

Multimode Fiber Combiner

All fiber types, All wavelength



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Features

- High Efficiency
- High Power
- Wavelength Insensitivity
- Custom Configurations
- Low insertion loss

Applications

- Bio-Sensor
- Fiber Lasers
- Fiber Amplifiers
- Instrumentation



The MFCN Series Multimode Fiber Combiners fuse multiple input multimode fibers into a single output fiber with a larger core diameter and low loss. These combiners offer low insertion loss (0.2 dB per fiber joint), high power-handling capability, and a broad operating wavelength range limited only by the fiber's intrinsic transmission characteristics. The MFCN Series can combine a large amount of input fibers into a single output fiber with core diameters of up to 600 μm . The minimum required output fiber core diameter, D_{out} , is determined by the equation below, where D_{in} is the input fiber core diameter, and N is the number of input fibers: $[D_{out} > \sqrt{N D_{in}}]$. For example, a 200 μm output fiber can accommodate 13 input fibers with 50/125 μm diameter and 3 fibers with 105/125 μm dimensions. A 400 μm output fiber can accommodate 55 fibers with 50/125 μm dimensions, 13 fibers with 105/125 μm dimensions, and 3 fibers with a 200 μm core diameter.

Specifications

Parameter	Min	Typical	Max	Unit
Signal Central Wavelength	1064		2000	nm
Pump Central Wavelength	800		1000	nm
Pump Port Number (N)	2		7	number
Pump Coupling Efficiency	88	90	93	%
Signal Insertion Loss	0.7	0.5	0.3	dB
Polarization Extinction Ratio	18			dB
Maximum Power/Port		5	10	W
Optical Isolation	15	25	30	dB
Operating Temperature	-5		70	°C
Storage Temperature	-40		85	°C

Notes:

[1]. [2] Measured without connectors.

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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Mechanical Footprint Dimensions (mm)

*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Ordering Information (Part Number)

Prefix	Test Wavelength	Package	# Input Fiber	Input Fiber Core/Cladding	Input Fiber Length	Input Fiber Connector	Output Fiber Core	Output Fiber Length	Output Fiber Connector
MFCN-	980 = 9 1060 = 1 1550 = 5 2000 = 2 Special = 0	Standard = 3 Space ^[1] = A Special = 0	2 = 02 4 = 04 10 = 10 13 = 13 16 = 16 24 = 24 38 = 38	SMA 28 (0.22) = S 50/125 (0.22) = 5 62.5/125 (0.28) = 6 105/125 (0.22) = 1 200/240 (0.22) = 2 Special = 0	0.1m = 1 0.2m = 2 0.3m = 3 0.5m = 5 Special = 0	SMA = 1 FC/PC = 2 Non = N	200 (0.22) = 1 400 (0.22) = 2 600 (0.22) = 3	0.1m = 1 0.2m = 2 0.3m = 3 0.5m = 5 Special = 0	SMA = 1 FC/PC = 2 Non = N

[1]. Aerospace-grade package featuring an aluminum metal casing filled with a specially formulated RTV compound that is both vibration-resistant and thermally conductive, specifically designed to endure repeated thermal shock cycles from -45°C to 90°C and vacuum operation compatible.

Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters (<5 µm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the handling by expanding the core side at the fiber ends.