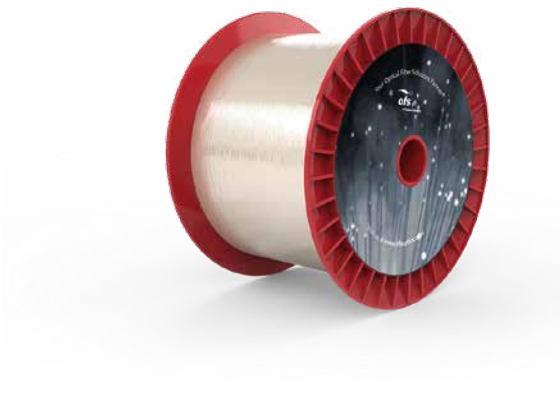
LaserWave® Dual-Band (OM4+) Optical Fiber

OM4+ multimode fiber optimized for Terabit BiDi applications



Features

- Designed for maximum performance in BiDi applications (850 nm and 910 nm)
- Doubles transmission capacity when used with BiDi transceivers
- Meets ANSI/TIA 492AAAF and IEC 60793-2-10 standards for A1-OM4 fiber
- Manufactured using the industry's tightest geometric control
- Completely backward compatible with existing OM4 applications

Benefits

- Supports today's applications and provides maximum reach in high speed Bidi systems.
- Supports 800 Gb/s transmission over 8-fiber links
- Supports 1.6 Tb/s transmission over 16-fiber links

Applications

LaserWave Dual-Band (OM4+) Multimode Optical Fiber provides outstanding performance for fiber management systems in:

- Data centers
- AI / ML clusters
- High-performance computing
- Enterprise local area networks
- Storage area networks
- Central office rearchitected as a data center (CORD)

Overview

LaserWave Dual-Band (OM4+) Multimode Optical Fiber is a premium 50-micron laser-optimized multimode fiber designed for maximum performance in BiDi applications, to support the next generation of high density and low power multimode links.

BiDi transceivers use two wavelengths, 850 nm and 910 nm, to transmit and receive signals on all fibers simultaneously. This effectively doubles the transmission rate vs. single wavelength systems, halving the number of fibers needed to achieve the link speed. The addition of 910nm transmission, however, limits the reach of conventional OM4 fibers and especially OM3 fibers that were designed for single wavelength operation.

LaserWave Dual-Band (OM4+) provides OM5-equivalent performance between 850 nm and 910 nm to support BiDi applications, without supporting the full SWDM4 wavelength range up to 940 nm (and up to 953 nm). Effective modal bandwidth is directly measured at both BiDi wavelengths using the most stringent DMD measurement techniques. The additional bandwidth specification at 910nm allows LaserWave Dual-Band (OM4+) to maintain 100m reach for Terabit BiDi Ethernet applications; 800G-SR4.2 and 1.6T-SR8.2.

Using state of the art process control, LaserWave fiber is manufactured to the tightest glass geometry and optical specifications in the industry. Tighter specifications lead to lower variation when mating fiber optic connectors and lower insertion loss. OFS patented D-LUX® Shield coating system cushions the fiber core against microbending, achieving exceptional attenuation when cabled and unlocking challenging new cable designs (e.g., Rollable Ribbon technology).

Today's high speed applications have extremely low loss budgets, and minimizing connector loss and cable attenuation is key to reliability in these links. LaserWave Dual-Band fiber offers low bending loss throughout the entire operating window, while maintaining excellent long-term fiber strength and reliability.

Product Specifications		
Physical Characteristics		
Core Diameter	50 ± 2.5 µm	
Core Non-Circularity	≤ 2.5 %	
Clad Diameter	125 ± 0.7 µm	
Clad Non-Circularity	≤ 0.7 %	
Core/Clad Concentricity Error (Offset)	≤ 0.7 µm	
Coating Diameter	242 ± 5 µm	
Coating Non-Circularity	≤ 5 %	
Coating-Clad Concentricity Error (Offset)	≤ 10 µm	
Tensile Proof Test	100 kpsi (0.69 GPa)	
Coating Strip Force	Range: 0.22 - 2.0 lbf (1.0 - 8.9 N) Typical: 0.6 lbf (2.7 N)	
Standard Reel Lengths	2.2 – 8.8 km	
Optical Characteristics		
Attenuation		
at 850 nm	≤ 2.2 dB/km	
at 953 nm	≤ 1.7 dB/km	
at 1300 nm	≤ 0.6 dB/km	
Laser Bandwidth/EMB	See Transmission Characteristics Table	
Transmission Distance (Link Length) Support	See Applications Support Table	
Attenuation at 1380 nm minus attenuation at 1300 nm	≤ 1.0 dB/km	
Attenuation Uniformity / Point Discontinuities at 850 nm and 1300 nm	≤ 0.08 dB	
Numerical Aperture	0.200 ± 0.010	
Chromatic Dispersion		
Zero Dispersion Wavelength (λ_0)	$1297 \le \lambda_0 \le 1328$ nm	
Zero Dispersion Slope (S_0)	$S_0 \le 4(-103)/(840(1-(\lambda_0/840)^4))$ ps/nm^{2}km	
Group Refractive Index		
at 850 nm	1.483	
at 1300 nm	1.479	
Backscatter Coefficient		
at 850 nm	-68.4 dB	
at 1300 nm	-75.8 dB	
Macrobend Attenuation	850 nm	1300 nm
100 turns @ 37.5 mm radius	≤ 0.5 dB	≤ 0.5 dB
2 turns @ 15 mm radius	≤ 0.1 dB	≤ 0.3 dB
2 turns @ 7.5 mm radius	≤ 0.2 dB	≤ 0.5 dB
Environmental Characteristics		
Operating Temperature Range	-60 °C to +85 °C	
Temperature Induced Attenuation at 850 nm and 1300 nm from -60° C to +85° C (5 24-hour cycles)	≤ 0.1 dB/km	
Temperature and Humidity Induced Attenuation at 850 nm and 1300 nm from -10° C to +85° C, 94% RH (30 24-hour cycles)	≤ 0.1 dB/km	
Accelerated Aging (Temperature) Induced Attenuation at 85° C for 30 days	≤ 0.1 dB/km	
Water Immersion Induced Attenuation, 23° C for 30 days	≤ 0.1 dB/km	
Damp Heat, 85° C, 85% Relative Humidity for 30 days	≤ 0.1 dB/km	
Dynamic Fatigue Stress Corrosion Parameter typical (n_d)	≥ 20	

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Transmission Characteristics	
Minimum Bandwidth Specifications (MHz-km)	
EMB @ 850 nm	4700
EMB @ 910 nm	3100
EMB @ 1300 nm	500
Overfilled @ 850 nm	3500
Overfilled @ 1300 nm	500

Application Support	
Application (Nominal Wavelength)	Reach (Meters)[1]
1.6 Terabit Ethernet	
Terabit BiDi 1.6T-SR8.2 (850/910 nm)	100
Terabit BiDi 1.6T-VR8.2 (850/910 nm)	70
800 Gigabit Ethernet	
Terabit BiDi 800G-SR4.2 (850/910 nm)	100
Terabit BiDi 800G-VR4.2 (850/910 nm)	70
800GBASE-SR8[2] (850 nm)	100
800GBASE-VR8[2] (850 nm)	50
400 Gigabit Ethernet	
400GBASE-SR4.2 (850/910 nm)	150
400GBASE-SR8 (850 nm)	100
400GBASE-SR4 (850nm)	100
400GBASE-VR4 (850nm)	50
100 Gigabit Ethernet	
100GBASE-SR4 (850 nm)	100
100 Gb/s BiDi (850/910 nm)	150
100 Gb/s SWDM4 (850-950 nm)	100
40 Gigabit Ethernet	
40GBASE-SR4 (850 nm)	190[3]
40 Gb/s BiDi (850/910 nm)	150
10 Gigabit Ethernet	
10GBASE-S (850 nm)	550[4]
10GBASE-LX4 (1310 nm CWDM lasers)	300
10GBASE-LRM (1310 serial w/ EDC)	220
1 Gigabit Ethernet	
1000BASE-SX (850 nm)	1040
1000BASE-LX (1310 nm)	600
Fibre Channel	
32GFC, 64GFC, 128GFC (850 nm)	100

[1] Unless otherwise indicated, application support distances are calculated using standards-based link losses. Lower-loss connectors and lower cable attenuations can lead to longer supportable distances.

[2] Based on draft IEEE P802.3df.

[3] Distances assume maximum 1.0 dB total splice/connector loss, maximum 3.0 dB/km cable attenuation at 850 nm, and VCSEL spectral width of ≤ 0.45 nm. 150 meter reach over OM4 as defined by IEEE 802.3ba.

[4] 550 meter reach assuming 3.5 dB/km maximum cabled attenuation at 850 nm plus 1.0 dB of total connection and splice loss.

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GUIDING LIGHT FOR A BETTER LIFE.™

For additional information please contact your sales representative.

You can also visit our website at www.ofsoptics.com
or call 1-888-fiberhelp (1-888-342-3743) USA or 1-770-798-5555 outside the USA.

FURUKAWA SOLUTIONS

For a full list of our certifications, visit our website.

RoHS Compliant

OFS Marketing Communications
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