

## Applications

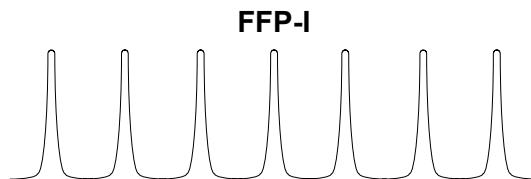
- Spectrum Sliced Source
- Calibrated Wavelength Reference
- Laser Stabilization
- WDM Emulation
- Optical Sensing

## Features

- Uniformly spaced transmission peaks
- Small footprint
- Vibration and shock resistant
- Low loss
- No alignment required

## Description

The **Micron Optics FFP-I**, Fiber Fabry-Perot Interferometer family of products is based on a fixed interferometer design with smooth, uniformly spaced transmission peaks. 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 with fiber pigtails so no alignment or mode-matching is required. The distances between peaks (FSR) may be fit exactly to customer specifications and a TEC package is available for thermal stability and minor adjustments of the bandpass frequency or wavelength.



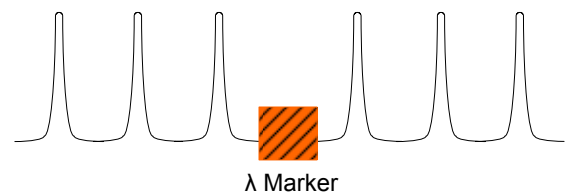
## TEC Controller

The Micron Optics *picoWave*<sup>®</sup> Controller is designed to be used in conjunction with Micron Optics' *picoWave*<sup>®</sup>, FFP-ITU and Fiber Fabry-Perot Interferometer (FFP-I), where temperature stability is critical for wavelength reference stability.

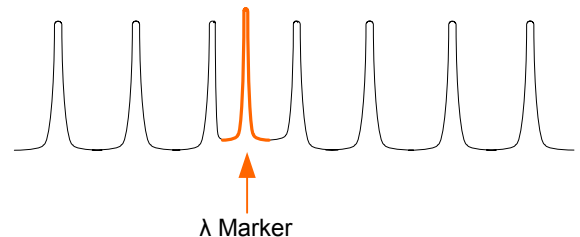
## *picoWave*<sup>®</sup>

The *picoWave*<sup>®</sup> is Micron Optics' patented multi-wavelength reference that enables real time wavelength calibration to picometer accuracy. Combining the uniform 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* (Serial Configuration)



### *picoWave* (Parallel Configuration)



**Specifications**

**Operating Wavelength Range<sup>1</sup>**

Typical Spectral Ranges (nm) :	800, 900, 1060, 1310 or 1550
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**Optical: FFP-I**

Free Spectral Range (fixed FSR but selectable within this range)	0.01 – 10,000 GHz
Finesse	5, 10, 40, 100, 150, 200, 650, 1000, 2000, 4000
Insertion Loss <sup>2</sup> (typical)	3 dB
Thermal Coefficient	~1.6 GHz/°C
Input Power <sup>3</sup>	< 100 mW (for F < 200)

**Optical: *picoWave*<sup>®</sup>**

Free Spectral Range	10 to 200 GHz
Finesse	5, 10
Insertion Loss (typical)	3 dB
Wavelength Marker Location	User Defined

**Electrical** (optional for FFP-I with BW >10 GHz, standard for *picoWave*)

TEC	Melcor Epoxy Filled 04OT2.0-30-F2-EP
TEC Drive Current	<2 A
TEC Qmax (T <sub>H</sub> = 25°C)	<4 W
TEC Vmax (T <sub>H</sub> = 25°C)	<3.6 V
TEC ΔTmax (T <sub>H</sub> = 25°C)	67° C
Thermistor	10 Ω NTC
Thermal Tuning Wavelength Range (0 – 60 °C)	98 GHz
Thermal Tuning Wavelength Speed (typical)	10 GHz/sec
Wavelength Stability (0 – 60 °C) <sup>4</sup>	+/- 5% of FSR
Wavelength Stability (laboratory conditions) <sup>4</sup>	+/- 0.125 GHz
Tuning Resolution	+/- 0.625 GHz
FSR Variation over Tuning Range	0.05% of FSR

<sup>1</sup> These are standard center wavelengths with useful spectral range defined by mirror pass band.  
<sup>2</sup> 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.  
<sup>3</sup> Maximum input power level depends on finesse value.  
<sup>4</sup> Using Micron Optics *picoWave* Controller.

**Options**

- 020 PM Fiber\*
- 030 Low Variation Bandwidth\*
- 060 FC/SPC Connectors (Fusion Spliced)
- 061 FC/APC Connectors (Fusion Spliced)
- 062 SC/SPC Connectors (Fusion Spliced)
- 063 SC/APC Connectors (Fusion Spliced)
- 065 FC/APC Connectors (Connectorized)
- 069 Other Connectors
- 080 TEC Equipped\*

\* Please verify specifications with Micron Optics.

**Part Number**

FFP-I  $\lambda\lambda\lambda\lambda$  -  $bbb$ uffff -  $l.l$

**Wavelength Band**

- Specify λ Center (ie: 0800 = 800nm)

**Bandwidth**

- Specify bandwidth Example: 010 = 10 GHz

**Bandwidth Unit**

- G – GHz
- M – MHz
- K – KHz

**Finesse**

- Specify finesse Example: 0200 = Finesse of 200

**Insertion Loss**

- Specify loss Example: 3.0 = 3.0 dB loss