Fiber Fabry-Perot Scanning Interferometer | FFP-SI

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 multi-layer mirrors that are deposited directly onto optical fibers.

The FFP-SI's 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.

Wide range of available FSRs and **no alignment** or **mode matching** is required.

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.

Key Features

Customizable center wavelength, free spectral range, finesse & bandwidth
High direct optical **resolution**
Low fiber-to-fiber **insertion loss**
Convenient wavelength locking
Small footprint
Vibration and **shock resistant**
No alignment required
Wavelength ranges from 800 to 1600 nm

Applications

Ultra high resolution laser analysis
Ultra high resolution spectroscopy
Laser Mode control and selection
Tunable fiber lasers
Polarization analysis

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Optical Properties	FFP-SI
Operating wavelength range[1]	800 to 1640 nm
Free spectral range	0.01 to 5.5 GHz
Finesse	10, 40, 100, 150, 200, 650, 1000
Bandwidth, (FWHM or 3dB)[2]	FSR/Finesse
Insertion loss[3]	< 3 dB
Maximum 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
Connectors	See Options

Ordering Information

FFP-SI wwww - bbb u ffff - ii - ccc

wwww	Specify Center Wavelength For example, 0800 = 800 nm
bbb	Specify bandwidth For example, 040 = 40 GHz
u	Bandwidth unit G GHz M MHz K KHz
ffff	Specify finesse For example, 0650 = finesse of 650
ii	Specify insertion loss For example, 2.5 = 2.5 dB loss
ccc	000 Unconnectorized 061 FC/APC (fusion spliced) 063 SC/APC (fusion spliced) 065 FC/APC (connectorized)

Notes

1 Each useful spectral range defined by mirror pass band.

2 Measurable bandwidth is limited by laser linewidth used for device characterization.

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.

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