

SINGLE-MODE COUPLERS

Fiber optic couplers are used to split light from one fiber into two with low excess loss and low backreflection. Couplers can also combine signals from two fibers into one. In larger distribution schemes, couplers are cascaded creating m x n (m input and n output) configurations. These components are generally used for signal distribution, light monitoring, and measurement applications.

TECH NOTE #7

POWER LOSS

A 1 x 2 coupler can combine the signal from two optical fibers into one, but not the power. In fact each leg of the 1 x 2 coupler exhibits the same loss regardless of the direction of light propagation.

Wave Optics' couplers. We offer 1 x 2 and 2 x 2 fused couplers for standard single-mode fibers as well as for shorter wavelength specialty fibers. Our couplers are available in bare fiber and ruggedized packaging. These passive devices are manufactured using a fused biconical taper method. In this process, the fibers are twisted, heated, and pulled. The pulling continues, with the output fibers actively monitored, until the correct split ratio is achieved. The fused fibers are then environmentally sealed.

Wave Optics' fused single-mode couplers exhibit superior thermal, shock, and vibration characteristics as well as a wide operating range.

Because the fibers are never broken in our fused couplers, the backreflection remains very low (<-55 dB) making them ideal for backreflection measurements (see page 16).

2 x 2 Single-mode Coupler,
Miniature Package

Single-mode Coupler Specifications (50/50 coupling ratio)

WAVELENGTH, nm	633	830	980	1300	1550	1310/1550 DUAL-WINDOW
Operating wavelength, nm	633 ± 20	830 ± 20	980 ± 20	1310 ± 50	1550 ± 50	1310, 1550 ± 50
Insertion loss*, dB, max	3.6	3.6	3.6	3.6	3.6	4.0
Uniformity, dB, max	1	1	1	0.9	0.9	0.9
Directivity**, dB, min	55	55	55	55	55	55
Polarization sensitivity, dB	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1
Thermal stability, dB	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1
Temperature	All: -20 to +70°C					
Port configuration	1x2, 2x2	1x2, 2x2	1x2, 2x2	1x2, 2x2	1x2, 2x2	1x2, 2x2
Fiber Code (page 7)	12	13	14	15	15	15

Packaging:

Miniature (length, OD) All: 65 x 4.8 mm OD
Ruggedized (L x W x H) All: 100 x 12 x 8 mm

* for 1x2 and 2x2 port configurations. ** 65 dB min for 2x2 port configurations.

Ordering Information: Single-mode Couplers, 1 x 2, 2 x 2

