DATA SHEET

1000 BASE-X SFP

HIGHLIGHTS

SFP 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.

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

Overview

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

There is a number of 1000 BASE SFP Optics that are available 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 wave- length 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.*

	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 Output 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 Sensitvity (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
Operating Temperature	-40°C to 85° C	-40°C to 85° C	-40°Cto 85° C	-40°C to 85° C	-40° C to 80° C	0° C to 85° C	0° C to 85° C	0° C to 85° C
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

- Operational Shock: 30 m/s2 (3g), 11ms

SAFETY COMPLIANCE

- Compatible with SFP MSA
- Operational Random Vibration: 5-500 Hz @ 1.5 Grms

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

- 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

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)
- EN 300 019-2-1 v2.1.2 (2000-09), Storage, Class 1.2

LASER SAFETY ENVIRONMENTAL, TRANSPORTATION, STORAGE AND OPERATIONAL

- Operating Temperature: -40° C to 40° C
- Operating Humidity: 5% to 95% non-condensing
- RoHS 6 compliant
- China RoHS compliant
- WEEE Compliant
- 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