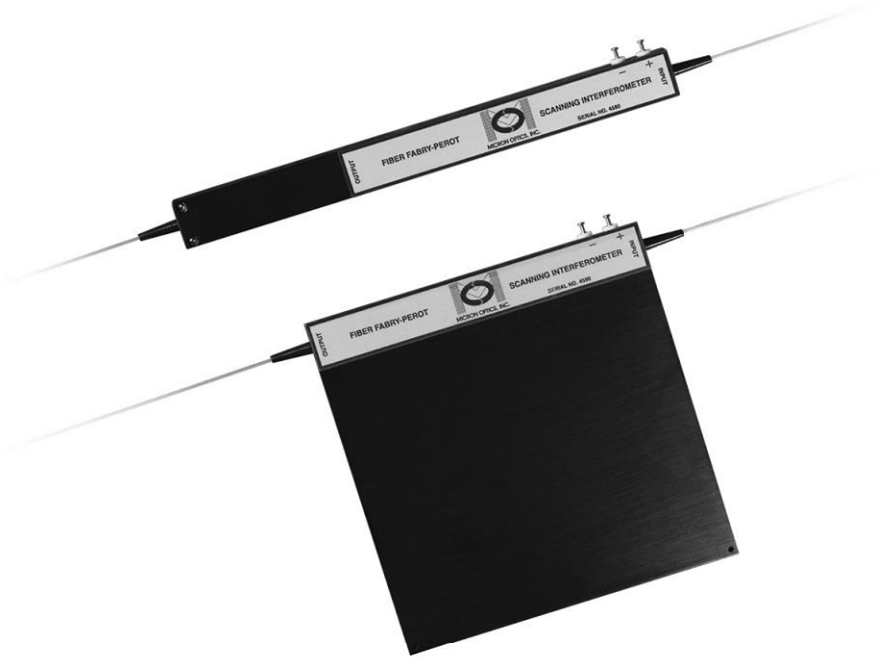
sa

scientific applications

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**

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-SI**s or FFP-TFs to provide ultra-high finesse values.

In general, **FFP-SI**s 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-SI**s incorporating polarization maintaining fibers are available (see Option 020).

Features

- **High direct optical resolution**
- **Low fiber-to-fiber insertion loss**
- **Convenient wavelength locking**
- **No alignment required**
- **Small footprint**
- **Shock resistant**
- **Wavelength ranges from visible to near-IR**

MICRON OPTICS

FFP-SI | Fiber Fabry-Perot Scanning Interferometer

sa scientific applications

Specifications

Optical

Typical Spectral Ranges (nm) :	800, 900, 1060, 1310 or 1550
Free Spectral Range (fixed FSR but selectable within this range)	0.01 – 5.5 GHz
3dB Bandwidth[2]	1 to 550 MHz
Standard Finesse Values	10, 40, 100, 150, 200, 650, 1000
Insertion Loss[3]	3 to 5 dB
Input Power[4]	< 100 mW (for F = 200)

Electrical

Tuning Voltage/FSR	<18 V
Capacitance	< 3.0 µF
Scan Rate	100 Hz
Maximum Tuning Voltage	70 V

Mechanical

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
Pigtail Jacket (loose)	900 µm buffer tubing
Pigtail Length	> 1 m
Connector	see options

Notes:

[1] These are standard center wavelengths with 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. Note that high input power can also cause non-linear effects in a long cavity FFP-SI.

Options

030 Low Variation Bandwidth*
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

** Please verify specifications with Micron Optics.*

Part Number

FFP-SI λλλλ – bbbuffff – l.l

Wavelength Band
- Specify λ Center (ie: 0800 = 800nm)

Bandwidth
- Specify bandwidth Example: 025 = 25 MHz

Bandwidth Unit
- M – MHz
- K - KHz

Finesse
- Specify finesse Example: 0200 = Finesse of 200

Insertion Loss
- Specify loss Example: 3.5 = 3.5 dB loss

Micron Optics, Inc.
1852 Century Place NE
Atlanta, GA 30345 USA
Phone (404) 325-0005
Fax (404) 325-4082
sales@micronoptics.com
www.micronoptics.com