

## CISCO 10GBASE X2 MODULES

**Figure 1.** Cisco 10GBASE X2 and Xenpak Module



### PRODUCT OVERVIEW

The Cisco® 10GBASE X2 modules (Figure 1) offers customers a wide variety of 10 Gigabit Ethernet connectivity options for data center, enterprise wiring closet, and service provider transport applications.

Main features of Cisco 10GBASE X2 module include:

- Supports 10GBASE Ethernet
- Hot-swappable input/output device plugs into an Ethernet X2 port of a Cisco switch or router to link the port with the network
- Provides flexibility of interface choice
- Supports “pay-as-you-populate” model
- Supports the Cisco quality identification (ID) feature that enables a Cisco switch or router to identify whether the module is a Cisco certified and tested X2
- Optical interoperability with respective 10GBASE Xenpak and 10GBASE XFP modules on the same link

#### Cisco X2-10GB-CX4

The Cisco 10GBASE-CX4 Module supports link lengths of up to 15 m on CX4 cable.

#### Cisco X2-10GB-LX4

The Cisco 10GBASE-LX4 Module supports link lengths of 300 m on standard Fiber Distributed Data Interface (FDDI) grade multimode fiber (MMF).

#### Cisco X2-10GB-SR

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

#### Cisco X2-10GB-LR

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

## Cisco X2-10GB-ER

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

## TECHNICAL SPECIFICATIONS

### Platform Support

Cisco X2 modules are supported on Cisco switches and routers. For more details, refer to the document Cisco 10-Gigabit Ethernet Transceiver Modules Compatibility Matrix.

### Connectors and Cabling

Connectors: Dual SC/PC connector (-SR, -LR, -LX4, -ER); Infiniband 4x connector (-CX4)

**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 X2 module.

**Table 1.** Table 1 X2 Port Cabling Specifications

Cisco X2	Wavelength (nm)	Cable Type	Core Size (micron)	Modal Bandwidth (MHz/km)	Cable Distance*
Cisco X2-10GB-CX4	n.a	CX4 (copper)	n.a	n.a.	15 m
Cisco X2-10GB-SR	850	MMF	62.5	160	26 m
			62.5	200	33 m
			50.0	400	66 m
			50.0	500	82 m
			50.0	2000	300 m
Cisco X2-10GB-LX4	1310	MMF	62.5	500	300 m
			50.0	400	240 m
			50.0	500	300 m
Cisco X2-10GB-LR	1310	SMF	G.652	–	10 km
Cisco X2-10GB-ER**	1550	SMF	G.652	–	40km***

\* Minimum cabling distance for optical X2 module (-LR, -SR, -LX4) is two meters, according to the IEEE 802.3ae standard.

\*\* Requires 5 dB 1550 nm fixed loss attenuator for < 20 kms. Attenuator is available as a spare. The part number is WS-X6K-5DB-ATT=.

\*\*\* Links longer than 30 km are considered engineered links.

### Standards

- IEEE 802.3ae (-LR, -SR, -LX4, -ER)
- IEEE 802.3ak (-CX4)

Table 2 shows the main optical characteristics for the Cisco X2 module. The Cisco X2-10GB-CX4 is not an optical module and therefore not listed in the table below.

**Table 2.** 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 X2-10GB-SR	10GBASE-SR 850nm MMF	-1.0*	-7.3	-1.0	-9.9	840 to 860
Cisco X2-10GB-LX4	10GBASE-LX4 WWDM 1300nm MMF	-0.5 per lane		-0.5 per lane	-14.4 per lane	Four lanes; overall range: 1269 to 1356
Cisco X2-10GB-LR	10GBASE-LR 1310 nm SMF	0.5	-8.2	0.5	-14.4	1260 to 1355
Cisco X2-10GB-ER	10GBASE-ER 1550 nm SMF	4.0	-4.7	-1.0	-15.8	1530 to 1565

\* 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

### Dimensions

Dimensions (D x W x H): 91mm x 36mm x 13.46mm. Cisco Xenpaks typically weigh under 300 grams.

### Environmental Conditions and Power Requirements

The operating temperature range is between 0 and 40°C (32 to 104°F); storage temperature range is -40 to 75°C (-40 to 167°F).

The maximum power consumption per Cisco X2 module is 4W.

### Warranty

- Standard warranty: 90 days
- Extended warranty (optional): Cisco X2 modules can be covered in a Cisco SMARTnet® support contract for the Cisco switch or router chassis

### Ordering Information

Table 3 provides the Ordering Information for Cisco X2 module and related cables.

**Table 3.** Ordering Cisco X2 and Respective Cables

Description	Product Number
<b>X2 Modules</b>	
Cisco 10GBASE-LR X2 Module for SMF	X2-10GB-LR
Cisco 10GBASE-CX4 X2 Module for CX4 (copper) cable	X2-10GB-CX4
Cisco 10GBASE-SR X2 Module for MMF	X2-10GB-SR
Cisco 10GBASE-LX4 X2 Module for MMF	X2-10GB-LX4
Cisco 10GBASE-ER X2 Module for SMF	X2-10GB-ER
<b>Cables</b>	
Mode conditioning patch cable 62.5u, dual SC connectors	CAB-GELX-625=

Description	Product Number
1 m cable for 10GBase-CX4 module	CAB-INF-28G-1=
5 m cable for 10GBase-CX4 module	CAB-INF-28G-5=
10 m cable for 10GBase-CX4 module	CAB-INF-28G-10=
15 m cable for 10GBase-CX4 module	CAB-INF-26G-15=

## Regulatory and Standards Compliance

### Standards:

GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable

GR-326-CORE: Generic Requirements for Singlemode Optical Connectors and Jumper Assemblies

GR-1435-CORE: Generic Requirements for Multi-Fiber Optical Connectors

### Safety

- Laser Class 1 21CFR-1040 LN#50 7/2001
- Laser Class 1 IEC60825-1

### Additional Information

For more information about Cisco 10GBASE-X2 modules, contact:

- United States and Canada: 800 553-6387
- Europe: 32 2 778 4242
- Australia: 61 2 9935 4107
- Other: 408 526-7209
- <http://www.cisco.com>



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Printed in the USA

C78-363188-01 08/06