# Phoenix Photonics

In-fiber LP$_{01}$-LP$_{11}$ Mode Coupler

Long Period Grating (LPG) Mode Converter

Product Overview

The Phoenix Photonics in-fiber LP01-LP11 mode coupler is for use with dual mode optical fiber. The mode coupling is achieved by a Long Period Grating (LPG). The principle of operation is to create a periodic mode coupling in the fiber at the beat length between the two modes. Phoenix creates the coupling using the electric arc technique. The grating created in the fiber will couple power between the LP01 mode and the LP11 mode when the period is matched to the beat length between the modes at the central operational wavelength.

Available at center wavelengths in C&L band, the center wavelength, output mode isolation and bandwidth is defined by the grating period and number of coupling points. The converter can be used to convert LP01 to LP11 or conversely to couple LP11 to LP01 and can be used in both mode multiplexers and demultiplexers. Higher order mode converters for 4-mode fibers are available on request.
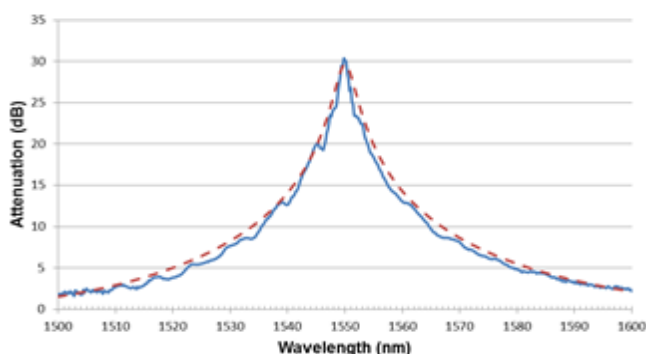
Typical wavelength response of LP01 transmission for an LPG. Solid curve shows experimental results and dashed curve theoretical curve with the same number of coupling points and coupling coefficient.

Features & Applications

FEATURES:

- Fixed coupling between LP01 and LP11
- Compact design
- Custom fiber design
- High mode isolation
- Low loss

EXAMPLE APPLICATIONS

- LP01 to LP11 mode conversion and LP11 to LP01 conversion
- Mode division multiplexing/demultiplexing
- Dual mode fiber component test
- Dual mode fiber sensors

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SPECIFICATION	Units	
Center wavelength range	nm	1520 - 1620
Bandwidth (3dB)	nm	5nm to 30nm (depending on number of coupling points)
Insertion Loss[1]	dB	<0.5
Isolation (output mode to input mode)	dB	>-20
Return Loss[1]	dB	>60
Operating Temperature Range	^{0}C	0 to 50
Storage Temperature	^{0}C	-40 to +85

Dimensions:

All dimensions are approximate and may vary slightly.
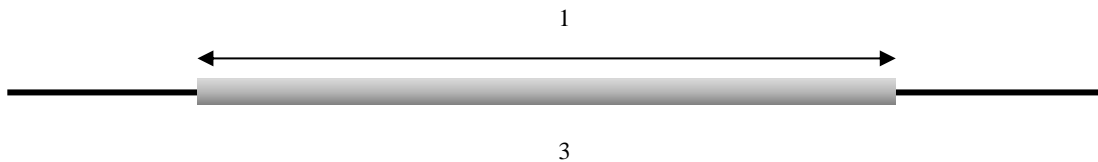
Ordering Information

Mode Coupler:

| F | L | P | G |

- Centre Wavelength nm

Connectors:
1 - FC
2 - SC

Polish:
1 – SPC
2 – APC
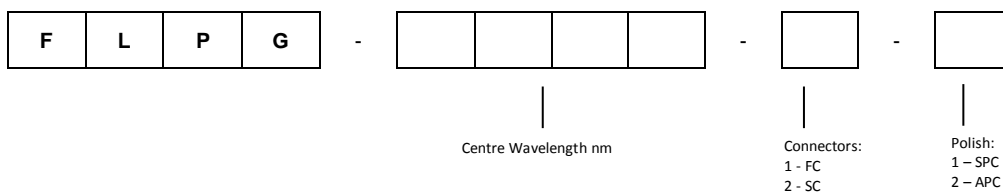
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