

SPECIALTY OPTICAL FIBER

IXF-MC-4-SM-1060

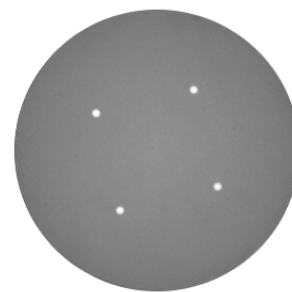
Multicore fiber

The IXF-MC family of multicore fibers includes both passive and active fibers with 2, 4, 7 and 12 cores.

Multicore fibers are used in a large variety of applications such as Space Division Multiplexing (SDM) and sensing (temperature, strain, or shape sensing). Passive multicore fibers have photosensitive cores, allowing Fiber Bragg Gratings (FBG) to be inscribed to the cores.

Fan-in and fan-out can be manufactured directly on the IXF-MC-4-SM-1060 multicore fiber either on a single side to inject (collect) the light to (from) the multicore fiber, or as a fan-in & fan-out pair.

Custom developments of passive, active, or spun multicore fibers are possible.



Benefits & Features

- 4-core passive fiber
- Uncoupled cores
- Singlemode operation from 980 nm to 1600 nm
- Photosensitive cores for FBG inscription
- Fan-in & fan-out available
- Matching erbium doped 4-core fiber available
- Custom designs possible

Applications

- Space division multiplexing (SDM)
- Shape sensing
- Temperature and strain sensing
- Coherent beam combining
- Imaging

Related Products

- IXF-MC-4-EDF-FGC-980 (erbium doped 4-core fiber)

Related Publications

- [Y. Wakayama, N. Yoshikane, and T. Tsuritani, "FIFO-less Core-pump Combiner for Multicore Fiber Amplifier," in Optical Fiber Communication Conference \(OFC\) 2021, P. Dong, J. Kani, C. Xie, R. Csgellas, C. Cole, and M. Li, eds., OSA Technical Digest \(Optica Publishing Group, 2021\), paper M3D.3.](#)
- [Y. Wakayama, N. Yoshikane and T. Tsuritani, "FIFO-less Core-pumped Multicore Fibre Amplifier with Fibre Bragg Grating based Gain Flattening Filter," 2022 European Conference on Optical Communication \(ECOC\), Basel, Switzerland, 2022, pp. 1-4.](#)

Multicore fiber with a single fan-in/out



Multicore fiber with a pair of fan-in and fan-out



Parameters

Core number	4
Core Position Shape	Square
Core spacing (μm)	44.2 ± 0.6
Cutoff wavelength (nm)	< 970
Attenuation @980 nm (dB/km)	< 2.5
Attenuation @1550 nm (dB/km)	< 1.0
Core diameter (μm)	3.4 ± 0.2
Mode field diameter @980 nm (μm)	4.0 ± 0.3
Mode field diameter @1550 nm (μm)	6.5 ± 0.5
Numerical aperture	0.21 ± 0.01
Cladding diameter (μm)	125 ± 3
Coating diameter (μm)	245 ± 15
Proof test level (kpsi)	100

Design parameters

Operating wavelength (nm)	> 980
Coating material	Dual acrylate
Operating temperature range ($^{\circ}\text{C}$)	-40 to $+85$

Fan-in / Fan-out (optional)

Design wavelength (nm)	1550
Fiber type	SMF28 Hi 1060 Flex
Insertion loss @1550 nm (dB), per fan-in	< 1.5 < 2.0
PDL @1550 nm (dB), per fan-in	< 0.1
Crosstalk @1550 nm (dB)	> 60
Fiber length (m)	1.0
Connector type	FC, SC, LC. Angle or flat-polished

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