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Product Brief

# Brocade® 32Gb/s LWL (10 km) SFP+

## Optimized, Certified Optical Transceivers for Extending Service Provider and Data Center Networks

## Highlights

- Provides high system reliability through rigorous qualification and certification processes.
- Leverages unique design parameters to provide the highest performance with industry-leading Brocade switch and backbone platforms to support business continuity and disaster recovery.
- Helps eliminate issues related to SFP incompatibility, reducing downtime and support costs.
- Helps eliminate issues resulting from unexpected design changes, providing ongoing end-to-end compatibility.
- Optimizes connectivity with Brocade platforms to enable maximum cable distance.
- Extends Fibre Channel connectivity over distance in mainframe environments, enabling high-performance business continuity and disaster recovery solutions.

## Key Features

The Brocade 32Gb/s LWL 10 km SFP+ modules 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 28.05Gb/s. They comply with SFP+ mechanical (SFF-8402), optical, and electrical specifications (FC-PI-6) for LC duplex transceivers.

The Brocade 32Gb/s LWL 10 km SFP+ is a multirated 1310 nm SFP that complies with 28.05/14.025/8.5Gb/s Fibre Channel specifiations.

## Overview

Today's enterprise data centers are undergoing an infrastructure transformation, requiring higher speeds, greater scalability, and higher levels of performance and reliability to better meet the demands of business. As speed and performance needs increase, optical transceivers—once considered a generic component of Fibre Channel switching technologies—have become an integral part of overall system design. However, optical transceiver design margins and parameters vary widely, and can be the difference between an optimized, highly reliable fabric and incompatibility issues that drive up support costs.

The Brocade® 32Gb/s Long Wavelength (LWL) 10 km SFP+, part of the Brocade family of Small Form-Factor Pluggable (SFP) optical transceivers, is optimized to fully leverage Brocade 32Gb/s backbone, director, and switch products. Brocade LWL SFPs extend native Fibre Channel connectivity over distance, enabling high-performance disaster recovery and business continuity solutions.

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.

## End-to-End Compatibility and Reliability

Brocade 32Gb/s ELWL 10 km SFP+ modules support highly reliable operations in data center fabrics and are optimized for Brocade 32Gb/s 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 backbone, director, and switch products.

For additional ordering information, contact a Brocade representative or visit www.broadcom.com/brocade-customers-partners.

## Key Features (cont.)

Product highlights include:

- 1310 nm DFB laser
- FC-PI-6 compliance for 28.05/14.025/8.5Gb/s operation
- Diagnostic features per SFF-8472 *Diagnostic Monitoring Interface for Optical Transceivers*, providing real-time monitoring of:
  - Transmitted optical power
  - Received optical power
  - Laser bias current
  - Temperature
  - Supply voltage
- Industry-standard LC duplex connector
- 10 km link lengths on 9 µm single-mode fiber
- IEC 60825-1 Class 1/CDRH Class 1 laser, eye-safe
- Compliance with Restriction on Hazardous Substances (RoHS) directive

## Caution

- Do not look through the optical ports, as it is a potential eye hazard.
- SFP is an ESD sensitivity Class 2 device. It should be handled accordingly.

## Ordering Part Number

- XBR-000238 (1-pack)
- XBR-000239 (8-pack)

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

## Brocade Global Support

Brocade Global Support has the expertise to help organizations build resilient, efficient SAN infrastructures. Leveraging 20+ years of expertise in storage networking, Global Support delivers world-class technical support, implementation, and migration services to enable organizations to maximize their hardware and software investments, accelerate new technology deployments, and optimize the overall performance of their network.

## Maximizing Investments

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Brocade sales partner or visit www.broadcom.com.

## Brocade 8 Gb/s ELWL (25 km) Optical Transceiver Specifications

| | |
|---|---|
| **System** | |
| Performance | Fibre Channel: 8.5, 14.025, and 28.05Gb/s line speed, full duplex; auto-sensing of 8, 14, and 28Gb/s port speeds |
| Media | Hot-pluggable, industry-standard Small Form-Factor Pluggable (SFP+), Duplex LC connector |
| Operating Parameters | Transmit (Tx):<br>• Wavelength: 1295 to 1325 nm<br>• Spectral width: 1.0 nm<br>• Average power: –5.0 to 2.0 dBm<br>• RIN: –130 dB/Hz max<br>• OMA: 631 µW min<br>Receive (Rx):<br>• Average power: 2 dBm max<br>• Optical return loss: 26 dB min<br>• Unstressed sensitivity: 72 µW, –11.4 dBm |
| **Mechanical** | |
| Size | Width: 14.80 mm (0.58 inches)<br>Height: 11.85 mm (0.47 inches)<br>Depth: 56.50 mm (2.22 inches) |
| **Environmental** | |
| Storage Temperature | –40°C to 85°C (–40°F to 185°F) |
| **Power** | |
| Power Dissipation | 1.5W |

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| **Regulatory and Standards Compliance** | |
| North America | UL/CSA 60950, CDRH Class 1 |
| European Union | EN 60950, EN 60825 Class 1 |

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**For product information and a complete list of distributors, visit our website at: broadcom.com**


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