

Product Brief

Brocade[®] 16Gb/s LWL (10 km) SFP+

Optimized, Certified Optical Transceivers for Extending Data-Center Fabrics

Highlights

- Provides high system reliability through a rigorous qualification and certification process.
- Eliminates issues related to SFP incompatibility, reducing downtime and support costs.
- Extends Fibre Channel connectivity over distance in enterprise environments, enabling high-performance business continuity and disaster recovery solutions.
- Ensures reliable FICON connectivity, interoperability, and architectural adherence between IBM Z mainframes and Brocade SAN products and storage devices.

Caution

- Do not look through the optical ports because doing so is a potential eye hazard.
- The SFP is an ESD sensitivity Class 2 device. It should be handled accordingly.

Ordering Part Numbers

- XBR-000198 (1-pack)
- XBR-000199 (8-pack)
- XBR-000498 (1-pack)
- XBR-000499 (8-pack)

Overview

Today's enterprise data centers are undergoing an infrastructure transformation, requiring higher speeds, greater scalability, and higher levels of performance and reliability to meet the increasing demands of business. As speed and performance needs increase, optical transceivers have become an integral part of overall system design.

The Brocade[®] 16Gb/s Long Wavelength (LWL) 10-km optical transceiver, part of the Brocade family of Small Form-Factor Pluggable (SFP) optical transceivers, is optimized to fully leverage Brocade 16Gb/s director and switch products. The Brocade 16Gb/s LWL 10-km SFPs are hot-swappable, low-voltage (3.3V), digital diagnostic optical transceivers that support high-speed serial links over single-mode optical fiber at signaling rates up to 14.025Gb/s. They comply with SFP mechanical (SFF-8432), optical, and electrical specifications (FC-PI-5) for LC duplex transceivers.

The Brocade LWL SFPs are the standard choice for use in mainframe environments, connecting to IBM System z channels and FICON devices over distance for business continuity and disaster recovery. Together with Brocade switching products, they provide state-of-the-art performance, helping IT organizations achieve new levels of infrastructure consolidation while expanding the capabilities of their applications and services.

Product highlights include the following:

- 1310-nm DFB laser
- FC-PI-5 compliance for 14.025/8.5/4.25Gb/s operation
- Diagnostic features per SFF-8472, *Diagnostic Monitoring Interface for Optical Transceivers*, providing real-time monitoring of:
 - Transmitted average optical power
 - Received average optical power
 - Laser bias current
 - Temperature
 - Supply voltage
- Industry-standard LC duplex connector
- 10-km link lengths at 14.025Gb/s on 9- μ m single-mode fiber
- IEC 60825-1 Class 1/CDRH Class 1 laser, which is eye-safe
- Compliance with the Restriction on Hazardous Substances (RoHS) directive

End-to-End Compatibility and Reliability

The Brocade 16Gb/s LWL 10-km optical transceivers support highly reliable operations in data-center fabrics and are optimized for Brocade switching platforms. They undergo rigorous qualification and certification testing that results in an end-to-end solution that is easier to maintain—helping improve the availability of data-center fabrics supporting mission-critical applications.

Family of Optical Transceivers

Brocade offers a comprehensive family of reliable optical transceivers to provide highly compatible, high-performance connectivity to Brocade director and switch products.

For additional ordering information, contact a Brocade representative or visit www.broadcom.com/support/fibre-channel-networking.

Brocade 16Gb/s LWL (10 km) SFP+ Specifications

System	
Performance	Fibre Channel: 4.25, 8.5, and 14.025Gb/s line speed, full duplex; auto-sensing of 4, 8, and 14Gb/s port speeds
Media	Hot-pluggable, industry-standard Small Form-Factor Pluggable (SFP+), LC connector; Long Wavelength (LWL)
Operating Parameters	Transmit (Tx): Wavelength: 1295 nm to 1325 nm Average power: -5.0 dBm to 2.0 dBm RIN: -130 dB/Hz max Optical return loss: 12 dB max OMA: 631 μW, -2.0 dBm Receive (Rx): Average power: 2.0 dBm max Optical return loss: -12 dB min Unstressed sensitivity: 63 μW, -12.0 dBm SRS OMA: 95 μW, -10.2 dBm 3-dB cutoff maximum: 18 GHz
Mechanical	
Size	Width: 14.80 mm (0.58 inches) Height: 11.85 mm (0.47 inches) Depth: 56.50 mm (2.22 inches)
Environment	
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Power	
Power Dissipation	1.08W
Regulatory and Standards Compliance	
North America	UL/CSA 60950, CDRH Class 1
European Union	EN 60950, EN 60825 Class 1

For information about supported SAN standards, visit www.broadcom.com/sanstandards.

For information about switch and device interoperability, see the [Brocade Transceiver Support Matrix](#).

For information related to SFF Committee documentation, visit www.snia.org/sff.