Fiber Fabry-Perot Scanning Interferometer | FFP-SI

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

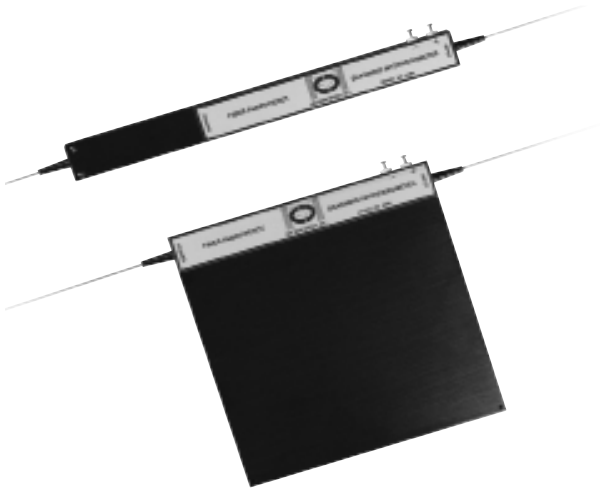
Features

- 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 multi-layer 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 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.

Ordering Information

FFP-SI-wwww-bbbuffff-i.i (Example: FFP-SI-1550-040G200-2.5)

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 (FusionSpliced) 062 SC/SPC Connectors (Fusion Spliced) 063 SC/APC Connectors (Fusion Spliced)
065 FC/APC Connectors (Connectorized) 069 Other Connectors

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