Double-Clad Fiber Coupler/Splitter 680nm to 980nm

(efficient collecting back reflection lights)

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Agiltron's double-clad 2x2 fiber coupler combines a double-clad fiber (single mode core surrounded by a multimode inner cladding) with a large core multimode fiber. Light in the single mode core of the double-clad fiber (DCF) is guided through the coupler with little loss (≤0.5 dB). Light in the multimode inner cladding of the DCF is transferred to the output multimode fiber with ≥60% transmission.

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

- Single Mode Core Guide
- Multimode Reflection Guide
- Low Loss Transmission
- High Efficient Collection
- Versatile

Applications

- LiDAR
- OCT
- Fluorescence Imagine
- Confocal Microscopy
- Endoscopy

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	680	780	980	nm
Single Mode Core Insertion Loss [1]		0.3	0.6	dB
Multimode Cladding Transfer [2]		60	70	%
Optical Power Handling			100	mW
Core Diameter (NA=0.12)		4.1		µm
Inner Cladding Diameter (NA=0.19)		26		µm
Collection Fiber Diameter (NA=0.22)		200		µm
Operating Temperature	-40		70	°C
Storage Temperature	-40		85	°C

Notes:

[1]. Exclude connectors and fiber loss, the loss may degrade over time due to shortwave radiation

[2]. Port 2 to 3. Exclude connectors and the water absorption region around 1383 nm

RoHS Reach

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 12/25/25

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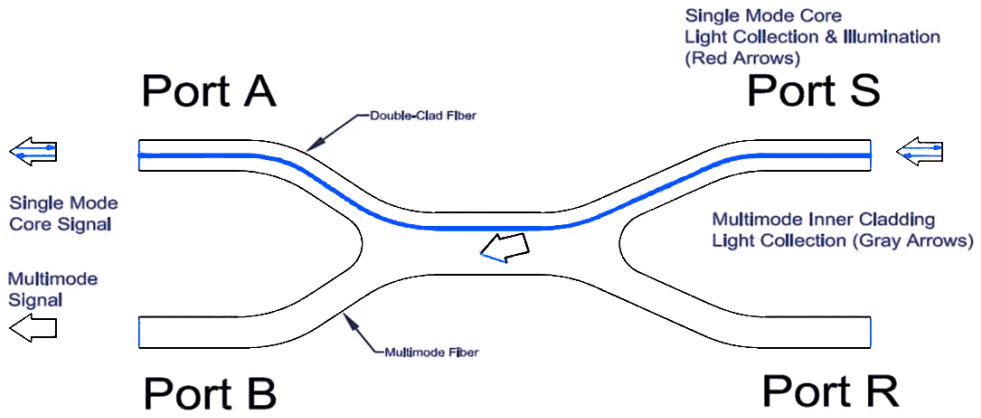
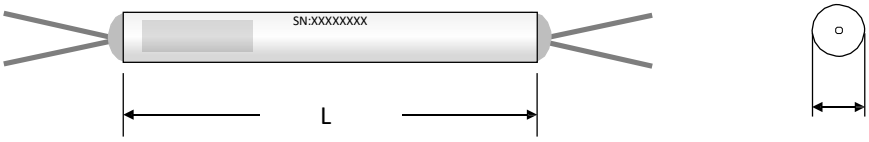
Function Diagram



Device Dimension



L: 60mm for 250μm fiber
L: 76mm for 900μm fiber

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Ordering Information

	☐	2	4 2	☐	☐	☐	☐	☐
Prefix	**Center Wavelength**	**Collect Fiber**	**Double Cladding**	**Pigtail Style**	**Fiber Length**	**Connector Input**	**Connector Output**	**Connector Signal**
DCFC-	1030 = 1 1310 = 3 780 = 7 530 = 5 Special = 0	200 µm NA=0.22 Special = 0	Core=4.1 µm, NA=0.12 Cladding=26 µm, NA=0.19 Special = 00	900um Jacket = 2 Special = 0	0.25m = 1 0.5m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3	None = 1 FC/PC = 2 FC/APC = 3 SMA = 4	None = 1 FC/PC = 2 FC/APC = 3 SMA = 4

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.

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