

# Fiber Fabry-Perot Interferometer | FFP-I



## Description

Micron Optics' FFP-I, Fiber Fabry-Perot Interferometer family of products is based on a fixed interferometer design with smooth, uniformly spaced transmission peaks.

### FFPI

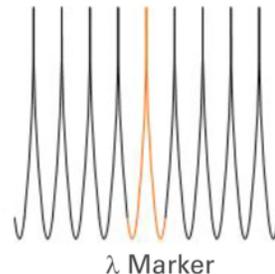
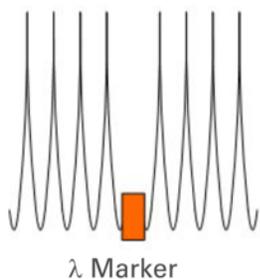
The FFP-I consists of a lensless, plane Fabry-Perot Interferometer with a single-mode optical fiber waveguide between two highly reflective multilayer mirrors. The FFP-I is manufactured directly with optical fibers so no alignment or mode-matching is required. The free spectral range (FSR) may be manufactured exactly to customer specifications and a TEC package is available for thermal stability and minor adjustments of center bandpass frequency.

A smooth, uniformly spaced  $\lambda$  reference with or without a wavelength marker.

### *picoWave*<sup>®</sup>

The *picoWave*<sup>®</sup> is Micron Optics' patented multi-wavelength reference that enables real time wavelength calibration to picometer accuracy. Combining the uniform frequency spacing of the FFP-I, a wavelength marker of a Fiber Bragg Grating, and a built-in TEC for thermal stability, the *picoWave*<sup>®</sup> makes an ideal calibrated wavelength reference. The FFP-I and FBG can be configured in Series or in Parallel (see diagrams below).

*picoWave*<sup>®</sup> (Serial Configuration)    *picoWave*<sup>®</sup> (Parallel Configuration)

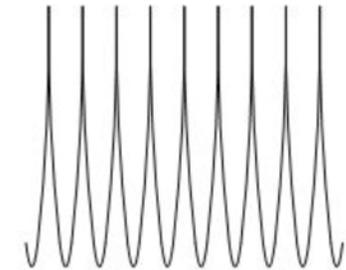


## Key Features

- Spectrum Sliced Source
- ITU Filter
- Calibrated Wavelength Reference
- Laser Stabilization
- WDM Emulation
- Optical Sensing



FFP-I, FFP-ITU, *picoWave*<sup>®</sup>



FFP-I

## OEM Applications

- Optical Performance Monitoring
- Spectrum Analysis
- Tunable Optical Noise Filtering
- Tunable Channel Drop for Ultra DWDM
- Tunable Sources
- Optical Sensing

# Fiber Fabry-Perot Interferometer | FFP-I



Optical Properties	FFP-I	<i>picoWave</i> <sup>®</sup>
Operating wavelength range <sup>1</sup>	1260 - 1620 nm	
Free spectral range	0.01 to 10,000 GHz	10 - 100 GHz
Finesse	10, 40, 100, 200, 500, 1000, 2000	10
Bandwidth, (FWHM or 3dB)	FSR/Finesse	
Insertion loss <sup>2</sup>	< 3 dB	
Maximum input power <sup>3</sup>	100 mW (for finesse < 200)	
Thermal Coefficient	~ 1.6 GHz/C	n/a
Wavelength marker placement	n/a	User defined

## Electrical Properties (optional for FFP-I with FSR > 10 GHz, standard for *picoWave*<sup>®</sup>)

TEC	Melcor Epoxy Filled 04OT2.0-30-F2-EP	
TEC drive current	< 2 A	
TEC $Q_{max}$ ( $T_H = 25$ °C)	< 4 W	
TEC $V_{max}$ ( $T_H = 25$ °C)	< 3.4 V	
TEC $\Delta T_{max}$ ( $T_H = 25$ °C)	67 C	
Thermistor	10 K $\Omega$ NTC	
Thermal tuning speed	1 GHz/sec, typical	
Stability	+/- 0.125 GHz, laboratory conditions	
FSR variation over tuning range	0.05% of FSR	

## Special OEM Options

Contact Micron Optics

**Wavelength Range:** 780 - 1640 nm

**Finesse:** up to 4,000

**Bandwidth:** from KHz to GHz

**ITU Tolerance:** from 0.5 to 0.05%

## Ordering Information

FFP-I <b>www</b> - <b>bbb</b> <b>u</b> <b>fff</b> - <b>ii</b> - <b>ccc</b>		
<b>www</b>	1310	(1260-1360 nm)
	1550	(1520-1570 nm)
	1420	(1360-1480 nm)
	1600	(1570-1620 nm)
	1500	(1480-1520 nm)
	1580	(1520-1620 nm)
<b>bbb</b>	Specify bandwidth For example, 040 = 40 GHz	
	Bandwidth unit	
<b>u</b>	G	GHz
	M	MHz
	K	KHz
<b>fff</b>	Specify finesse For example, 0650 = finesse of 650	
	<b>ii</b>	Specify insertion loss For example, 2.5 = 2.5 dB loss
<b>ccc</b>		Unconnectorized
	061	FC/APC (fusion spliced)
	063	SC/APC (fusion spliced)
	065	FC/APC (connectorized)
	080	TEC Equipped

## Notes

- Each useful spectral range defined by mirror pass band.
- High resolution (BW < 2 GHz) FFP-Is are generally polarization sensitive. However, polarization properties are stable and can be adjusted by a polarization controller at the FFP-I input.
- Maximum input power level depends on finesse value.