j-fiber Jena

Member of LEONI Group

GigaGrade Multimode Fiber 50/125

j-fiber's 50µm Multimode fiber solution with an extensive performance value range to allow for most flexible high data volume transmission at short to medium distances in Local Area Network applications.

GigaGrade 50/125 fiber is specified for use in high-speed laser-based network protocols as well as networks using LED as light source. They support fiber-optic network protocols such as Gigabit Ethernet, ATM, Fast Ethernet and lower bit rate networks used in Local Area Networks (LAN), Storage Area Networks (SAN), high-speed parallel interconnects for central offices and local access networks. Based on the desired wiring application the fiber value range also includes short reach 10Gb/s capability for distances up to 150 meters.
The fiber fits perfectly for transmission in backbone, riser and horizontal wiring applications.

Features and Benefits

- Customized bandwidth and link length combinations available for specific applications
- Highest performance meeting/exceeding current industry standards for Gigabit Ethernet, Fiber Channel, FDDI (Fiber Distributed Data Interface), ATM (Asynchronous Transfer Mode)
- Optimized for use in 850nm and 1300nm applications with lowest attenuation and highest bandwidth range available today
- High link lengths for 1Gb/s data rate transmission up to 2000m and 10Gb/s data rate transmission up to 150m available
- High flexible low cost solution to migrate from LEDs to lasers as light source, such as Vertical Cavity Surface Emitting Lasers (VCSELs)
- Excellent splicing performance and compatibility with installed fiber base and photonics components
- Maximum product consistency and reliability through patented j-fiber manufacturing process resulting in low fiber costs

Select your individual fiber specification as required by your application from our wide performance value range:

Ordering Example:

Data Rate	lower data rates	higher data rates		Unit
Light Source	LED	laser		
Requirement	OM2 fiber type	OM2 or A1a fiber type +1Gb/s transmission	OM2 fiber type +10Gb/s	
Bandwidth @ 850/1300nm	500/500	500/1000	700/500	MHz·km
Link Length for 1GbE @ 850/1300nm	not required	550/1000	750/550	m
Link Length for 10GbE @ 850nm	not required	not required	150	m

For further information about our Multimode Fiber and other j-fiber products and services, please contact us:

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Performance Characteristics

		Spec. Value Range	Unit
Bandwidth[1]			
Light source:			
LED, overfilled launch assuming	850nm	≥ 400 – ≥ 750	MHz·km
a linear relationship	1300nm	≥ 500 – ≥ 1200	MHz·km
Link Lengths at 1Gb/s transmission[1]			
Light source:	850nm	≥ 500 – ≥ 750	m
Laser, restricted mode launch	1300nm	≥ 550 – ≥ 2000	m
Link Lengths at 10Gb/s transmission[2]			
Light source:	850nm	up to 150	m
Laser, restricted mode launch	1300nm	not specified	

[1] For both, bandwidth and link lengths special combinations and values are available.

[2] Assured by DMD control (Differential Mode Delay): Fibers shall meet the respective DMD templates in accordance with the standard TIA/EIA 455-220 or IEC 60793-2-10.

Optical Characteristics

		Spec. Value Range	Unit
Attenuation Coefficient[3]	850nm	≤ 2.2 – ≤ 2.4	dB/km
	1300nm	≤ 0.6 – ≤ 0.7	dB/km
Attenuation at 1383nm (OH-Peak)		< 2.0	dB/km
Attenuation Discontinuities (OTDR 1300nm)		< 0.05	dB
Chromatic dispersion			
Zero dispersion wavelength λ_0		$1295 < \lambda_0 < 1340$	nm
Zero dispersion slope, S_0			
– from $1295 < \lambda_0 < 1310$		≤ 0.105	ps/nm²·km
– from $1310 < \lambda_0 < 1340$		$\leq 0.000375 \cdot (1590-\lambda_0)$	ps/nm²·km
Macrobend loss			
mandrel radius		37.5	mm
number of turns		100	
max. at 850nm		0.5	dB
max. at 1300nm		0.5	dB
Numerical Aperture		0.200 ± 0.015	
Effective Group Index of Refraction			
	850nm	1.483	
	1300nm	1.478	

[1] Special attenuation values available upon request

Geometrical Characteristics

	Spec. Values	Unit
Core Diameter	50 ± 2.5	µm
Core Non-Circularity	≤ 5.0	%
Core/Clad Concentricity Error	≤ 1	µm
Cladding Diameter	125 ± 1.0	µm
Cladding Non-Circularity	≤ 1.0	%
Coating Diameter[1]	242 ± 7	µm
Coating /Clad Concentricity Error	≤ 10	µm
Standard Lengths	2.2/4.4/6.6/ 8.8/13.2/17.6	km

[1] Other coating diameters are available upon request

Quality Procedure

All j-fiber Multimode fibers comply with or exceed the ITU recommendation G.651 or the IEC 60793-2-10 Optical Fiber Specifications. Each fiber is 100% quality measured according to IEC 60793. Furthermore, the specific fiber is subject to performance measurements with laser light sources to provide guaranteed link lengths at 1Gb/s transmission rates and DMD control to support applications at 10Gb/s transmission rates.

Patented Process

Optical fibers are manufactured by j-fiber's patented, proprietary technology using a MCVD (Modified Chemical Vapour Deposition) process. This technology allows us to flexibly provide innovative fiber designs according to the customer's own specifications. Our improved patented process results in low attenuation fiber with consistent geometric properties, high strength, and precise control of each fiber's index of refraction. The fiber has a high level of splice compatibility with optical fibers manufactured by other processes.

Mechanical Characteristics

	Spec. Values	Unit
Proof Test	≥ 100 ≥ 8.8	kpsi N
Dynamic Tensile Strength Unaged Fiber (0.5m) Median Tensile Strength 15th Percentile Tensile Strength Aged Fiber (0.5m) Median Tensile Strength 15th Percentile Tensile Strength	 ≥ 3.8 ≥ 3.3 ≥ 3.03 ≥ 2.76	 GPa GPa GPa GPa
Dynamic Fatigue Stress Corrosion Parameter n_d	 ≥ 20	
Operating Temperature Range	-60°C to +85°C	
Coating Strip Force (typical)	1.9	N

Environmental Characteristics

	Spec. Values	Unit
	at 850/1300nm	
Change of Temperature Attenuation increase, -60°C to+85°C	≤ 0.1	dB/km
Dry Heat Attenuation increase, 30 days at 85°C	≤ 0.1	dB/km
Damp Heat Attenuation increase, 30 days at 85°C/85% R.H.	≤ 0.1	dB/km
Water Immersion Attenuation increase, 30 days in 23°C water	≤ 0.1	dB/km

Environmental friendly Packaging

The shipping spool is designed to safeguard j-fiber optical fiber not only during shipping but also during subsequent handling in the customer's plant. It features smooth inside surfaces to ensure that the fiber is wound on and off the reel without the risk of breaking. The reel barrel is isolated via a polyethylene cover. The inside end of the fiber can be accessed for various measurements while still on the shipping spool.
Each spool carries product information, including fiber type, measurement data and peel-off bar coding to assist with inventory control. All reels and transport boxes are designed to take advantage of our recycling program.

Coating

j-fiber Multimode optical fiber is protected with our enhanced coating material that guarantees long-term performance and reliability. The dual layer acrylate material is user friendly and compatible in all cable constructions, such as tight buffer and loose tube designs with low bending loss. Optimized for Multimode fiber the coating shows best-in-class low microbending sensitivity. The coating is mechanically strippable and leaves no residue.

Coating Diameter Options

- Standard: 242µm (JFC)
- Optional: 500µm
- Customized: info@j-fiber.com

	Size
Spool diameter	9.25"/23.5cm
Spool width	4.21"/10.7cm
Spindle	1"/2.54cm
Traverse width	3.75"/9.5cm

Ordering Information

To order GigaGrade optical fiber please call, fax or email us and specify the following parameters when ordering:

Fiber Type:	GigaGrade Multimode Fiber 50/125/242µm
Desired Attenuation, Bandwidth, Link Length at 1Gb/s:	at 850nm/1300nm
Fiber Quantity:	kms
Other:	desired ship date, reel length, special requests

All fibers and preforms are subject to j-fiber's ongoing process and quality improvement programs ensuring excellent performance and high reliability. We reserve the right to make changes to the above specification without notice.

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