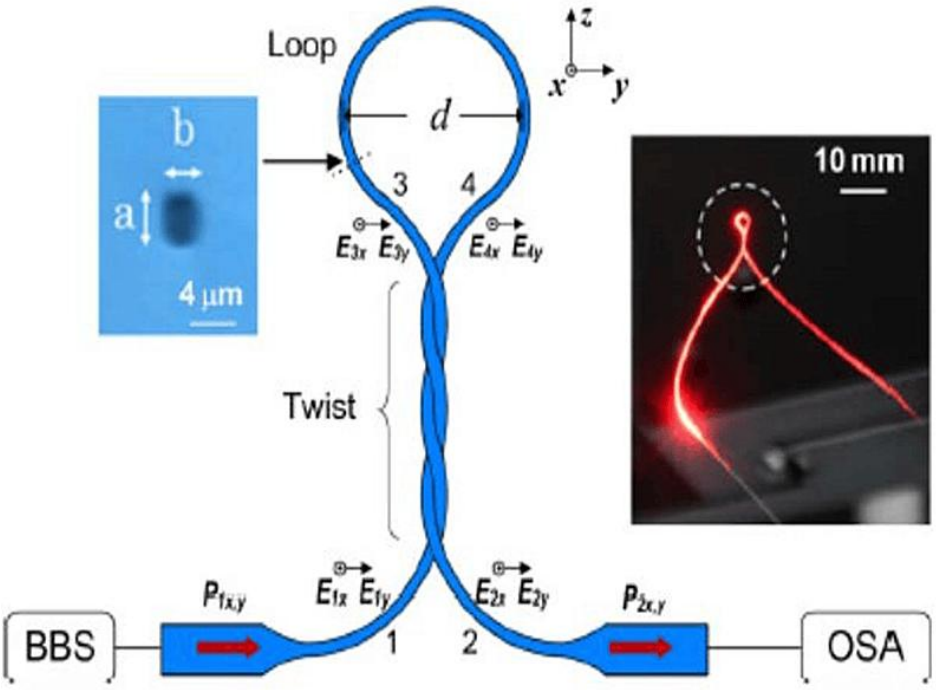
Interferometric Single-Mode Micro-Nano Fiber Sensor 1270-2000nm



Product Description

The micro-nano fiber sensor has characteristics such as compact size, flexible structure, and strong transient field. It can measure the refractive index of surrounding liquids to detect slight biochemical changes. Reported types of micro-nano fiber refractive index sensors include grating-based and resonator-based sensors. Through structural design and optimization, we have developed several interferometric micro-nano fiber refractive

index sensors with advantages such as high refractive index sensitivity, low temperature sensitivity, and low manufacturing cost. Research progress in interferometric micro-nano fiber sensors includes high-birefringence micro-nano fiber ring sensors, cascaded long-period grating sensors, and micro-nano fiber interferometric sensors based on single-taper structures. By designing and optimizing the interferometer's geometric structure, we have achieved refractive index sensing sensitivity at the level of 104 nm/RIU, providing an option for the development of low-cost, highly sensitive optical biochemical sensors.

Product features

Strong interference characteristics 、 Subwavelength structure 、 Single-mode and multi-mode options

Part Number

MP-FOS-NIR-800-7-SA

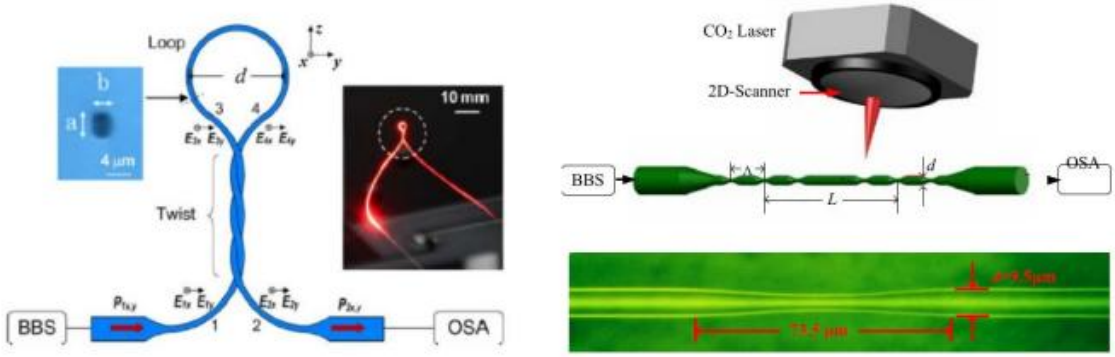
Application area

Micro-nano fiber 、 Micro-nano fiber sensor 、 Interferometric sensor

Core parameters

Operating Wavelength	Connector Type
1270-2000nm	FC/APC

General Parameters



Left image: Schematic and physical diagram of the sensor based on the high birefringence micro-nano fiber ring resonator structure.

Right image: Schematic and physical diagram of the interferometric sensor based on the cascaded micro-nano fiber long-period grating.

Parameters

Parameters	Unit	Value
Operating Wavelength	nm	1270-2000nm
Biconical Fiber Waist Diameter	nm	800
Tapered Fiber Waist Width	mm	2
Tapered Region Length	mm	>15 (Typ. 20)

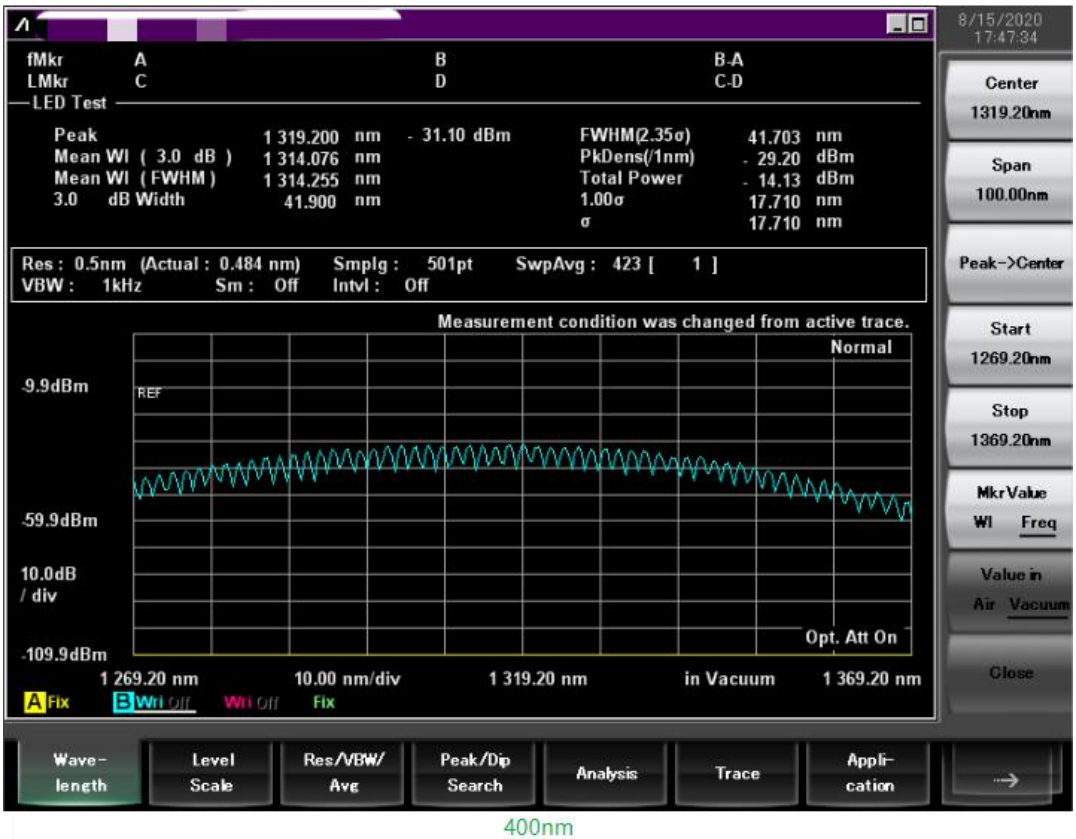
Additional Loss	dB	⩽7dB
Cladding Diameter	um	125
Fiber Type		SMF-28E/PM1550
Connector Type		FC/APC OR FC/PC

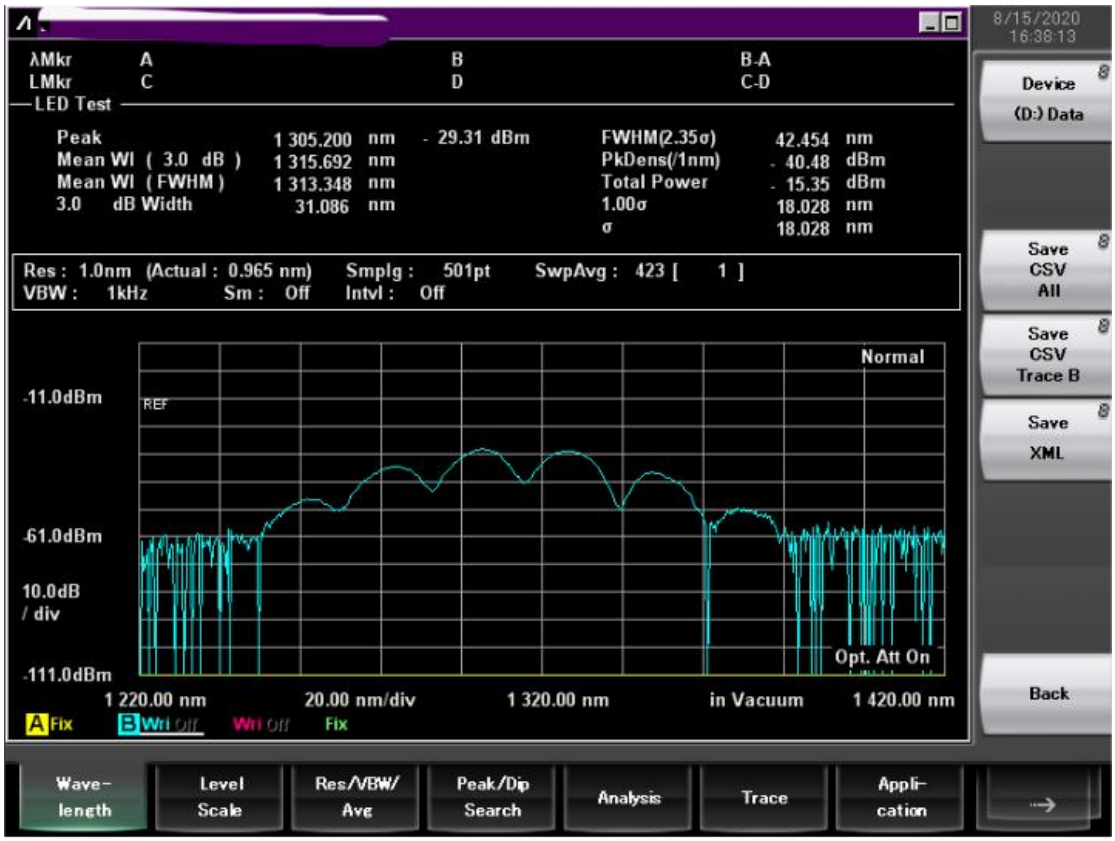
Notes:

All test results do not include connectors.

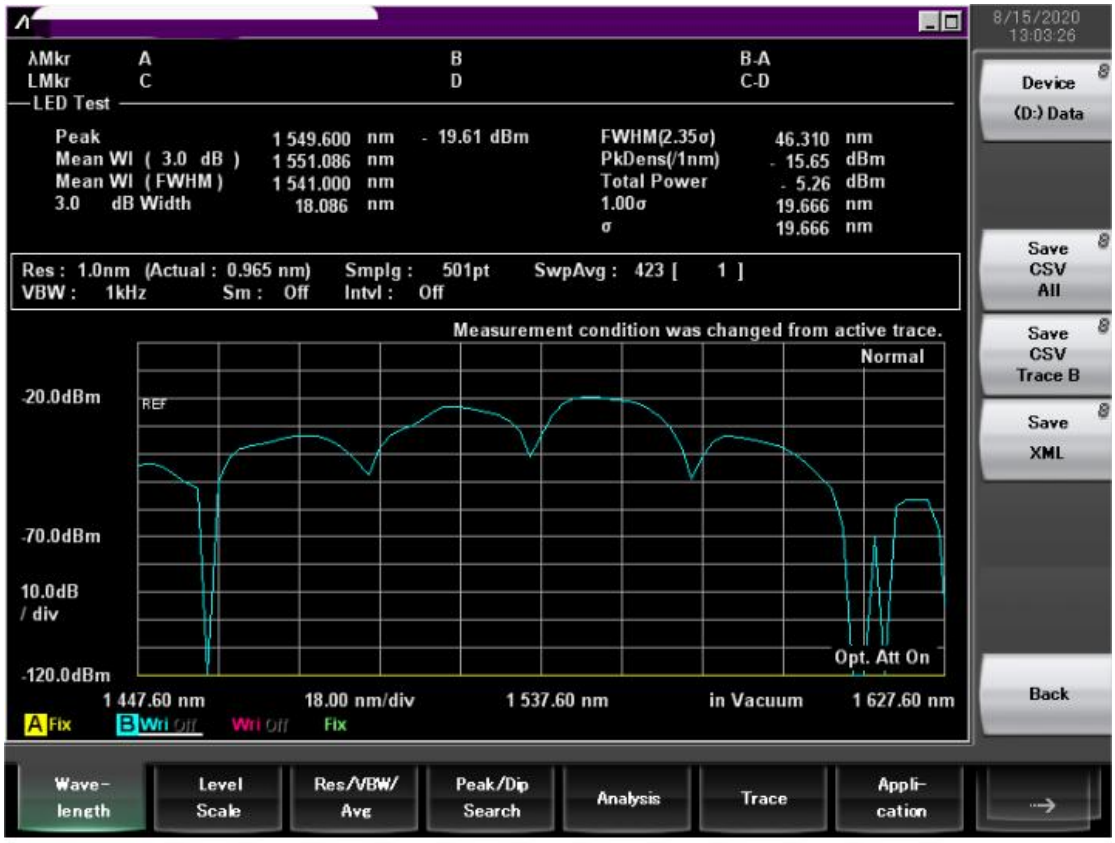
Customization is available for improved parameters or other specific requirements.

Test Spectrum




8/15/2020
16:38:13
λMkr A B B-A
LMkr C D C-D
LED Test
Peak 1 305.200 nm - 29.31 dBm
Mean WI (3.0 dB) 1 315.692 nm
Mean WI (FWHM) 1 313.348 nm
3.0 dB Width 31.086 nm
FWHM(2.35σ) 42.454 nm
PkDens(/1nm) - 40.48 dBm
Total Power - 15.35 dBm
1.00σ 18.028 nm
σ 18.028 nm
Res : 1.0nm (Actual : 0.965 nm) Smplg : 501pt SwpAvg : 423 [1]
VBW : 1kHz Sm : Off Intvl : Off
Normal
REF
-11.0dBm
-61.0dBm
10.0dB / div
-111.0dBm
Opt. Att On
1 220.00 nm 20.00 nm/div 1 320.00 nm in Vacuum 1 420.00 nm
A Fix B Wri Off Wri Off Fix
Device (D:) Data
Save CSV All
Save CSV Trace B
Save XML
Back
Wave-length
Level Scale
Res/VBW/ Avg
Peak/Dip Search
Analysis
Trace
Appli-cation

1um


8/15/2020
13:03:26
λMkr A B B-A
LMkr C D C-D
LED Test
Peak 1 549.600 nm - 19.61 dBm
Mean WI (3.0 dB) 1 551.086 nm
Mean WI (FWHM) 1 541.000 nm
3.0 dB Width 18.086 nm
FWHM(2.35σ) 46.310 nm
PkDens(/1nm) - 15.65 dBm
Total Power - 5.26 dBm
1.00σ 19.666 nm
σ 19.666 nm
Res : 1.0nm (Actual : 0.965 nm) Smplg : 501pt SwpAvg : 423 [1]
VBW : 1kHz Sm : Off Intvl : Off
Measurement condition was changed from active trace.
Normal
REF
-20.0dBm
-70.0dBm
10.0dB / div
-120.0dBm
Opt. Att On
1 447.60 nm 18.00 nm/div 1 537.60 nm in Vacuum 1 627.60 nm
A Fix B Wri Off Wri Off Fix
Device (D:) Data
Save CSV All
Save CSV Trace B
Save XML
Back
Wave-length
Level Scale
Res/VBW/ Avg
Peak/Dip Search
Analysis
Trace
Appli-cation

3um

Ordering info

MP-FOS-NIR-☆-△-XX

☆: Waist Diameter 400: 400nm

1000: 1um

△: Loose Tube

B :Bare Fiber

9: 900um Loose Tube

20: 2mm Loose Tube

30: 2mm Loose Tube

XX: Fiber and Connector Type

SA=SMF-28E+ FC/APC SP=SMF-28E+ FC/PC

PA=PM Fiber+ FC/APC PP=PM Fiber+ FC/PC