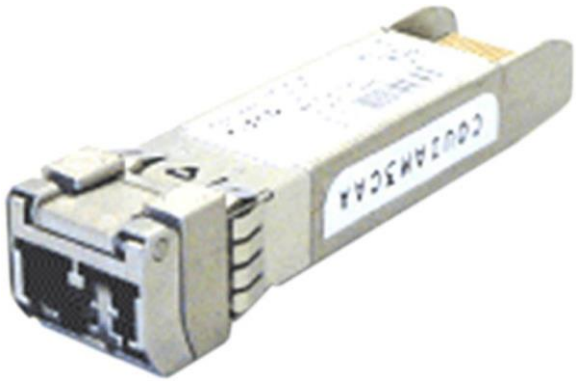
Cisco 10GBASE SFP+ Modules

A broad range of industry-compliant SFP+ modules for 10 Gigabit Ethernet deployments in diverse networking environments

Product overview

The Cisco® 10GBASE SFP+ modules (Figure 1) give you 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



Features and benefits

Cisco SFP+ modules offer the following features and benefits.

- Industry's smallest 10G form factor for greatest density per chassis
- Hot-swappable input/output device that plugs into an Ethernet SFP+ port of a Cisco switch (no need to power down if installing or replacing)
- Supports "pay-as-you-populate" model for investment protection and ease of technology migration
- Digital optical monitoring capability for strong diagnostic capabilities
- Optical interoperability with 10GBASE XENPAK, 10GBASE X2, and 10GBASE XFP interfaces on the same link
- Cisco quality Identification (ID) feature enables a Cisco platform to identify whether the module is certified and tested by Cisco

Cisco SFP-10G-SR-S module (S-Class)

The Cisco 10GBASE-SR module supports a link length of 26 meters on standard Fiber Distributed Data Interface (FDDI)-grade Multimode Fiber (MMF). Using 2000 MHz*km MMF (OM3), up to 300-meter link lengths are possible. Using 4700 MHz*km MMF (OM4), up to 400 meter link lengths are possible. SFP-10G-SR-S does not support FCoE.

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Cisco SFP-10G-SR module

The Cisco 10GBASE-SR Module supports a link length of 26m on standard Fiber Distributed Data Interface (FDDI)-grade Multimode Fiber (MMF). Using 2000MHz*km MMF (OM3), up to 300m link lengths are possible. Using 4700MHz*km MMF (OM4), up to 400m link lengths are possible.

Cisco SFP-10G-SR-X module

The Cisco SFP-10G-SR-X is a multirate* 10GBASE-SR, 10GBASE-SW and OTU2/OTU2e module for extended operating temperature range. It supports a link length of 26m on standard Fiber Distributed Data Interface (FDDI)-grade Multimode Fiber (MMF). Using 2000MHz*km MMF (OM3), up to 300m link lengths are possible. Using 4700MHz*km MMF (OM4), up to 400m link lengths are possible.

* Except for version 1, which supports only 10GBASE-SR.

Cisco SFP-10G-LRM module

The Cisco 10GBASE-LRM Module supports link lengths of 220m on standard Fiber Distributed Data Interface (FDDI) grade Multimode Fiber (MMF). To make sure that specifications are met over FDDI-grade, OM1 and OM2 fibers, the transmitter should be coupled through a mode conditioning patch cord. No mode conditioning patch cord is required for applications over OM3 or OM4. For additional information on mode conditioning patch cord requirements please see: https://www.cisco.com/en/US/prod/collateral/modules/ps5455/product_bulletin_c25-530836.html.

The Cisco 10GBASE-LRM Module also supports link lengths of 300m on standard Single-Mode Fiber (SMF, G.652).

Cisco SFP-10G-LR-S module (S-Class)

The Cisco 10GBASE-LR module supports a link length of 10 kilometers on standard Single-Mode Fiber (SMF) (G.652). SFP-10G-LR-S does not support FCoE.

Cisco SFP-10G-LR module

The Cisco 10GBASE-LR Module supports a link length of 10 kilometers on standard Single-Mode Fiber (SMF, G.652).

Cisco SFP-10G-LR-X module

The Cisco SFP-10G-LR-X is a multirate 10GBASE-LR, 10GBASE-LW, and OTU2/OTU2e module for extended operating temperature range. It supports a link length of 10 kilometers on standard Single-Mode Fiber (SMF, G.652).

Cisco SFP-10G-ER-S module (S-Class)

The Cisco 10GBASE-ER module supports a link length of up to 40 kilometers on SMF (G.652). SFP-10G-ER-S does not support FCoE.

Cisco SFP-10G-ER module

The Cisco 10GBASE-ER Module supports a link length of up to 40 kilometers on standard Single-Mode Fiber (SMF, G.652).

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Cisco SFP-10G-ZR-S module (S-Class)

The Cisco 10GBASE-ZR module supports link lengths of up to about 80 kilometers on standard SMF (G.652). This interface is not specified as part of the 10 Gigabit Ethernet standards and is, instead, built according to Cisco specifications. SFP-10G-ZR-S does not support FCoE.

Cisco SFP-10G-ZR module

The Cisco SFP-10G-ZR is a multirate 10GBASE-ZR, 10GBASE-ZW, and OTU2/OTU2e module. It supports link lengths of up to about 80 kilometers on standard Single-Mode Fiber (SMF, G.652). This interface is not specified as part of the 10 Gigabit Ethernet standard and is instead built according to Cisco specifications.

Cisco FET-10G module

The Cisco FET-10G Fabric Extender Transceiver supports link lengths up to 100m on laser-optimized OM3 or OM4 multimode fiber. It is supported on fabric links from a Nexus 2000 to a Cisco parent switch only. Note this product is not orderable individually. For more information refer to Nexus 2000 datasheet: https://www.cisco.com/en/US/prod/collateral/switches/ps9441/ps10110/data_sheet_c78-507093.html.

Cisco SFP-10G-BXD-I and SFP-10G-BXU-I for 10Km (single-fiber bidirectional applications)

The Cisco SFP-10G-BXD-I and SFP-10G-BXU-I SFPs operate on a single strand of standard SMF.

A SFP-10G-BXD-I device is always connected to a SFP-10G-BXU-I device with a single strand of standard SMF with an operating transmission range up to 10 km.

The communication over a single strand of fiber is achieved by separating the transmission wavelength of the two devices, as depicted in Figure 2. SFP-10G-BXD-I transmits a 1330-nm channel and receives a 1270-nm signal, whereas SFP-10G-BXU-I transmits at a 1270-nm wavelength and receives a 1330-nm signal. Note in Figure 2 the presence of a Wavelength-Division Multiplexing (WDM) splitter integrated into the SFP to split the 1270-nm and 1330-nm light paths.

Figure 2. Bidirectional transmission of a single strand of SMF

The SFP-10G-BXD-I and SFP-10G-BXU-I SFPs also support Digital Optical Monitoring (DOM) functions according to the industry-standard SFF-8472 Multisource Agreement (MSA). This feature gives the end user the ability to monitor real-time parameters of the SFP, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

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Cisco SFP-10G-BX40D-I and SFP-10G-BX40U-I (for 40Km single-fiber bidirectional applications)

The Cisco SFP-10G-BX40D-I and SFP-10G-BX40U-I SFPs operate on a single strand of standard SMF.

A SFP-10G-BX40D-I device is always connected to a SFP-10G-BX40U-I device with a single strand of standard SMF with an operating transmission range up to 40 km.

The communication over a single strand of fiber is achieved by separating the transmission wavelength of the two devices. SFP-10G-BX40D-I transmits a 1330-nm channel and receives a 1270-nm signal. The SFP-10G-BX40U-I transmits at a 1270-nm wavelength and receives a 1330-nm signal.

The SFP-10G-BX40D-I and SFP-10G-BX40U-I SFPs support Digital Optical Monitoring (DOM) functions according to the industry-standard SFF-8472 Multisource Agreement (MSA). This feature gives the end user the ability to monitor real-time parameters of the SFP, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

Cisco SFP+ Twinax copper cables

Cisco SFP+ Copper Twinax (Figure 3) direct-attach cables are suitable for very short distances and offer a cost-effective way to connect within racks and across adjacent racks. Cisco offers passive Twinax cables in lengths of 1, 1.5, 2, 2.5, 3, 4 and 5 meters, and active Twinax cables in lengths of 7 and 10 meters.

Figure 3. Cisco direct-attach twinax copper cable assembly with SFP+ connectors

Cisco SFP+ Active optical cables

Cisco SFP+ Active Optical Cables (Figure 4) are direct-attach fiber assemblies with SFP+ connectors. They are suitable for very short distances and offer a cost-effective way to connect within racks and across adjacent racks. Cisco offers Active Optical Cables in lengths of 1, 2, 3, 5, 7, and 10 meters.

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Figure 4. Cisco direct-attach active optical cables with SFP+ connectors

Platform support

Cisco SFP+ modules are supported on a wide range of Cisco switches and routers*:

• 7600 Series Router	• Catalyst 4500 and 4500-X Series Switches
• ASR 901	• CRS Router
• ASR 903	• MDS 9000
• ASR 1000 Series Router	• ME 4500
• ASR 9000 Series Router	• ME 4900NCS 6000 Series Router
• ASR 9000v Series Router	• Nexus 2000, 3000, and 4000 Series Switches
• Catalyst 2350 and 2360 Series Switches	• Nexus 9000 and 9500 (modular) Series Switches
• Catalyst 2960-S, 2960-X, and 2960-XR Series Switches	• RF Gateway Series
• Catalyst 3100 Blade Switches	• SCE 8000
• Catalyst 3560, 3560-E, and 3560-X Series Switches	• Shared Port Adapter (SPA)
• Catalyst 3750, 3750-E, and 3750-X Series Switches	• Unified Computing System (UCS) Switches
• Catalyst 3850 Series Switches	

* Not all devices listed support every module. For details about which modules run in which devices and other compatibility information, refer to the document "Cisco 10 Gigabit Ethernet Transceiver Modules Compatibility Matrix": https://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_6974.html.

Additional platforms may continually be added; please check the compatibility matrix for the latest information and for the Cisco compatible operating system for each platform.

Connectors: Dual LC/PC connector (-SR, -LRM, -LR, -ER, -ZR and FET-10G).

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.

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Product specifications

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-Sa **Cisco SFP-10G-SR** **Cisco SFP-10G-SR-X**	850	MMF	62.5 62.5 50.0 50.0 50.0 50.0	160 (FDDI) 200 (OM1) 400 500 (OM2) 2000 (OM3) 4700 (OM4)	26m 33m 66m 82m 300m 400m
Cisco SFP-10G-LRM	1310	MMF SMF	62.5 50.0 50.0 G.652	500 400 500 -	220m 100m 220m 300m
Cisco SFP-10G-LR-Sa **Cisco SFP-10G-LR** **Cisco SFP-10G-LR-X**	1310	SMF	G.652	-	10km
Cisco SFP-10G-ER-S[****a] **Cisco SFP-10G-ER**[****]	1550	SMF	G.652	-	40km[**]
Cisco SFP-10G-ZR-S[*****a] **Cisco SFP-10G-ZR**[*****]	1550	SMF	G.652	-	80km
Cisco FET-10G	850	MMF	50.0 50.0 50.0	500 (OM2) 2000 (OM3) 4700 (OM4)	25m 100m 100m
Cisco SFP-10G-BXD-I	1330	SMF	G.652	-	10km
Cisco SFP-10G-BXU-I	1270	SMF	G.652	-	10km
Cisco SFP-10G-BX40D-I[******]	1330	SMF	G.652	-	40km
Cisco SFP-10G-BX40U-I[******]	1270	SMF	G.652	-	40km
Cisco SFP-H10GB-CU1M	-	Twinax cable, passive, 30AWG cable assembly	-	-	1m
Cisco SFP-H10GB-CU1-5M	-	Twinax cable, passive, 30AWG cable assembly	-	-	1.5m
Cisco SFP-H10GB-CU2M	-	Twinax cable, passive, 30AWG cable assembly	-	-	2m
Cisco SFP-H10GB-CU2-5M	-	Twinax cable, passive, 30AWG cable assembly	-	-	2.5m
Cisco SFP-H10GB-CU3M	-	Twinax cable, passive, 30AWG cable assembly	-	-	3m
Cisco SFP-H10GB-CU4M	-	Twinax cable, passive, 24AWG or 26AWG cable assembly	-	-	4m
Cisco SFP-H10GB-CU5M	-	Twinax cable, passive, 24AWG or 26AWG cable assembly	-	-	5m
Cisco SFP-H10GB-ACU7M	-	Twinax cable, active, 30 AWG cable assembly	-	-	7m
Cisco SFP-H10GB-ACU10M	-	Twinax cable, active, 28 AWG cable assembly	-	-	10m
Cisco SFP-10G-AOC1M	-	Active Optical Cable assembly	-	-	1m
Cisco SFP-10G-AOC2M	-	Active Optical Cable assembly	-	-	2m

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Cisco SFP+	Wavelength (nm)	Cable Type	Core Size (Microns)	Modal Bandwidth (MHz*km)***	Cable Distance*
Cisco SFP-10G-AOC3M	-	Active Optical Cable assembly	-	-	3m
Cisco SFP-10G-AOC5M	-	Active Optical Cable assembly	-	-	5m
Cisco SFP-10G-AOC7M	-	Active Optical Cable assembly	-	-	7m
Cisco SFP-10G-AOC10M	-	Active Optical Cable assembly	-	-	10m

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

** Links longer than 30km are considered engineered links as per IEEE 802.3ae.

*** Specified at transmission wavelength.

**** Requires 5 dB 1550nm fixed loss attenuator for < 20km. Attenuator is available as a spare. The part number is 15216 ATT LC 5=.

***** Requires 15dB attenuator if Link Distance < 5km.

Requires 10dB attenuator if Link Distance is between 5km and 25km.

Requires 5dB attenuator if Link Distance is between 25km and 45km.

****** Requires 15dB attenuator if Link Distance < 5km.

Requires 10dB attenuator if Link Distance is between 5km and 15km.

Requires 5dB attenuator if Link Distance is between 15km and 25km.

Attenuator is available as a spare. The part numbers:

- 5dB - 15216 ATT LC 5=
- 10dB - 15216 ATT LC 10=
- 15dB - 15216 ATT LC 15=

[a] - No FCoE support.

Table 2 lists 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-S **Cisco SFP-10G-SR**	10GBASE-SR 850nm MMF	-1.2**	-7.3	-1.0	-9.9	840 to 860
Cisco SFP-10G-SR-X	10GBASE-SR, 10GBASE-SW and OTU2e 850nm MMF	-1.2**	-7.3	-1.0	-9.9	840 to 860
Cisco SFP-10G-LRM	10GBASE-LRM 1310nm MMF and SMF	0.5	-6.5	0.5	-8.4 (in average) and -6.4 (in OMA)***	1260 to 1355
Cisco SFP-10G-LR-S **Cisco SFP-10G-LR**	10GBASE-LR 1310nm SMF	0.5	-8.2	0.5	-14.4	1260 to 1355
Cisco SFP-10G-LR-X	10GBASE-LR, 10GBASE-LW and OTU2e 1310nm SMF	0.5	-8.2	0.5	-14.4	1260 to 1355
Cisco SFP-10G-ER-S **Cisco SFP-10G-ER**	10GBASE-ER 1550nm SMF	4.0	-4.7	-1	-15.8	1530 to 1565
Cisco SFP-10G-ZR-S **Cisco SFP-10G-ZR**	10GBASE-ZR 1550nm SMF	4.0	0	-7	-24	1530 to 1565
Cisco FET-10G	FET-10G 850nm MMF	-1.3	-8	-1	-9.9	840 to 860

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Product	Type	Transmit Power (dBm)*		Receive Power (dBm)*		Transmit and Receive Wavelength (nm)
		Maximum	Minimum	Maximum	Minimum	
Cisco SFP-10G-BXD-I	10G-SFP Bidirectional for 10km	0.5	-8.2	0.5	-14.4	1320 to 1340 (Tx) 1260 to 1280 (Rx)
Cisco SFP-10G-BXU-I	10G-SFP Bidirectional for 10km	0.5	-8.2	0.5	-14.4	1260 to 1280 (Tx) 1320 to 1340 (Rx)
Cisco SFP-10G-BX40D-I	10G-SFP Bidirectional for 40km	4.5	-2.7	-9	-21.2	1320 to 1340 (Tx) 1260 to 1280 (Rx)
Cisco SFP-10G-BX40U-I	10G-SFP Bidirectional for 40km	4.5	-2.7	-9	-21.2	1260 to 1280 (Tx) 1320 to 1340 (Rx)

* 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.

*** Both average and OMA specifications must be met simultaneously.

Table 3 details optical specifications for the Cisco SFP-10G-ZR modules.

Table 3. SFP-10G-ZR optical parameters

Parameter	Symbol	Minimum	Typical	Maximum	Units	Notes and Conditions
Transmitter						
Transmitter wavelength		1530		1565	nm	
Side-mode suppression ratio	SMSR	30			dB	
Transmitter extinction ratio		9			dB	
Transmitter optical output power	Pout	0		4.0	dBm	Average power coupled into single-mode fiber
Receiver						
Receiver optical input wavelength		1260		1565	nm	Receiver Sensitivity specified over 1530-1565nm only, with 3dB degradation permitted from 1260-1530nm
Receiver damage threshold		+5			dBm	
Receiver Overload		-7			dBm	
Receiver performance at 10GE LAN and 10GE WAN rates, non-FEC application						
Receiver sensitivity		-24			dBm	At BER=1E-12 with PRBS31 and 10GE frame
Chromatic Dispersion Penalty@ 1600 ps/nm				3	dB	
Receiver performance at OTU2/OTU2e rates, FEC application						
Receiver sensitivity		-27			dBm	At Pre-FEC BER=1E-5 for GFEC and Pre-FEC BER=7E-4 for EFEC with PRBS31 and OTU2 frame
Chromatic Dispersion Penalty@ 1300 ps/nm				3	dB	

Note: Parameters are specified over temperature and at end of life unless otherwise noted. When shorter distances of single-mode fiber are used (<40km), an inline optical attenuator must be used to avoid overloading and damaging the receiver.

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Table 4 describes the bail latch color code for each type of optical SFP+ module.

Table 4. SFP+ optical modules color code

Product	Bail Latch Color
Cisco SFP-10G-SR-S **Cisco SFP-10G-SR** **Cisco SFP-10G-SR-X**	Beige
Cisco SFP-10G-LRM	Orange
Cisco SFP-10G-LR-S **Cisco SFP-10G-LR** **Cisco SFP-10G-LR-X**	Blue
Cisco SFP-10G-ER-S **Cisco SFP-10G-ER**	Red
Cisco SFP-10G-ZR-S **Cisco SFP-10G-ZR**	Green
Cisco FET-10G	Brown
Cisco SFP-10G-BXD-I **Cisco SFP-10G-BXU-I**	Blue
Cisco SFP-10G-BX40D-I **Cisco SFP-10G-BX40U-I**	Red
Cisco SFP-H10GB-CU1M	Beige
Cisco SFP-H10GB-CU1-5M	Black
Cisco SFP-H10GB-CU2M	Brown
Cisco SFP-H10GB-CU2-5M	Yellow
Cisco SFP-H10GB-CU3M	Orange
Cisco SFP-H10GB-CU4M	Green
Cisco SFP-H10GB-CU5M	Gray
Cisco SFP-H10GB-ACU7M	Blue
Cisco SFP-H10GB-ACU10M	Red
Cisco SFP-10G-AOC1M	Beige
Cisco SFP-10G-AOC2M	Brown
Cisco SFP-10G-AOC3M	Orange
Cisco SFP-10G-AOC5M	Gray
Cisco SFP-10G-AOC7M	Blue
Cisco SFP-10G-AOC10M	Red

Table 5 provides the maximum power consumption and operating temperature range ratings per Cisco SFP+ module.

Table 5. SFP+ modules maximum power consumption

Product	Power Consumption (W)	Operating Temperature Range
Cisco SFP-10G-SR-S **Cisco SFP-10G-SR**	1	COM
Cisco SFP-10G-SR-X	1	EXT
Cisco SFP-10G-LRM	1	COM
Cisco SFP-10G-LR-S **Cisco SFP-10G-LR**	1	COM

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Product	Power Consumption (W)	Operating Temperature Range
Cisco SFP-10G-LR-X	1	EXT
Cisco SFP-10G-ER-S **Cisco SFP-10G-ER**	1.5	COM
Cisco SFP-10G-ZR-S **Cisco SFP-10G-ZR**	1.5	COM
Cisco FET-10G	1	COM
Cisco SFP-10G-BXD-I **Cisco SFP-10G-BXU-I**	1	IND
Cisco SFP-10G-BX40D-I **Cisco SFP-10G-BX40U-I**	1.2	IND
Cisco SFP-H10GB-CU1M	1	COM
Cisco SFP-H10GB-CU1-5M	1	COM
Cisco SFP-H10GB-CU2M	1	COM
Cisco SFP-H10GB-CU2-5M	1	COM
Cisco SFP-H10GB-CU3M	1	COM
Cisco SFP-H10GB-CU4M	1	COM
Cisco SFP-H10GB-CU5M	1	COM
Cisco SFP-H10GB-ACU7M	1	COM
Cisco SFP-H10GB-ACU10M	1	COM
Cisco SFP-10G-AOC1M	1	COM
Cisco SFP-10G-AOC2M	1	COM
Cisco SFP-10G-AOC3M	1	COM
Cisco SFP-10G-AOC5M	1	COM
Cisco SFP-10G-AOC7M	1	COM
Cisco SFP-10G-AOC10M	1	COM

Dimensions

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

Environmental Conditions and Power Requirements

Operating temperature range:

- Commercial temperature range (COM): 0 to 70°C (32 to 158°F)
- Extended temperature range (EXT): -5 to 85°C (23 to 185°F)
- Industrial temperature range (IND): -40 to 85°C (-40 to 185°F)
- Storage temperature range: -40 to 85°C (-40 to 185°F)

Warranty

- Standard warranty: 1 year
- Extended warranty (optional): Cisco SFP+ modules can be covered in a Cisco SMARTnet® Service support contract for the Cisco switch or router chassis

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Ordering information

Table 6 provides the ordering information for Cisco SFP+ modules and related cables.

Table 6. Ordering information

Description	Product Number
Cisco 10GBASE-SR SFP+ Module for MMF S-Class	SFP-10G-SR-S
Cisco 10GBASE-SR SFP+ Module for MMF	SFP-10G-SR
Cisco multirate 10GBASE-SR, 10GBASE-SW and OTU2e SFP+ Module for MMF, extended temperature range	SFP-10G-SR-X
Cisco 10GBASE-LRM SFP+ Module for MMF and SMF	SFP-10G-LRM
Cisco 10GBASE-LR SFP+ Module for SMF S-Class	SFP-10G-LR-S
Cisco 10GBASE-LR SFP+ Module for SMF	SFP-10G-LR
Cisco multirate 10GBASE-LR, 10GBASE-LW and OTU2e SFP+ Module for SMF, extended temperature range	SFP-10G-LR-X
Cisco 10GBASE-ER SFP+ Module for SMF S-Class	SFP-10G-ER-S
Cisco 10GBASE-ER SFP+ Module for SMF	SFP-10G-ER
Cisco 10GBASE-ZR SFP+ Module for SMF S-Class	SFP-10G-ZR-S
Cisco multirate 10GBASE-ZR, 10GBASE-ZW and OTU2e SFP+ Module for SMF	SFP-10G-ZR
Cisco 10GBASE-BX10-D Bidirectional for 10km	SFP-10G-BXD-I
Cisco 10GBASE-BX10-U Bidirectional for 10km	SFP-10G-BXU-I
Cisco 10GBASE-BX40-D Bidirectional for 40km	SFP-10G-BX40D-I
Cisco 10GBASE-BX40-U Bidirectional for 40km	SFP-10G-BX40U-I
10GBASE-CU SFP+ Cable 1 Meter, passive	SFP-H10GB-CU1M
10GBASE-CU SFP+ Cable 1.5 Meter, passive	SFP-H10GB-CU1-5M
10GBASE-CU SFP+ Cable 2 Meter, Passive	SFP-H10GB-CU2M
10GBASE-CU SFP+ Cable 2.5 Meter, Passive	SFP-H10GB-CU2-5M
10GBASE-CU SFP+ Cable 3 Meter, passive	SFP-H10GB-CU3M
10GBASE-CU SFP+ Cable 4 Meter, passive	SFP-H10GB-CU4M
10GBASE-CU SFP+ Cable 5 Meter, passive	SFP-H10GB-CU5M
10GBASE-CU SFP+ Cable 7 Meter, active	SFP-H10GB-ACU7M
10GBASE-CU SFP+ Cable 10 Meter, active	SFP-H10GB-ACU10M
10GBASE-AOC SFP+ Cable 1 Meter	SFP-10G-AOC1M
10GBASE-AOC SFP+ Cable 2 Meter	SFP-10G-AOC2M
10GBASE-AOC SFP+ Cable 3 Meter	SFP-10G-AOC3M
10GBASE-AOC SFP+ Cable 5 Meter	SFP-10G-AOC5M
10GBASE-AOC SFP+ Cable 7 Meter	SFP-10G-AOC7M
10GBASE-AOC SFP+ Cable 10 Meter	SFP-10G-AOC10M

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
- IEEE 802.3: 10-Gigabit Ethernet

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- ITU-T G.709: Interfaces for the Optical Transport Network
- ITU-T G.975: GFEC
- ITU-T G.975.1: EFEC
- SFP+ MSA SFF-8431 (Optical Modules, Active Optical Cables, and Passive Twinax cables)
- SFP+ MSA SFF-8461 (Active Twinax cables)

Safety:

- Laser Class 1 21CFR-1040 LN#50 7/2001
- Laser Class 1 IEC60825-1
- Cable jacket of SFP+ copper modules is UL #E116441 Compliant
- All length SFP+ copper cables are ELV and RoHS Compliant

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Next steps

Learn more about Cisco 10GBASE SFP+ fiber modules or 10GBase SFP+ copper modules (twinax cable) by contacting your sales representative or visiting https://www.cisco.com/en/US/products/ps6574/index.html.

For S-Class SFP+ 10 Gigabit Modules, refer to the link below: https://www.cisco.com/c/en/us/products/interfaces-modules/transceiver-modules/datasheet-listing.html.

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