

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

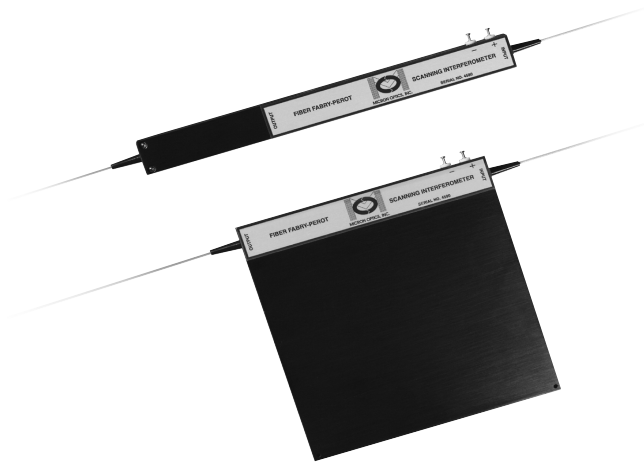
Features

- 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. For applications where polarization sensitivity may be undesirable, FFP-SIs incorporating polarization maintaining fibers are available (see Option 020).

Fiber Fabry-Perot Scanning Interferometer | FFP-SI

Specifications

FFP-SI

Optical Properties

Operating Wavelength Range ¹	800 - 1600 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 to 5 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. FFP-SIs are generally polarization sensitive. However, polarization properties are stable and can be adjusted by a polarization controller at the FFP-SI input.
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 - **www** - **bbb**ffff - **i**.i

(Example: FFP-SI -1550 - 40G200-2.5)

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

Options

- 020 PM Fiber* 060 FC/SPC Connectors (Fusion Spliced) 062 SC/SPC Connectors (Fusion Spliced) 064 Other Connectors
 030 Low Variation Bandwidth* 061 FC/APC Connectors (Fusion Spliced) 063 SC/APC Connectors (Fusion Spliced) 065 FC/APC Connectors (Connectorized)

* Please verify specifications with Micron Optics.



Micron Optics, Inc.
1852 Century Place NE
Atlanta, GA 30345 USA

phone 404 325 0005
fax 404 325 4082
www.micronoptics.com