Cisco 10GBASE SFP+ Modules

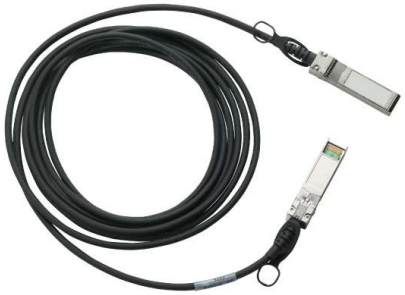
Product Overview

The Cisco® 10GBASE SFP+ modules (Figure 1) offer customers a wide variety of 10 Gigabit Ethernet connectivity options for data center, enterprise wiring closet, and service provider transport applications.

Figure 1. Cisco 10GBASE SFP+ Modules

SFP+ Copper (Twinax) cable

SFP+ OPTIC



Features and Benefits

Main features of Cisco 10GBASE SFP+ modules include:

- Smallest 10G form factor
- Supports 10GBASE Ethernet
- Hot-swappable input/output device that plugs into an Ethernet SFP+ port of a Cisco switch
- Provides flexibility of interface choice
- Supports “pay-as-you-populate” model
- Supports the Cisco quality identification (ID) feature that enables a Cisco switch to identify whether the module is certified and tested by Cisco
- Optical interoperability with 10GBASE XENPAK, 10GBASE X2, and 10GBASE XFP interfaces on the same link

Cisco SFP-10G-SR

The Cisco 10GBASE-SR Module supports a link length of 26m on standard Fiber Distributed Data Interface (FDDI)–grade multimode fiber (MMF). Using 2000 MHz*km MMF (OM3), up to 300m link lengths are possible.

Cisco SFP-10G-LR

The Cisco 10GBASE-LR Module supports a link length of 10 kilometers on standard single-mode fiber (SMF, G.652)

Cisco SFP+ Copper

Cisco SFP+ Copper Twinax cables are suitable for very short distances of up to 10m. Twinax cables offer a highly cost-effective way to connect within racks and across adjacent racks.

Technical Specifications

Platform Support

Cisco SFP+ modules are supported on Cisco switches and routers. For more details, refer to the document “Cisco 10 Gigabit Ethernet Transceiver Modules Compatibility Matrix”: http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_6974.html.

Connectors and Cabling

Connectors: Dual LC/PC connector (-SR and -LR)

Note: Only connections with patch cords with PC or UPC connectors are supported. Patch cords with APC connectors are not supported. All cables and cable assemblies used must be compliant with the standards specified in the standards section.

Table 1 provides cabling specifications for the Cisco SFP+ modules.

Table 1. SFP+ Port Cabling Specifications

Cisco SFP+	Wavelength (nm)	Cable Type	Core Size (microns)	Modal Bandwidth (MHz*km)	Cable Distance*
Cisco SFP-10G-SR	850	MMF	• 62.5 • 62.5 • 50.0 • 50.0 • 50.0	• 160 • 200 • 400 • 500 • 2000	• 26m • 33m • 66m • 82m • 300m
Cisco SFP-10G-LR	1310	SMF	G.652	-	10km
Cisco SFP-H10GB-CU1M	-	Twinax cable, 30AWG cable assembly	-	-	1m
Cisco SFP-H10GB-CU3M	-	Twinax cable, 30AWG cable assembly	-	-	3m
Cisco SFP-H10GB-CU5M	-	Twinax cable, 24AWG cable assembly	-	-	5m

* Minimum cabling distance for -SR and –LR modules is 2m, according to the IEEE 802.3ae.

Standards

- IEEE 802.3ae

Table 2 shows the main optical characteristics for the Cisco SFP+ modules.

Table 2. Optical Transmit and Receive Specifications

Product	Type	Transmit Power (dBm)*		Receive Power (dBm)*		Transmit and Receive Wavelength (nm)
		Maximum	Minimum	Maximum	Minimum	
Cisco SFP-10G-SR	10GBASE-SR 850 nm MMF	–1.2**	–7.3	–1.0	–9.9	840 to 860
Cisco SFP-10G-LR	10GBASE-LR 1310 nm SMF	0.5	-8.2	0.5	-14.4	1260 to 1355

*Transmitter and receiver power is in average, unless specified.
**The launch power shall be the lesser of the class 1 safety limit or the maximum receive power. Class 1 laser requirements are defined by IEC 60825-1: 2001.

Table 3 describes the bail latch color code for each type of optical SFP+ module.

Table 3. SFP+ Optical Modules Color Code

Product	Bail Latch Color
Cisco SFP-10G-SR	Beige
Cisco SFP-10G-LR	Blue

Dimensions

Dimensions (H x W x D): 8.5 x 13.4 x 56.5 mm. Cisco SFPs typically weigh 75 grams or less.

Environmental Conditions and Power Requirements

Operating temperature range:

- Commercial temperature range: 0 to 70℃ (32 to 158° F)
- Storage temperature range: –40 to 85℃ (–40 to 185° F)

The maximum power consumption per Cisco SFP+ module is 1W.

Warranty

- Standard warranty: 90 days.
- Extended warranty (optional): Cisco SFP+ modules can be covered in a Cisco SMARTnet® Service support contract for the Cisco switch or router chassis.

Ordering Information

Table 4 provides the ordering information for Cisco SFP+ modules and related cables.

Table 4. Ordering Information

Description	Product Number
SFP+ Modules	
Cisco 10GBASE-SR SFP+ Module for MMF	SFP-10G-SR
Cisco 10GBASE-LR SFP+ Module for SMF	SFP-10G-LR
SFP+ Copper Modules	
10GBASE-CU SFP+ Cable 1 Meter	SFP-H10GB-CU1M

10GBASE-CU SFP+ Cable 3 Meter	SFP-H10GB-CU3M
10GBASE-CU SFP+ Cable 5 Meter	SFP-H10GB-CU5M

Regulatory and Standards Compliance

Standards:

- GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable
- GR-326-CORE: Generic Requirements for Single-Mode Optical Connectors and Jumper Assemblies
- GR-1435-CORE: Generic Requirements for Multifiber Optical Connectors

Safety:

- Laser Class 1 21CFR-1040 LN#50 7/2001
- Laser Class 1 IEC60825-1
- All length SFP+ copper cables are ELV and RoHS Compliant

Additional Information

For more information about Cisco 10GBASE SFP+ fiber modules or 10GBase SFP+ copper modules (twinax cable), contact your sales representative or visit: http://www.cisco.com/en/US/products/ps6574/index.html.

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