(N+1)x1 PM Fiber Pump Combiner

(N<7)

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Return to the Webpage

The LLCB series of (N+1)x1 fiber combiner is designed for high power fiber laser application. They combine N pump lasers and one signal channel into a laser fiber. The LLCB cover a wide range of fiber types.

Couplers are highly efficient in splitting light with little loss, about 0.2dB per joint, but incur significant losses when combining lights; for example, a 50/50 coupler produces a 50% loss to each beam when combined. For beam-combining applications, search Combiner.

Features

- High Pump Efficiency
- High Signal Transfer
- Wavelength Insensitivity
- Custom Configurations
- Low insertion loss

Applications

- Fiber Lasers
- Fiber Amplifiers
- Instrumentation

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]. Operation bandwidth is ± 25nm approximately at 1550nm.

[2] Measured without connectors. For other wavelength, please contact us.

[3] Defined at 1310nm/1550nm. For the shorter wavelength, the handling power may be reduced, please contact us for more information.

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]:

Rev 07/17/25

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Mechanical Footprint Dimensions (mm)

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

Ordering Information

	☐	☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**N**	**Wavelength**	**Package**	**Input Fiber Core/Cladding**	**Input Fiber Type**	**Pump Fiber NA**	**Pump Fiber Core/Cladding**	**Output Fiber Core/Cladding**	**Output Fiber Type**
LLCB-	2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7	980 = 9 1060 = 1 1550 = 5 2000 = 2 Special = 0	Standard = 3 Aerospace [1] = A Special = 0	None = N PM980 = 1 PM6/125 = 2 PM10/125 = 3 PM12/125 = 4 PM15/125 = 5 PM20/125 = 6 PM25/125 = 7 PM20/200 = 8 PM30/250 = 9 PM20/400 = W	Regular = 1 DCF = 2 TCF = 3	0.15 = 1 0.22 = 2	105/125 = 1 200/220 = 2 220/242 = 3	PM980 = 1 PM6/125 = 2 PM10/125 = 3 PM12/125 = 4 PM15/125 = 5 PM20/125 = 6 PM25/125 = 7 PM20/200 = 8 PM30/250 = 9 PM20/400 = W	Regular =1 DCF = 2 TCF = 3

[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.

[2]. Standard Fiber Length = 0.7

[3]. Special package required for high humidity operation

[4]. Detailed fiber information must be written on PO

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 how handling by expanding the core side at the fiber ends.