

# Fiber Fabry-Perot Tunable Filter | FFP-TF

## Applications

- Optical Performance Monitoring
- Spectrum Analysis
- Tunable Optical Noise Filter
- Tunable Optical Add/Drop
- Tunable Sources
- Optical Sensing

## Features

- High resolution for precise spectrum analysis
- Large dynamic range permits accurate measurements
- Efficient low loss design
- Tunable across S, C & L bands
- Wide ranges of user-specified parameters
- Thermally stable
- Vibration and shock resistant
- Small footprint
- Low power requirements
- Proven reliability, less than 80 FITS
- Qualified for Telcordia GR 2883
- All-fiber platform
- Compact for OEM application

## Description

The Micron Optics Fiber Fabry-Perot (FFP) tunable filter is a specialized filter based on the all-fiber Fabry-Perot etalon technology. The FFP tunable filter passes wavelengths that are equal to integer fractions of the cavity (etalon) length; all other wavelengths are attenuated according to the Airy function.

The key to the elegant design of the FFP tunable filter is the lensless fiber construction. There are no collimating optics or lenses, thus the FFP tunable filter achieves high finesse and maintains a low loss transmission profile. Micron Optics has eliminated the pitfalls of other Fabry-Perot component technologies, including misalignment, environmental sensitivity, and extraneous modes.



The all-fiber FFP tunable filter follows the Airy function so closely that engineers can design it into the opto-electronic systems with a high degree of confidence that it will provide results very close to the theoretical mathematical model. Low loss, high isolation, and accurate power or wavelength measurements are just a few of the characteristics resulting from an ideal Airy function.

Micron Optics has provided thousands of FFP tunable filters for a large variety of applications. For more than a decade, the Micron Optics Tunable Filter has proven its capabilities in WDM applications, and has satisfied the ever-increasing performance demands of the telecom market including Optical Network Monitoring, Signal Conditioning and Dynamic Networking and Transport. Additionally, the filter continually proves itself as the key enabling technology for Micron Optics line of world-class test instruments.

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## Specifications

## FFP-TF

### Optical Properties

Operating Wavelength Range <sup>1</sup>	800-1200 nm
	O-Band 1260 - 1360 nm    C-Band 1520 - 1570 nm
	E-Band 1360 - 1480 nm    L-Band 1570 - 1620 nm
	S-Band 1480 - 1520 nm    C & L Band 1520 - 1620 nm
Free Spectral Range (fixed FSR but selectable within this range)	10 to 45,000 GHz (Ex. 80 pm to 360 nm at 1550 nm)
Standard Finesse Values (nominal)	10, 40, 100, 200, 500,
(For non-standard finesse values up to 16,000 - Contact Micron Optics)	650, 1000, 2000, 4000
3dB Bandwidth	Equals desired FSR/Finesse
Insertion Loss <sup>2</sup>	<2.5 dB
Polarization Dependent Loss <sup>2</sup>	<0.2 dB
Input Power (Maximum) <sup>3</sup>	< 100mW (for finesse <200)
Glitch Free Dynamic Range (GFDR)	> 15 dB

### Electrical Properties

Tuning Voltage/FSR	< 12 V
Capacitance	< 3.0 μF
Cycling Speed Over 1 FSR <sup>4</sup>	2500 Hz (max)
Maximum Tuning Voltage	70 V

### Mechanical Properties

Dimensions	12.7 mm x 14.3 mm x 57.2 mm
Weight	28 g
Mounting Holes	(4) #1-72 UNF x 0.16 inch deep
Electrical Terminals	DIP Pins Standard, Side Terminals Optional
Cable Jacket	(loose) 900 μm buffer tubing
Cable Length	>1 m
Connector	See options

### Environmental Properties <sup>2,5</sup>

Operating Temperature	-20° to 80°C
Δ Insertion Loss/Operating Temperature (dependent on FSR)	± 0.5 dB
Δ Insertion Loss/Vibration	< 0.5 dB

#### Notes:

1. Specifications are dependent on filter configuration. Please contact Micron Optics for final specifications.
2. Typical value; final value is dependent on Free Spectral Range and Finesse.
3. Maximum input power level depends on finesse value. Generally, the higher the finesse, the lower the maximum input power level.
4. Noted cycling speeds are recommended maximums. Experimental rates of <100 KHz have been achieved on the FFP-TF version.
5. These parameters are not available for all possible configurations. Please contact Micron Optics for details.

## Ordering Information

FFP-TF - **www** - **bbb**fff - **i.i** (Example: FFP-TF - 1550 - 10G200-2.0)

<b>www</b> : Wavelength Band Specify X Center (i.e: 0800 = 800nm)	<b>bbb</b> : Bandwidth Specify bandwidth (i.e: 010 = 10GHz)	<b>u</b> : Bandwidth Unit <b>G</b> GHz <b>M</b> MHz <b>K</b> KHz	<b>fff</b> : Finesse Specify finesse (i.e: 200=Finesse of 200)	<b>i.i</b> : Insertion Loss Specify Loss (i.e: 2.0 = 2dB)
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## Options

- 020 PM Fiber\* (Standard config. is DIP Pins)    060 FC/SPC Connectors (Fusion Spliced)    062 SC/SPC Connectors (Fusion Spliced)    065 FC/APC Connectors (Connectorized)  
 030 Low Variation Bandwidth\*    061 FC/APC Connectors (Fusion Spliced)    063 SC/APC Connectors (Fusion Spliced)    070 Side Terminal Configuration

\*Please verify specifications with Micron Optics.



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