1000BASE SFP Optics

1000BASE-BX   1000BASE-LX   1000BASE-SX

Highlights

Extreme Networks® pluggable optics provide physical layer connectivity for optical-port modular switch IO blades and optical-port stackable switches.

- Provides a range of form factor options for enterprise and service provider needs.

- Helps network managers meet their varied and evolving network demands.

- Hot-swappable, reliable, and cost-effective optics.

Overview

Extreme Networks optics are thoroughly tested and are subject to an extensive qualification process before being considered certified to work in Extreme Networks IO modules and switches. Only proven, qualified vendors are chosen to assist in providing an end-to-end optical solution.

There are four form factors available: XENPAK, XFP, SFP, and GBIC. Within these form factors there are a variety of choices depending on the customer application and distance capability required. Each optical interface operates and is managed like a fixed port but gives the customer flexibility to hot-swap or interchange to different optical module types (i.e., SR, LR, ZR).

Key Features

1000BASE-SX

- 1000BASE-SX SFP supports link length of up to 550m (depending on fiber type) on multimode fiber at 1Gbps. This optic works at 850nm wavelength and uses an LC connector.

1000BASE-LX

- 1000BASE-LX SFP supports link length of up to 10km on single mode fiber at 1Gbps. This optic works at 1310nm wavelength and uses an LC connector.

1000BASE-ZX

- 1000BASE-ZX SFP supports link length of up to 80km on single mode fiber at 1Gbps. This optic works at 1550nm wavelength and uses an LC connector.

1000BASE BX-D*

- 1000BASE BX-D SFP supports link length of up to 10km point to point on single mode fiber (1490nm TX/1310nm RX wavelength) at 1Gbps bidirectional. This optic uses an LC connector.

*1000BASE-BX optics have two models and must be used in a pair. 1000BX is a technology that allows 1000BASE Ethernet connectivity via single fiber cable.

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1000BASE BX-U*

- 1000BASE BX-U SFP supports link length of up to 10km point to point on single mode fiber (1310nm TX/1490nm RX wavelength) at   1Gbps bidirectional. This optic uses an LC connector.

100FX/1000LX**

- 100FX/1000LX Dual Speed SFP supports link length of up to 2km on multimode fiber (100 Mbps) and 10km on single mode fiber (1Gbps). This optic works at 1310nm wavelength and uses an LC connector.

1000BASE LX100

- LX100 SFP supports link length of up to 100km on single mode fiber at 1Gbps. This optic works at 1550nm wavelength and uses an LC connector.

100FX

- LX100 SFP supports link length of up to 2km on multimode fiber at 100 Mbps (x10). This optic works at 1310nm wavelength and uses an LC connector. For support on 1000BASE SFP Interfaces.

	SX	LX	ZX	BX-D	BX-U	FX100/LX1000	LX100	FX100
Fiber Type	Multimode	Single-mode	Single-mode	Single-mode	Single-mode	Multimode/Single-mode	Single-mode	Multimode
Connector Type	LC	LC	LC	LC	LC	LC	LC	LC
Average Launch Power (min/max)	-9.5/-4 dBm	-9.5/-3 dBm	0/+5 dBm	-9/-3 dBm	-9/-3 dBm	-9.5/-3 dBm	0/+5 dBm	-20/-14 dBm
Receiver Sensitivity (max)	-17 dBm	-20 dBm	-24 dBm	-19.5 dBm	-19.5 dBm	-22 dBm	-30 dBm	-31.5 dBm
Receiver Overload (min)		-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-9 dBm	-9 dBm
Center Wavelength Range (min/max)	830/860 nm TX 770/860 nm RX	1270/1355 nm TX 1260/1570 nm RX	1530/1580 nm TX	1480/1500 nm TX 1260/1360 nm RX	1260/1360 nm TX 1480/1500 nm RX	1270/1355 nm TX 1260/1570 nm RX	1480/1580 nm TX 1260/1580 nm TX	1270/1355 nm TX 1260/1570 nm RX
Voltage Range	3.13 to 3.47V	3.13 to 3.47V	3.13 to 3.47V	3.13 to 3.47V	3.13 to 3.47V	3.13 to 3.47V	3.13 to 3.47V	3.13 to 3.47V
Distance Range	up to 550km	up to 10km	up to 80km	up to 10km	up to 10km	2km/10km	100km	2km
Data Range	1Gbps	1Gbps	1Gbps	1Gbps	1Gbps	1Gbps	1Gbps	100 MbpsX10
Mean Time Between Failure (@+40°C)	4,000 (kHRs)	2,500 (kHRs)	1,500 (kHRs)	2,688 (kHRs)	2,694 (kHRs)	1,990 (kHRs)	14,279 (kHRs)	6,471 (kHRs)
Optical Link Budget	7.5 dB	8 dB	24 dB	10 dB	10 dB	11 dB	30 dB	10 dB

Technical Specifications

Standard
- Compatible with SFP MSA

Physical Specifications
- Dimensions (HxWxD): 0.48x0.54x2.70 in 1.22x1.38x6.86 cm)
- Weight: 0.06 lb (25.1 g) unpackaged, 0.30 lb (135 g) packaged
- Shipping box dimensions (HxWxD): 2.1x6.8x7.7 in (5.4x17.2x19.6 cm)

Environmental Conditions

Environmental, Transportation, Storage and Operational
- Operating Temperature: 0° C to 40° C
- Operating Humidity: 5% to 95% non-condensing

- Operational Shock: 30 m/s2 (3g), 11ms
- Operational Random Vibration: 5-500 Hz @ 1.5 Grms
- Temperature: -40° C to 70° C
- Relative Humidity: 10% to 95%
- Shock: 180 m/s2 (18g), 6ms
- Random Vibration: 5 – 20 Hz @ 1.0 ASD w/-3dB/oct. from 20 – 200 Hz
- Drop: 42" (105cm)
- EN 300 019-2-3 v2.1.2 (2003-04), Stationary Use, Class 3.1e
- EN 300 019-2-2 v2.1.2 (1999-09), Public Transportation, Class 2.3
- EN 300 019-2-1 v2.1.2 (2000-09), Storage, Class 1.2
- RoHS 6 compliant
- China RoHS compliant
- WEEE Compliant

Safety Compliance

North American Safety of ITE
- UL60950:2000 3rd edition of later, Recognized Component
- CAN/CSA-C22.2 No. 60950-00:2000 3rd Ed or later Recognized Component

European Safety of ITE
- EN60950-1:2001+ all available country deviations
- 2006/95/EC Low Voltage Directive (LVD)

Laser Safety
- EN60825-1:1994, A11:1996, A2:2001
- 21 CFR Subpart J, Class 1 Laser
- CDRH Letter of Approval

**Requires MCP and 6dB Attenuator for 100FX-MMF operation.

EMC Compliance

North America EMC for ITE
- FCC CFR 47 part 15 Class A (USA)
- ICES-003 Class A (Canada)

European EMC Standards
- EN 55022:1998 or later, Class A
- EN 55024:1998 or later, Class A
- ETSI EN 300 386: v1.3.1 2001-09 or later
- (EMC Telecommunications)
- 2004/108/EC EMC Directive

International EMC Certifications
- CISPR 22: 2006 Class A (International
- CISPR 22: 1997 or later, Class A (International Emissions)
- CISPR 24: 1998 or later, Class A (International Immunity)

- IEC/EN 61000-4-2 Electrostatic Discharge, 8kV Contact, 15kV Air, Criteria A
- IEC/EN 61000-4-3 Radiated Immunity 10V/m, Criteria A
- IEC/EN 61000-4-4 Transient Burst, 1kV, Criteria A
- IEC/EN 61000-4-5 Surge, 1kV L-L, 2kV L-G, Level 4, Criteria A
- IEC/EN 61000-4-6 Conducted Immunity, 0.15-80MHz, 10V/m unmod. RMS, Criteria A
- IEC/EN 61000-4-11 Power Dips & Interruptions, >30%, 25 periods, Criteria A

Note: All 1 gigabit SFP modules meet the above standards when installed in Extreme Networks equipment.

Warranty

- Ltd. 1-year
- For warranty details, visit http://www. extremenetworks.com/go/warranty

Ordering Information

Part Number	Description
1000BASE-SX SFP	
10051	SFP, 1000BASE-SX, MMF (850nm wavelength) up to 550m, 1.25Gbps, LC connector
1000BASE-LX SFP	
10052	SFP, 1000BASE-LX, SMF (1310nm wavelength) up to 10km, 1.25Gbps, LC connector
1000BASE-ZX SFP	
10053	SFP, 1000BASE-ZX, SMF (1550nm wavelength) up to 80km, 1.25Gbps, LC connector
1000BASE-BX-D SFP	
10056	SFP, 1000BASE-BX-D, SMF (1490nm TX/1310nm RX wavelength) up to 10km, 1.25Gbps, LC connector
1000BASE-BX-U SFP	
10057	SFP, 1000BASE-BX-U, SMF (1310nm TX/1490nm wavelength) up to 10km, 1.25Gbps, LC connector
100FX SFP	
10060	SFP, Dual-Speed 100FX/1000BASE-LX, (1310nm wavelength) up to 2km MMF (100FX, 125Mbps)/10km SMF(1000BASE-LX, 1.25Gbps), LC connector. Requires MCP and 6dB Attenuator for 100FX-MMF operation.
100FX SFP	
10063	SFP, 100BASE FX, MMF (1310nm wavelength) up to 2km, 125MbpsX10, LC connector
1000BASE-LX100 SFP	
10064	SFP, 1000BASE-LX100, SMF (1550nm wavelength) up to 100km, 1.25Gbps, LC conector

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