Cisco 100BASE-X Small Form-Factor Pluggable Modules for Fast Ethernet Applications

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Product overview

The Cisco® 100BASE-X Small Form-Factor Pluggable (SFP) device (Figure 1) is a hot-swappable input/output device that plugs into Fast Ethernet ports, dual-rate Fast/Gigabit Ethernet ports, or Gigabit Ethernet ports of a Cisco switch or router, linking the port with the fiber cabling network.

Main features include the following:

- Hot-swappable when deployed, the switch or router does not have to reboot
- Supports the “pay-as-you-populate” model
- Interchangeable with other 100BASE-X SFPs on the same line card
- Supports the Cisco quality ID feature that enables the switch or router to identify whether or not the SFP is a Cisco qualified SFP
- Optically interoperable with respective 100BASE-X Ethernet interfaces on the same link



Figure 1.
Cisco 100M Ethernet SFP

Cisco 100BASE-FX SFP

The Cisco 100BASE-FX SFP operates on ordinary multimode fiber-optic (MMF) link spans up to 2 kilometers (km) long.

GLC-FE-100FX modules operate in Fast Ethernet or dual-rate Fast/Gigabit Ethernet ports of Cisco switches and routers.

GLC-FE-100FX-RGD modules operate in Fast Ethernet or dual-rate Fast/Gigabit Ethernet ports of Cisco Industrial Ethernet and SmartGrid switches and routers.

GLC-GE-100FX modules operate in Gigabit Ethernet ports of Cisco switches and routers. GLC-GE-100FX is not compatible with any media converter, NIC, nor 3rd party product.

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Cisco 100BASE-LX10 SFP

The Cisco 100BASE-LX10 SFP operates on ordinary single-mode fiber-optic (SMF) link spans up to 10 km long.

GLC-FE-100LX modules operate in Fast Ethernet or dual-rate Fast/Gigabit Ethernet ports of Cisco switches and routers.

GLC-FE-100LX-RGD modules operate in Fast Ethernet or dual-rate Fast/Gigabit Ethernet ports of Cisco Industrial Ethernet and SmartGrid switches and routers.

Cisco 100BASE-BX10 SFP

The Cisco 100BASE-BX10 (part numbers GLC-FE-100BX-D and GLC-FE-100BX-U) SFPs operate on ordinary SMF single-strand link spans up to 10 km long. A 100BASE-BX10-D device is always connected a 100BASE-BX10-U 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. 100BASE-BX10-D transmits a 1550-nm channel and receives a 1310-nm signal, whereas a 100BASE-BX10-U transmits a 1310-nm wavelength and receives a 1550-nm signal. Note in Figure 2 the presence of a Wavelength-Division Multiplexing (WDM) splitter integrated into the SFP to split the 1310-nm and 1550-nm light paths.



Figure 2.
Bidirectional Transmission on a Single Strand of SMF

Cisco 100BASE-EX SFP

The Cisco 100BASE-EX SFP operates on ordinary SMF link spans up to 40 km long.

GLC-FE-100EX modules operate in Fast Ethernet or dual-rate Fast/Gigabit Ethernet ports of Cisco switches and routers.

Cisco 100BASE-ZX SFP

The Cisco 100BASE-ZX SFP operates on ordinary SMF link spans up to 80 km long.

GLC-FE-100ZX modules operate in Fast Ethernet or dual-rate Fast/Gigabit Ethernet ports of Cisco switches and routers.

Cisco 100BASE-T Copper SFP

The 100BASE-T SFP operates on standard Category 5 unshielded twisted-pair copper cabling of link lengths up to 100 m (328 ft). It supports Industrial temperature range of -40 to 85C.

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Technical specifications

Platform Support

The Cisco SFPs are supported across a variety of Cisco switches, routers, and optical transport devices. For more details, refer to the document Cisco 100M Ethernet SFP Compatibility Matrix.

Connectors and Cabling

Connectors: Dual LC connector (GLC-FE-100FX, GLC-FE-100FX-RGD, GLC-GE-100FX, GLC-FE-100LX, GLC FE-100LX-RGD, GLC-FE-100EX, and GLC-FE-100ZX) or single LC connector (GLC-FE-100BX-D and GLC FE-100BX-U).

Table 1 provides cabling specifications for the SFPs for installation in a Fast Ethernet SFP port. Note that all SFP ports have LC-type connectors, and the minimum cable distance for all SFPs listed (MMF and SMF [G.652]) is 2 meters (6.5 feet).

Table 1. SFP Port cabling specifications

SFP	Wavelength (nm)	Fiber Type	Cable Distance
GLC-FE-100FX **GLC-FE-100FX-RGD** **GLC-GE-100FX**	1300	MMF	2 km (6,562 ft)
GLC-FE-100LX **GLC-FE-100LX-RGD**	1310	SMF	10 km (32,810 ft)
GLC-FE-100BX-U	1310	SMF	10 km (32,810 ft)
GLC-FE-100BX-D	1550	SMF	10 km (32,810 ft)
GLC-FE-100EX	1310	SMF	40 km (131,240 ft)
GLC-FE-100ZX	1550	SMF	80 km (262,480 ft)

Table 2 gives information about fiber loss.

Table 2. Fiber-loss budgets

SFP	Type	Transmit (dBm)		Receive (dBm)	
		Maximum	Minimum	Maximum	Minimum
GLC-FE-100FX **GLC-FE-100FX-RGD** **GLC-GE-100FX**	100BASE-FX	-14	-20	-14	-31
GLC-FE-100LX **GLC-FE-100LX-RGD**	100BASE-LX10	-8	-15	-8	-28
GLC-FE-100BX-U	100BASE-BX10-U	-8	-14	-3	-28.2

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SFP	Type	Transmit (dBm)		Receive (dBm)	
		Maximum	Minimum	Maximum	Minimum
GLC-FE-100BX-D	100BASE-BX10-D	-8	-14	-3	-28.2
GLC-FE-100EX	100BASE-EX	0	-5	-8	-28
GLC-FE-100ZX	100BASE-ZX	2	-3	-8	-30

Dimensions

Dimensions (H x W x D): 8.5 x 13.4 x 56.5 mm

Environmental Conditions and Power Requirements

- **Operating temperature range:**
  - **Commercial temperature range (COM):** 0 to 70° C (32 to 158° F), applicable to GLC-GE-100FX, GLC-FE-100BX-D, GLC-FE-100BX-U, and GLC FE 100ZX
  - **Extended temperature range (EXT):** -5 to 85° C (23 to 185° F) applicable to GLC-FE-100FX, GLC-FE-100LX and GLC-FE-100-EX
  - **Industrial temperature range (IND):** -40 to 85° C (-40 to 185° F), applicable to GLC-FE-100FX-RGD, GLC-FE-100LX-RGD and GLC-FE-T-I
- **Storage temperature range:** -40 to 85° C (-40 to 185° F)
- **Power consumption:**
  - GLC-FE-100FX, GLC-FE-100FX-RGD, GLC-FE-100BX-D, GLC-FE-100BX-U, GLC-FE-100EX, and GLC-FE-100ZX modules consume up to 1W per port
  - GLC-GE-100FX modules typically consume 1.5W per port (up to 1.7W)
  - GLC-FE-T-I modules typically consume 1W per port

Warranty

- Standard warranty: 5 years
- Extended warranty (optional): Cisco QSFP 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 3 gives ordering information for the Cisco SFP.

Table 3. Ordering Cisco SFP

Product Number	SFP
GLC-FE-100FX	100BASE-FX SFP for Fast Ethernet SFP Ports
GLC-FE-100FX-RGD	100BASE-FX Rugged SFP for Fast Ethernet SFP Ports
GLC-GE-100FX	100BASE-FX SFP for Gigabit Ethernet SFP Ports
GLC-FE-100LX	100BASE-LX10 SFP for Fast Ethernet SFP Ports
GLC-FE-100LX-RGD	100BASE-LX10 Rugged SFP for Fast Ethernet SFP Ports
GLC-FE-100BX-U	100BASE-BX10-U SFP for Fast Ethernet SFP Ports
GLC-FE-100BX-D	100BASE-BX10-D SFP for Fast Ethernet SFP Ports
GLC-FE-100EX	100BASE-EX for Fast Ethernet SFP Ports
GLC-FE-100ZX	100BASE-ZX for Fast Ethernet SFP Ports
GLC-FE-T-I	100BASE-T for Fast Ethernet SFP Ports

Regulatory and Standards Compliance

Safety

- Laser Class 1 21CFR1040 LN#50 7/2001
- Laser Class I IEC 60825

Standards

- IEEE 802.3u
- IEEE 802.3z
- IEEE 802.3ah
- 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
- RoHS 5

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Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's Corporate Social Responsibility (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

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Additional Information

For more information about Cisco 100BASE-X SFPs for Fast Ethernet SFP ports, contact:

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

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