWDM-SFP-1590	Red	Longwave 1590 nm laser
CWDM-SFP-1610	Brown	Longwave 1610 nm laser

## 1000BASE-DWDM SFP Transceivers

The Dense Wavelength Division Multiplexing (DWDM) SFP transceivers are part of a DWDM optical network to provide high-capacity bandwidth across an optical fiber network. There are 40 fixed-wavelength DWDM SFP transceivers that support the International Telecommunications Union (ITU) 100-GHz wavelength grid. These transceivers have duplex SC connectors. CWDM SFP transceivers can transmit and receive optical signals up to 50 miles (80 km) depending on the quality of the fiber-optic cable used.

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DWDM SFP transceivers look like the typical 1000BASE-X transceivers as shown in [Figure B-2](#) on page B-3.

For the specifications that differentiate the 1000BASE-DWDM SFP transceivers, see [Table B-6](#). For specifications and installation information that apply to all DWDM SFP transceivers, see the *Cisco SFP and SFP+ Transceiver Module Installation Notes*.

**Table B-6 DWDM SFP Transceivers**

Part Number	100-GHz ITU Channel	Description
DWDM-SFP-6141	20	Longwave 1561.42 nm laser
DWDM-SFP-6061	21	Longwave 1560.61 nm laser
DWDM-SFP-5979	22	Longwave 1559.79 nm laser
DWDM-SFP-5898	23	Longwave 1558.98 nm laser
DWDM-SFP-5817	24	Longwave 1558.17 nm laser
DWDM-SFP-5736	25	Longwave 1557.36 nm laser
DWDM-SFP-5655	26	Longwave 1556.55 nm laser
DWDM-SFP-5575	27	Longwave 1555.75 nm laser
DWDM-SFP-5494	28	Longwave 1554.94 nm laser
DWDM-SFP-5413	29	Longwave 1554.13 nm laser
DWDM-SFP-5332	30	Longwave 1553.33 nm laser
DWDM-SFP-5252	31	Longwave 1552.52 nm laser
DWDM-SFP-5172	32	Longwave 1551.72 nm laser
DWDM-SFP-5092	33	Longwave 1550.92 nm laser
DWDM-SFP-5012	34	Longwave 1550.12 nm laser
DWDM-SFP-4931	35	Longwave 1549.32 nm laser
DWDM-SFP-4851	36	Longwave 1548.51 nm laser
DWDM-SFP-4772	37	Longwave 1547.72 nm laser
DWDM-SFP-4692	38	Longwave 1546.92 nm laser
DWDM-SFP-4612	39	Longwave 1546.12 nm laser
DWDM-SFP-4532	40	Longwave 1545.32 nm laser
DWDM-SFP-4453	41	Longwave 1544.53 nm laser
DWDM-SFP-4373	42	Longwave 1543.73 nm laser
DWDM-SFP-4294	43	Longwave 1542.94 nm laser
DWDM-SFP-4214	44	Longwave 1542.14 nm laser
DWDM-SFP-4134	45	Longwave 1541.34 nm laser
DWDM-SFP-4056	46	Longwave 1540.56 nm laser
DWDM-SFP-3977	47	Longwave 1539.77 nm laser
DWDM-SFP-3898	48	Longwave 1538.98 nm laser
DWDM-SFP-3819	49	Longwave 1538.19 nm laser

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**Table B-6 DWDM SFP Transceivers (continued)**

Part Number	100-GHz ITU Channel	Description
DWDM-SFP-3739	50	Longwave 1537.39 nm laser
DWDM-SFP-3661	51	Longwave 1536.61 nm laser
DWDM-SFP-3582	52	Longwave 1535.82 nm laser
DWDM-SFP-3504	53	Longwave 1535.04 nm laser
DWDM-SFP-3425	54	Longwave 1534.25 nm laser
DWDM-SFP-3346	55	Longwave 1533.47 nm laser
DWDM-SFP-3268	56	Longwave 1532.68 nm laser
DWDM-SFP-3190	57	Longwave 1531.90 nm laser
DWDM-SFP-3112	58	Longwave 1531.12 nm laser
DWDM-SFP-3033	59	Longwave 1530.33 nm laser

## RJ-45 Connectors

The RJ-45 connector connects Category 3, Category 5, Category 5e, Category 6, or Category 6A foil twisted-pair or unshielded twisted-pair cable from the external network to the following module interface connectors:

- Supervisor modules
  - CONSOLE port
  - COM1/AUX port
  - MGMT ETH port
  - CMP MGMT ETH port
- 48-port 10/100/1000 Ethernet modules
  - 10/100/1000 ports



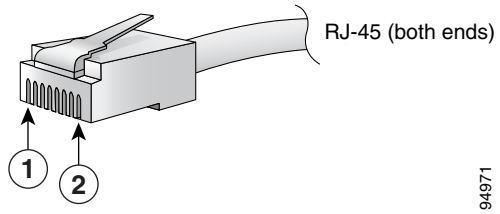
### Caution

To comply with GR-1089 intrabuilding, lightning immunity requirements, you must use foil twisted-pair (FTP) cable that is properly grounded at both ends.

Figure B-4 shows the RJ-45 connector.

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**Figure B-4 RJ-45 Connector**



<b>1</b>	Pin 1	<b>2</b>	Pin 8
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