

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

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.

All these modules are interoperable with industrywide interfaces compliant to the IEEE 100BASE-FX standard.

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.

These modules are interoperable with industrywide interfaces compliant to the IEEE 100BASE-LX10 standard.

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.

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
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-FE-100FX, GLC-FE-100LX, GLC-GE-100FX, GLC-FE-100BX-D, GLC-FE-100BX-U, GLC-FE-100EX, and GLC-FE-100ZX
 - **Industrial temperature range (IND):** -40 to 85°C (-40 to 185°F), applicable to GLC-FE-100FX-RGD and GLC-FE-100LX-RGD
- **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)

Warranty

- Standard warranty: 1 year
- Extended warranty (option): Available under a Cisco SMARTnet[®] Support contract for the Cisco switch or router chassis

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

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

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
- <http://www.cisco.com>



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