

# Scanning Fiber Michelson Interferometer

500 – 2600 nm, 0.01 – 1000 mm



DATASHEET

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The MIIM Series Scanning Fiber Optical Michelson Interferometer splits incoming light into two paths using a fiber optic coupler—one reference arm with a fixed fiber length and the other sample arm with a variable length controlled by either a high-speed piezoelectric fiber stretcher or a motor-driven long range delay line. Light reflected from the two fiber reflectors is recombined to produce an interference pattern for high-precision measurements. Fast scanning is achieved via the piezoelectric stretcher driven through a front-panel BNC input, while extended-range scanning is enabled by a motorized stage controlled via USB/GUI. Designed for operation across 500 to 2600 nm with matched single-mode fibers, each MIIM unit features a “zero meter” path mismatch baseline, allowing flexible delay customization. The MIIM is a versatile unit with both optical output or 0-5V electrical output (build in amplified detector). Standard and custom fiber lengths are available, including configurations with variable delay in both arms. The unit comes complete with a power supply.

## Features

- Non-Mechanical High Reliability
- Accurate and Reproducible Position Control
- Fast Scan Speeds

## Applications

- Laser Phase /Frequency Noise Testing
- Interferometric Sensors
- Heterodyne Interferometer

## Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	500		2600	nm
Wavelength Range		+ - 150		nm
Insertion Loss <sup>[1]</sup>	1300nm	3	5	dB
	850nm	5	6.5	
	660nm	6	7.5	
Variable Delay Difference	Piezo	0.01	5	mm
	Motor	0.01	500	
Fix Delay Range	1		10000	mm
Path Mismatch (without delay line)			10	mm
Input Power			500	mW
Phase Modulation Speed	Piezo	30		kHz
	Motor	0.01		
Detector Bandwidth (3dB)		DC – 5		MHz
Detector Gain		10 <sup>4</sup>		V/A
Amplifier Outputs Impedance (SMA)		50		Ω
Power Supply		±12V, 250mA		

### Notes:

[1]. Includes connector losses, measured at center wavelength. Shorter wavelength has higher loss

\* All accuracy data are valid at 23 ± 5°C and 45 ± 15% humidity

**Note:** The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

Rev 11/24/25

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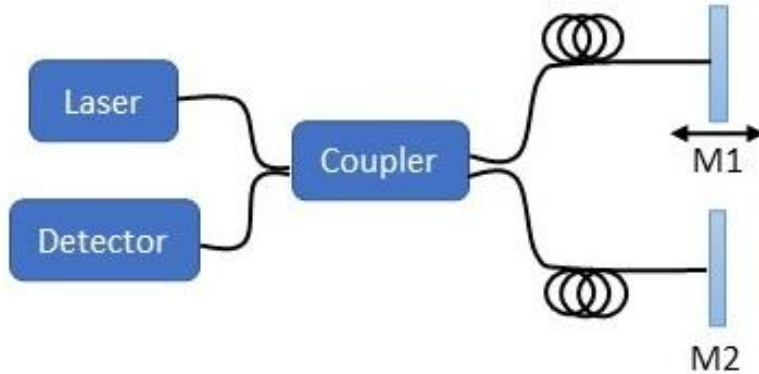
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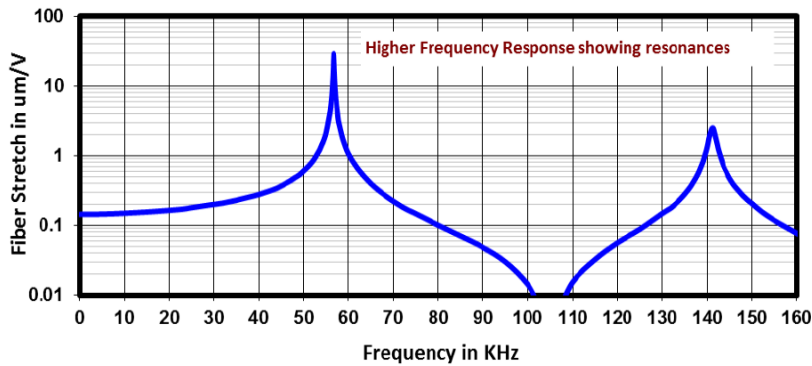


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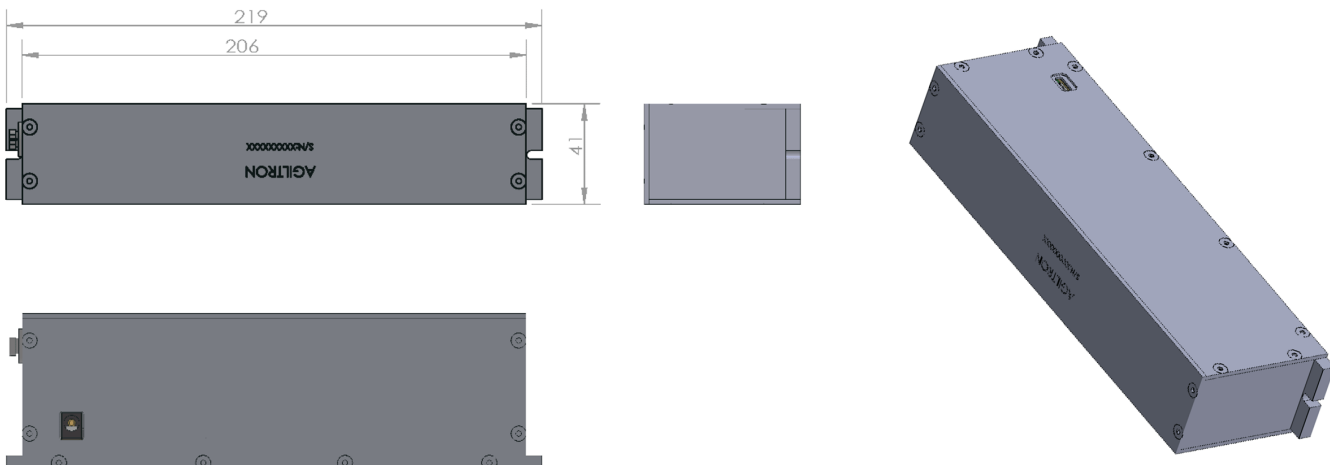
### Functional Diagram



### Typical Piezo Stretcher Modulation Frequency Response



### Mechanical Dimensions (mm)



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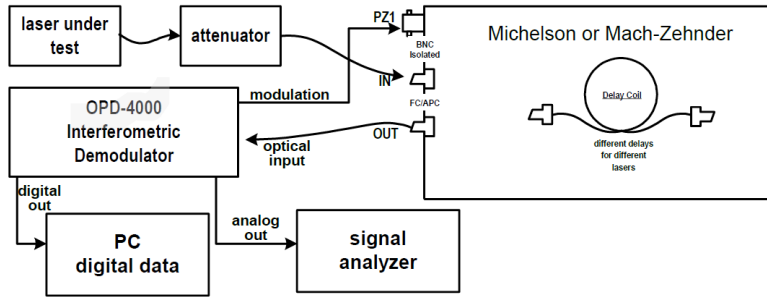
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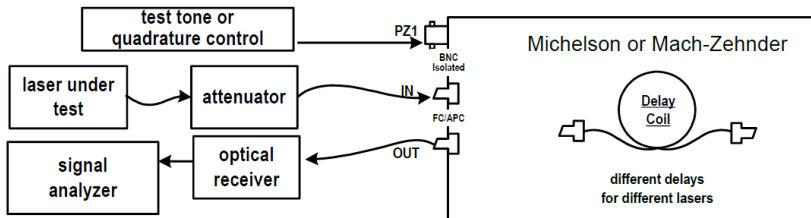
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## Application Examples

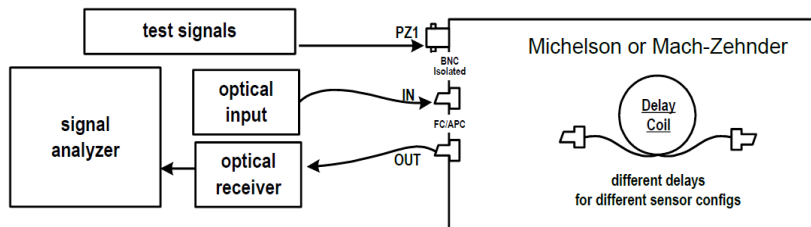
### LASER PHASE / FREQUENCY NOISE TESTING



### LASER PHASE / FREQUENCY NOISE TESTING 2



### FIBER INTERFEROMETRIC SENSOR SIMULATOR



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### Ordering Information (Part Number) System

Prefix	Type	Wavelength	Variable Range *	Fix Range	Fiber Type	Fiber Cover	Detector	Connector <sup>[1]</sup>
MIIM-	Standard = 1 Special = 0	488 = 4 532 = 5 650 = 6 780 = 7 850 = 8 980 = 9 1060 = 1 1310 = 3 1550 = C 2000 = 2 Special = 0	0.5mm = 0A 1mm = 01 10mm = 10 20mm = 20 30mm = 30 40mm = 40 50mm = 50 50µm = 05 Special = 00	0.05m = 0A 0.5m = 05 1m = 10 10m = 20 100m = A1 200m = A2 Special = 00	Select below	0.9mm Tube = 1 Special = 0	Non = 1 Yes = 2 Special = 0	FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = 8 LC/UPC = U Special = 0

\* < 1mm use high speed piezo actuator, >1mm use motor

[1]. The connector cannot be installed directly onto bare fiber, as it is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

**Fiber Type Selection Table**

1	SMF-28	5	PM1550	M	MM 50/125µm
		D	PM1950	N	MM 62.5µm
		3	PM1310		
4	SM450	E	PM400		
A	SM1950	F	PM480		
6	SM600	G	PM630		
7	Hi780	H	PM850		
8	SM800	I	PM980		
9	SM980	J	PM780		
B	Hi1060	K	PM460		
C	SM400	L	PM405		

### Typical InGaAs Detector Response

