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**

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 1480 to 1620 nm**

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FFP-SI | Fiber Fabry-Perot Scanning Interferometer

Options

020 PM Fiber*

060 FC/SPC Connectors (Fusion Spliced)

061 FC/APC Connectors (Fusion Spliced)

062 SC/SPC Connectors (Fusion Spliced)

063 SC/APC Connectors (Fusion Spliced)

064 Other Connectors

065 FC/APC Connectors (Connectorized)

** Please verify specifications with Micron Optics.*

Part Number

FFP-SI λλλλ – bbbuffff – l.l

Wavelength Band
- 1500 – S Band
- 1550 – C Band
- 1600 – L Band

Bandwidth
- Specify bandwidth
  Example:
  040 = 40 GHz Bandwidth

Bandwidth Unit
- G - GHz
- M – MHz
- K - KHz

Finesse
- Specify finesse
  Example:
  0200 = Finesse of 200

Insertion Loss
- Specify loss
  Example:
  2.5 = 2.5 dB loss

Specifications

Operating Wavelength Range[1]

S-Band	1480 – 1520 nm
C-Band	1520 – 1570 nm
L-Band	1570 – 1620 nm

Optical

Free Spectral Range (fixed FSR but selectable within this range)	0.01 – 5.5 GHz (0.08 pm – 44 pm)
3dB Bandwidth[2]	1 to 550 MHz (0.08 to 4.4 pm)
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	<12 V
Capacitance	< 3.0 μF
Slew Rate	< 10 V/ms
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

[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.

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