可変FPフィルタ &コントローラー

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MicronOptics社製 可変FPフィルタ

MicronOptics社では、独自の技術で様々な仕様の可変ファブリペロー フィルタを長年、開発、製造しており、信頼性が高く、低損失、非常に 性能の高い製品をご提供しています。

- ・オールファイバ構造で、レンズやミラーを使用しておりません。
 ・効率の高い低損失設計で、高いフィネス、分解能、耐入射光レベルを
- 実現
- 高速な応答速度

- ・広いダイナミックレンジで非常に正確な計測が可能です。
 ・信号用フィルタとしてバンド幅のカスタマイズ対応
 ・理想的なエアリー関数で理論モデルに非常に近い結果を得られます。





製品ラインアップ: • FFP-TF2 第二世代TF2モデル(Telcorida GR2883準拠) 16,000 Finesseまで対応 スキャンレート800Hzまで対応

• FFP-TF2 9000 広い可変レンジ(1280-1620nm) 正確なスペクトラム解析に必要な高い分解能 広いダイナミックレンジで正確な計測を実現

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MicronOptics社製 可変FPフィルタ

・FFP-TF 50KHzまでの高速アプリケーションに最適(OCT) 非常に高い信頼性と性能を実現 KHzスキャンまで対応

 FFP-SI Long cavity長で、小さいFSR 独自の技術で<10KHzまでのバンド幅を実現

・FFP-I & PicoWave 波長リファレンシングで滑らかで均一間隔の伝送ピークを実現 ピコウェーブは波長マーカーとTECを内蔵

・フィルタコントローラ
 全てのFFPシリーズの制御が可能
 スキャン、マニュアル可変が可能
 ビルトインディテクタでフィルタロックが可能

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An all-fiber Fabry-Perot

super-cavity

in a robust, fast tuning

Telcordia qualified

package.



Description

Micron Optics' patented FFP-TF all-fiber Fabry-Perot (FFP) Tunable Filter achieves high finesse and maintains low loss in a rugged package.

The key to the simple and elegant design of the FFP tunable filter is the lensless fiber construction. There are no collimating optics or lenses, thus with the FFP

tunable filter 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 OEM systems knowing that it will provide results very close to the theoretical mathematical model.

For more than two decades, the Micron Optics FFP-TF 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 world-class test instruments.



All-fiber platform High resolution and low loss design Super-cavity finesse Vibration and shock resistant Thermally stable Fast scanning permits accurate measurements Ideal for OEM applications Customizable free spectral range, finesse and bandwidth Tunable across S, C & L bands Small footprint Low power requirements Telcordia GR 2883 qualified Proven reliability with less than 80 FITS



OEM Applications

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







Optical Properties ¹		FFP-TF2		Specia Contact I	I OEM Options Micron Optics
Operating wavelength range	O-Band 1260-1360 nm C-Band 1520-1570 nm	E-Band 1360-1480 nm L-Band 1570-1620 nm Ext L-Band 1570-1640 nm	S-Band 1480-1520 nm C&L Band 1520-1620 nm Ext C&L Band 1520-1640 nm	Wavelen Finesse:	gth Range : 800 - 16 : up to 16,000
Free spectral range ²	10 to 2	5,000 GHz (80 pm to 200 nm @	⊉ 1550 nm)	Bandwid	Ith: from KHz to GHz
Finesse	10, 40, 10	00, 200, 500, 650, 1000, 2000,	4000, 10,000	Ordori	na Information
Bandwidth, (FWHM or 3dB)		FSR/Finesse			
Insertion loss		< 2.5 dB		FFP-IF	1310 (1260-1360
Polarization dependent loss		< 0.2 dB			1550 (1200-1300 1550 (1520-1570 1420 (1360-1480
Input power		100 mW (for finesse = 200)		wwww	1600 (1570-1620 1500 (1480-1520
Glitch free dynamic range		> 15 dB			1580 (1520-1620
Electrical Properties				bbb	Specify bandwidth For example, 040 =
Tuning voltage/FSR		< 18 V			Bandwidth unit
Tuning rate/FSR		2500 Hz		u	M MHz K KHz
Capacitance		< 3 uF			Specify finesse
Tuning voltage, maximum		70 V		ffff	For example, 0650
Mechanical Properties				ii	Specify insertion los For example, 2.5 =
Dimension; Weight	1	2.7 mm x 14.3 mm x 57.2 mm;	28 g		Unconnect
Cable jacket		900 um loose buffer tubing		ccc	061 FC/APC (fu 063 SC/APC (fu
Cable length		> 1 m			065 FC/APC (co 070 Side termin
Environmental Properties ⁴				Notes	
Operating temperature		-20 to 80 C		1 Specifica contact /	ations are dependent on filter Micron Optics for final specif
Change in voltage		< 18 V		2 FSRs are	e fixed but customizable with
Change in insertion loss		< 0.5 dB		3 Captures	s effects of long term use over



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Wavelength	Range:	800 -	1620 nm
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-TF2	wwww	- <u>bbb u ffff</u> - <u>ii</u> - <u>ccc</u>
vw	1310 1550 1420 1600 1500 1580	(1260-1360 nm) (1520-1570 nm) (1360-1480 nm) (1570-1620 nm) (1480-1520 nm) (1520-1620 nm)
b	Specify For exa	bandwidth mple, 040 = 40 GHz
	Bandwi G M K	dth unit GHz MHz KHz
f	Specify For exa	finesse mple, 0650 = finesse of 650
	Specify For exa	insertion loss mple, 2.5 = 2.5 dB loss
с	061 063 065 070	Unconnectorized FC/APC (fusion spliced) SC/APC (fusion spliced) FC/APC (connectorized) Side terminal configuration

configuration. Please ations.

- these ranges.
- full operating
- 4 Complies to Telcordia GR 2883.



Description

Micron Optics' patented FFP-TF all-fiber Fabry-Perot (FFP) Tunable Filter achieves high finesse and maintains low loss in a rugged package.

The key to the simple and elegant design of the FFP tunable filter is the lensless fiber construction. There are no collimating optics or lenses, thus the FFP tunable filter 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 OEM systems knowing that it will provide results very close to the theoretical mathematical model.

The FFP-TF2 design provides improved etalon alignment for stable long-term, high reliability, and Telcordia-qualified performance at a more attractive

price. Several standard low-cost configurations are readily available for quick delivery. Custom high performance multi-band configurations are also available for special uses including sensing, biotech, and scientific applications.



Example FFP-TF Filters Standard Finesse Values with Fixed FSR Down to 1280 nm Filter Tuning — Up to 1620 nm 0.00 Finesse Values -10.00 -20.00 (**dB**) nce -30.00 100 -40.00 200 2 -50.00 650 1000 -60.00 2000 4000 -70.00 0.5 1.5 Normalized Frequency (FSRs)

Key Features

All-fiber platform

- High resolution and low loss design
- Super-cavity finesses
- Vibration and shock resistant
- Thermally stable
- Large dynamic range permits accurate measurements

Ideal for OEM applications

Customizable free spectral range, finesse and bandwidth

Tunable across O, E, S, C & L bands

 Small footprint

 Low power requirements

 Telcordia GR 2883 gualified



OEM Applications

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





Optical Properties ¹		FFP-TF2			
Operating wavelength range	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 ²	100 to 45,000 GHz (800 pm to 340 nm @ 1550 nm)				
Finesse	10, 40, 100	10, 40, 100, 200, 500, 650, 1000, 2000, 4000, 10,000			
Bandwidth, (FWHM or 3dB)		FSR/Finesse			
Insertion loss		< 1.5 dB			
Polarization dependent loss		< 0.2 dB			
Input power		100 mW (for finesse = 200)			
Glitch free dynamic range		> 15 dB			
Electrical Properties					
Tuning voltage/FSR		< 18 V			
Tuning rate/FSR		800 Hz			
Capacitance		< 3 uF			
Tuning voltage, maximum		70 V			
Mechanical Properties					
Dimension; Weight	13	9.5 mm x 25.8 mm x 57.2 mm; {	53 g		
Cable jacket	900 um loose buffer tubing				
Cable length	> 1 m				
Environmental Properties ⁴					
Operating temperature		-20 to 80 C			
Change in voltage	< 18 V				
Change in insertion loss	< 0.5 dB				

Special OEM Options

Contact Micron Optics

Wavelength R	ange: 800	- 1620 nm
--------------	-----------	-----------

Finesse: up to 16,000

Bandwidth: from MHz to GHz

Ordering Information

FFP-TF2	wwww	- <u>bbb u ffff</u> - <u>ii</u> - <u>ccc</u>
wwww	1310 1550 1420 1600 1500 1580	(1260-1360 nm) (1520-1570 nm) (1360-1480 nm) (1570-1620 nm) (1480-1520 nm) (1520-1620 nm)
bbb	Specify For exa	y bandwidth ample, 040 = 40 GHz
u	Bandw G M	idth unit GHz MHz
ffff	Specify For exa	y finesse ample, 0650 = finesse of 650
ii	Specify For exa	y insertion loss ample, 2.5 = 2.5 dB loss
ccc	061 063 065	Unconnectorized FC/APC (fusion spliced) SC/APC (fusion spliced) FC/APC (connectorized)

Notes

- 1 Specifications are dependent on filter configuration. Please contact Micron Optics for final specifications.
- 2 FSRs are fixed but customizable within these ranges.
- 3 Captures effects of long term use over full operating temperature range of the instrument.
- 4 Complies to Telcordia GR 2883.

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Widely Tunable Fiber Fabry-Perot Filter | FFP-TF2 9000

Applications

- Tunable Channel Drop for Coarse WDM
- Optical Performance Monitoring for CWDM
- Tunable Optical Noise Filtering and Channel Locking
- Full-Band Optical Spectroscopy

Features

- Wide tuning range from 1280 to 1620 nm
- Ideal for low cost, high volume applications
- High resolution for precise spectrum analysis
- Large dynamic range permits accurate measurements
- Efficient low loss design
- · Wide ranges of user-specified parameters
- Thermally stable
- · Vibration and shock resistant
- Small footprint
- Low power requirements
- Qualified for Telcordia GR 2883

Description

The Micron Optics FFP-TF2 9000 Fiber Fabry-Perot (FFP) tunable filter provides an unique opportunity for the system designer to design-in just one tunable filter in an application previously incorporating multiple filters. The Free Spectral Range (FSR) of this unique filter can be as wide as 340nm allowing tunability from just one period of the frequency comb across the entire telecom spectrum.

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 new widely 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.

Widely Tunable Fiber Fabry-Perot Filter | FFP-TF2 9000



Specifications '	Finesse = 750	FFP-TF2 9000	Finesse = 3000
Optical Properties			
Operating Wavelength Range ² Full Band (O, E, S, C & L Bands)		1280 - 1620 nm	
Free Spectral Range		51,000 GHz (340 nm)	
Standard Finesse Values (nominal)	750		3000
3dB Bandwidth			
1280 nm to 1300 nm	< 300 pm		< 300 pm
1300 nm to 1600 nm	< 400 pm		< 50 pm
1600 nm to 1620 nm	< 350 pm		< 120 pm
Insertion Loss ³		< 3.0 dB	
Polarization Dependent Loss ³		<0.2 dB	
Input Power (Maximum) ⁴	< 40 mW		< 10 mW
Electrical Properties			
Tuning Voltage/FSR		< 18 V	
Capacitance		< 3.0 µF	
Slew Rate		< 90 V/ms	
Cycling Speed Over 1 FSR		800 Hz (max)	
Maximum Tuning Voltage		70 V	
Mechanical Properties			
Dimensions		13.5 mm x 25.8 mm x 57.2 mm	
Weight		53 g	
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	
Environmental Properties ^{3,5}			
Operating Temperature		-20° to 80°C	
Δ Insertion Voltage/Operating Temperatu	re	< 18 V	
Δ Insertion Loss/Operating Temperature (dependent on FSR)	< 0.5 dB	
Δ Insertion Loss/Vibration		< 0.5 dB	
Notes: 1. Specifications are for 2 standard filter con	nfigurations. Please contact Micron Optics	for custom specifications.	

2. Other non-telecom wavelengths are available. Please contact Micron Optics for specifications.

3. Typical value; final value is dependent on Free Spectral Range and Finesse.

4. Maximum input power level depends on finesse value. Generally, the higher the finesse, the lower the maximum input power level.

5. These parameters are not available for all possible configurations. Please contact Micron Optics for details.

Ordering Information	FFP-TF2 9000 - bb	buffff - ii (Example: FFP-TF2 90	000 - 6.3G3000-3.0)
bbb: Average Bandwidth	u: Bandwidth Unit	ffff: Finesse	ii: Insertion Loss
Specify bandwidth	G GHz	Specify finesse	Specify Loss
(i.e: 6.3 = 6.3GHz)	M MHz	(i.e: 3000=Finesse of 3000)	(i.e: 3.0 = 3.0dB loss
Options			
030 Low Variation Bandwidth*	060 FC/SPC Connectors (Fusion Spliced)) 062 SC/SPC Connectors (Fusion Spliced)	065 FC/APC Connectors (Connectorized)
* Please verify specifications with Micron Optics.	. 061 FC/APC Connectors (Fusion Spliced) 063 SC/APC Connectors (Fusion Spliced)	069 Other Connectors



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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

picoWave®

(see diagrams below).

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 λ reference with or without a wavelength marker.

Key Features

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





FFP-I, FFP-ITU, picoWave®

FFP-I

picoWave® (Serial Configuration) picoWave® (Parallel Configuration)

The *pico*Wave[®] 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[®] makes an ideal calibrated

wavelength reference. The FFP-I and FBG can be configured in Series or in Parallel





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>pico</i> Wave [®]
Operating wavelength range ¹	1260 - 1	620 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/Fi	inesse
Insertion loss ²	< 3	dB
Maximum input power ³	100 mW (for f	inesse < 200)
Thermal Coefficient	~ 1.6 GHz/C	n/a
Wavelength marker placement	n/a	User defined
Electrical Properties (optional for FFP-I with	th FSR > 10 GHz, standard for <i>pico</i> W	(ave®)
TEC	Melcor Epoxy Filled	040T2.0-30-F2-EP
TEC drive current	< 2	2 A
TEC Q _{max} (T _H = 25 °C)	< 4	W
TEC V _{max} (T _H = 25 °C)	< 3.	4 V
TEC ΔT_{max} (T _H = 25 °C)	67	С
Thermistor	10 KΩ	2 NTC
Thermal tuning speed	1 GHz/se	c, typical
Stability	+/- 0.125 GHz, lab	oratory 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 <u>wv</u>	FFP-I <u>wwww - bbb u</u> ffff - ii - ccc			
wwww	1310 1550 1420 1600 1500 1580	(1260-1360 nm) (1520-1570 nm) (1360-1480 nm) (1570-1620 nm) (1480-1520 nm) (1520-1620 nm)		
bbb	Specif For ex	y bandwidth ample, 040 = 40 GHz		
u	Bandw G M K	vidth unit GHz MHz KHz		
ffff	Specif For ex	y finesse ample, 0650 = finesse of 650		
ii	Specif For ex	y insertion loss ample, 2.5 = 2.5 dB loss		
ccc	061 063 065	Unconnectorized FC/APC (fusion spliced) SC/APC (fusion spliced) FC/APC (connectorized)		

Notes

1 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.

3 Maximum input power level depends on finesse value.



Fiber Fabry-Perot Scanning Interferometer | FFP-S

Applications

- Ultra High Resolution Laser Analysis
- Linewidth
- Mode Structure and Stability
- Wavelength Chirp
- Jitter and Drift
- Ultra High Resolution Spectroscopy
 - Chemical Analysis
 - Emission or Absorption Lines
- Laser Mode Control and Selection
- Tunable Fiber Lasers
- Polarization Analysis

Features

- High direct optical resolution
- Low fiber-to-fiber insertion loss
- Convenient wavelength locking
- No alignment required
- Small footprint
- Shock resistant
- Wavelength ranges from 800 to 1600 nm

Description

The Micron Optics FFP-SI Fiber Fabry-Perot Scanning Interferometer is a lensless, plane Fabry-Perot interferometer with a single-mode fiber waveguide between two highly reflective multilayer mirrors that are deposited directly onto optical fibers. The cavity consists entirely of fiber waveguide, permitting an extremely wide range of possible Free Spectral Ranges (FSRs), and no alignment or mode-matching is required.

Wavelength scanning is achieved by axially straining a short section of fiber inside the cavity using a stacked piezoelectric actuator. Scanning frequencies to 100 Hz and higher can provide direct measurement of transient optical phenomenon such as laser chirp and jitter. Stable and repeatable scanning over longer periods of time can provide direct measurement of slowly varying optical phenomenon such as laser drift.



For driving the FFP-SI, the FFP Controller (FFP-C) provides simple electrical signals for wavelength scanning and wavelength selection in either open or closed-loop mode. Many spectral measurements can be made using only an FFP-SI, FFP-C and oscilloscope. Also the FFP-SI can be cascaded with other FFP-SIs or FFP-TFs to provide ultra-high finesse values.

In general, FFP-SIs are sensitive to the input polarization of the optical signal. Since polarization properties of the FFP-SI are stable, an input polarization controller can be used to tune to one polarization or to perform polarization analysis.



Specifications	FFP-SI
Optical Properties	
Operating Wavelength Range ¹	800 - 1640 nm
Free Spectral Range (fixed FSR but selectable within this range)	0.01 - 5.5 GHz
3dB Bandwidth ²	1 - 550 MHz (0.08 to 4.4 pm)
Standard Finesse Values (nominal)	10, 40, 100, 150, 200, 650, 1000
Insertion Loss ³	< 3 dB
Input Power ⁴	< 100 mW (for finesse = 200)
Electrical Properties	
Tuning Voltage/FSR	< 12 V
Capacitance	< 3.0 µF
Slew Rate	< 10 V/ms
Maximum Tuning Voltage	70 V
Mechanical Properties	
Dimensions (1 GHz < FSR < 5.5 GHz)	12.7 x 14.3 x 152.5 mm
Dimensions (FSR < 1 GHz)	12.7 x 101.6 x 101.6 mm
Weight (1 GHz < FSR < 5.5 GHz)	31 g
Weight (FSR < 1 GHz)	100 g
Mounting Holes	(4) #1-72 UNF x 0.16 inch deep
Cable Jacket (loose)	900 μm buffer tubing
Cable Length	> 1 m
Connector	See Options
Notes: 1. Each useful spectral range defined by mirror pass band. 2. Measurable bandwidth is limited by laser linewidth used for device of	haracterization.

3. Typical value; final value depends on Free Spectral Range and Finesse.

4. Maximum input power level depends on finesse value. Generally, the higher the finesse, the lower the maximum input power level.

Ordering Information	FFP-SI	-wwww-bbbuffff-i.i	(Example: FFP-SI-1550-040G2	200-2.5)
wwww: Wavelength Band	bbb: Bandwidth	u: Bandwidth Unit	ffff: Finesse	ii: Insertion Loss
Specify X Center	Specify bandwidth	G GHz	Specify finesse	Specify Loss
(i.e: 0800 = 800nm)	(i.e: 040 = 40GHz)	M MHz	(i.e: 200=Finesse of 200)	(i.e: 2.5 = 2.5dB loss)
		K KHz		

Options

 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
 069
 Other Connectors



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Tunable Filter Controller | FFP-C



Applications

- Spectrum Scanning
- Wavelength Locking

Features

- Scan or dither mode capability
- Scan mode > 50V (> 4 FSR range)
- Built-in photodetector with FC/APC input (other inputs available)
- Digital voltmeter for piezoelectric transducer monitoring
- Rear BNC outputs for oscilloscope monitoring
- Bias voltage control for any filter
- Automatic wavelength locking with filters of finesse values up to 750

Description

The Micron Optics FFP-Controller is an electronic piezoelectric actuator driver and optical signal processor specially designed for the FFP Tunable Filter (TF or TF2) or Scanning Interferometer. The Micron Optics FFP-C can be used in several modes of operation.

- Manual DC Voltage Driver (bias control only)
- Manual DC + AC Voltage Driver (bias, amplitude and frequency controls)
- Automatic Wavelength Locking to Laser Input Source (via a closed phase lock loop)



The FFP-C is an excellent tool for first time users of fiber Fabry-Perot filters to become familiar with filter technology and operations. It also can be used as a lab bench tool in the research of advanced capabilities of tunable filters.

Tunable Filter Controller	IFFP_C



Specifications	FFP-C
Optical Properties	
Input Power	-50 to -10 dBm
Input Connector	FC/SPC
Detector Wavelength Range - InGaAs	1000 - 1650 nm
Electrical Properties	
Bias Tuning Voltage	5 - 55 V
Ramp Frequency	20 - 100 Hz
Ramp Amplitude	5 - 55 V
Dither Frequency	1.5 - 2.5 kHz
Dither Amplitude	8 - 12 mV
Power Supply, 15 W	95 - 135 VAC
Auxilliary Input Impedence	10 kΩ
Auxilliary Input DC Voltage	Maximum 12 V
Auxilliary Dither Signal Amplitude	10 μV to 80 mV
Auxilliary Input	SMA
Mechanical Properties	
Dimensions (mm)	211 x 87 x 242
Weight	1.9 kg
Options	
020 - Power Supply, 220 V	190 - 265 VAC
060 - Equipped with FC/SPC Bulkhead Adapter	

062 - Equipped with SC/SPC Bulkhead Adapter

Fig. 1 Block Diagram & Circuit Schematic





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