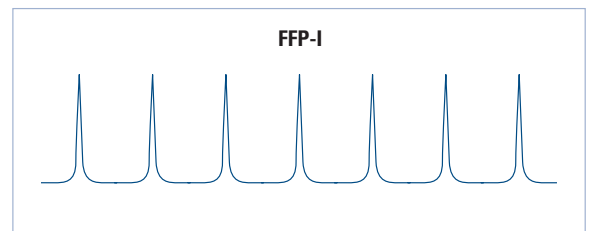


Figure 1



### Applications

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

### Features

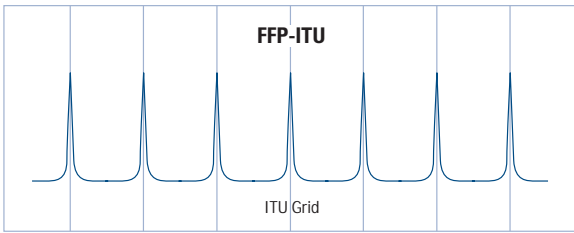
- Uniformly Spaced Transmission Peaks
- Small Footprint
- Vibration and Shock Resistant
- Low Loss
- No Alignment Required

### Description

**FFP-I** The Fiber Fabry-Perot Interferometer (FFP-I) 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.

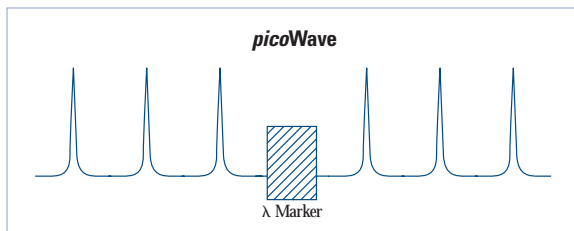
# FFP-I | Fiber Fabry-Perot Interferometer

Figure 2



**FFP-ITU** An FFP-ITU is a specially constructed FFP-I that aligns to the International Telecommunications Union (ITU) grid with 25, 50 or 100 GHz spacing. Grid spacings are available with tolerances of +/-0.5%, +/-0.2%, +/-0.1% or +/-0.05% for more exact alignment with the ITU grid. The FFP-ITU has a built-in thermo electric controller (TEC) package for thermal stability, and can be controlled by Micron Optics' TEC controller. Also, a complete Micron Optics ITU WDM Emulator is available that includes an ASE source as well as two FFP-ITU filters and two TEC controllers.

Figure 3



**picoWave®** The *picoWave®* 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®* makes an ideal calibrated wavelength reference.

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

## Options

- 020 PM Fiber\*
- 060 FC/SPC Connectors
- 061 FC/APC Connectors
- 062 SC/SPC Connectors
- 063 SC/APC Connectors
- 064 Other Connectors
- 080 TEC Equipped

## Tolerances

### FFP-ITU FSR Tolerance Options

- 0050 +/- 0.5%
- 0020 +/- 0.2%
- 0010 +/- 0.1%
- 0005 +/- 0.05%

## Part Number

FFP-I  $\lambda\lambda\lambda\lambda$ -bbbufff-I.I  
 FFP-ITU

### Wavelength Band

- 1500 - S Band
- 1550 - C Band
- 1600 - L Band

### Bandwidth

- Specify bandwidth
- Example:  
040-40 GHz Bandwidth

### 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

\*Please verify specifications with Micron Optics.

C

components

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

S-Band	1480 - 1520 nm
C-Band	1520 - 1570 nm
L-Band	1570 - 1620 nm

**Optical: FFP-I**

Free Spectral Range (fixed FSR but selectable within this range)	0.01 - 10,000 GHz (0.08 pm - 80 nm)
Finesse	10, 40, 100, 150, 200, 650, 1000
Insertion Loss <sup>2</sup> (typical)	3 dB
Thermal Coefficient	~13 pm/C
Input Power <sup>3</sup>	< 100 mW (for F < 200)

**Optical: FFP-ITU**

Free Spectral Range	25, 50 or 100 GHz (0.2, 0.4 or 0.8 nm)
Finesse	40
Insertion Loss (typical)	3 dB
ITU Tolerance Options	0.5%, 0.2%, 0.1% or 0.05%

**Optical: *picoWave*<sup>®</sup>**

Free Spectral Range	100 or 200 GHz (0.8 or 1.6 nm)
Finesse	10
Insertion Loss (typical)	3 dB
Wavelength Marker Location	1535 or 1567 nm

**Electrical** (optional for FFPI, standard for ITU and *picoWave*)

TEC	Melcor Epoxy Filled 04OT2.0-30-F2-EP
TEC Drive Current	< 2 A
TEC Q <sub>max</sub> (T <sub>H</sub> =25°C)	< 4 W
TEC V <sub>max</sub> (T <sub>H</sub> =25°C)	< 3.6 V
TEC ΔT <sub>max</sub> (T <sub>H</sub> =25°C)	67°C
Thermistor	10 kΩ 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>	+/- 1.0 pm (+/- 0.125 GHz)
Tuning Resolution	+/- 5 pm
FSR Variation over Tuning Range	0.05% of FSR

**Mechanical**

Dimensions (FSR > 4 GHz)	12.7 x 14.3 x 61 mm
Dimensions (1 GHz ≤ FSR < 4 GHz)	12.7 x 14.3 x 152.5 mm
Dimensions (0.01 GHz ≤ FSR < 1 GHz)	12.7 x 101.6 x 101.6 mm
Mounting Holes	(4) #1-72 UNF x 0.16 inch deep
Pigtail Jacket - loose	900 μm buffer tubing
Pigtail Length	> 1 m
Connector	see options

## Notes:

- (1.) These are standard center wavelengths with useful spectral range defined by mirror pass band.
- (2.) High resolution (<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.
- (3.) Maximum input power level depends on finesse value.
- (4.) Using Micron Optics *picoWave* controller.

