

1x2 / 2x2 50/125 Multi-Mode Broadband Fiber Optic Coupler/Splitter



DATASHEET

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Features

- Wavelength Independent
- Low Insertion Loss
- Low PDL
- Highly Stable & Reliable
- Ultra Low Cost

Applications

- Optical communications
- FTTX
- Local Access Network (LAN)
- Fiberoptic Instrumentation

The FC Series fiber optic coupler is based on Agiltron's fused biconical taper technology and compact packaging structure. It features good uniformity, low excess loss and very low polarization sensitivity. The device is ideal for splitting or combining light with exceptional performance over a wide wavelength range.

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.

Specifications

Parameter		Min	Typical				Max	Unit
Splitting Ratio		5/95 to 50/50						
Central Wavelength			1310/1550/2000		850			nm
Bandwidth		± 20						nm
			Premium	Grade A	Premium	Grade A		
Excess Loss			0.3	1.0	0.6	1.0		dB
Insertion Loss	50/50		3.5/3.5	4.5/4.5	3.7/3.7	5.5/5.5		dB
	40/60		4.6/2.6	5.6/3.7	5.0/3.0	6.6/4.7		dB
	30/70		5.9/1.9	7.0/2.9	6.2/2.4	8.0/3.9		dB
	20/80		7.8/1.2	9.0/2.3	8.1/1.7	10.0/3.2		dB
	10/90		11.2/0.7	12.8/1.8	11.4/1.2	13.5/2.7		dB
	5/95		15.0/0.5	16.8/1.5	14.3/1.0	17.5/2.4		dB
Uniformity			0.5	0.8	0.5	0.8		dB
Optical Power Handling			5					W
Operating Temperature		-40					85	°C
Storage Temperature		-50					85	°C
Package Dimension *		Bare fiber: (ø)3x(L)54						
		900um loose tube: (ø)3x(L)70						mm
		900um loose tube / 2mm / 3mm Cable: (L)90x(W)16x(H)9						

Notes:

* Other package options available on request

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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Ordering Information (Part Number)

Prefix	Port	Wavelength	Grade	Package	Splitting Ratio	Fiber Type	Fiber Cover	Fiber Length	Connector ^[2]
FCM5-	1x2 = 1 2x2 = 2	1550nm = 4 1310nm = 7 850nm = A 2000nm = P Special = 0	P Grade = P A Grade = A Aerospace ^[1] = A	54(L) = 1 70(L) = 2 90(L) = 3 Special = 0	05/95 = 3 10/90 = 4 20/80 = 5 30/70 = 6 40/60 = 7 50/50 = 8 Special = 0	50/125μm = 1 Special = 0	900μm tube = 2 250μm bare = 1 2mm cable = 3 3mm cable = 4 Special = 0	0.5m = 1 0.75m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 FC/UPC = 4 SC/SPC = 5 SC/APC = 6 SC/UPC = 7 ST = 8 MU = 9 LC/PC = B LC/APC = A LC/UPC = U Special = 0

[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]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

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.