Fiber Bragg Grating | os1100

Applications

- Fundamental optical element for fiber optic sensors for strain, temperature, displacement, pressure, and acceleration.
- Measurement of strain on a structure's surface.
- Measurement of temperature.
- Measurement of strain inside of a composite or laminate structure.
- Proof of concept for FBG sensor applications.
- Experimental mechanics evaluations requiring many sensors.

Features

- Optional FC/APC connector and loose buffer tube for ease of handling.
- Clearly marked FBG location.
- Non metallic construction.

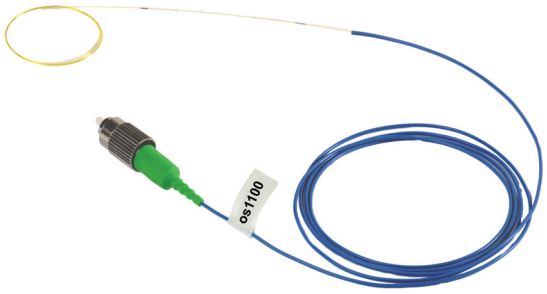
Advantages of FBG Sensor Technology

- Longevity – resistant to lightning, corrosion, EMI.
- Passive – no spark hazard, no power at sensor.
- Multiplexing – many sensors, few cables, long range.
- Versatility – small size, sense many properties with one system.
- Installation – weld, glue, embed, connect in series.
- Calibration – none required by user
- Ruggedness – fatigue over 100 million cycles, wide temperature range.

Description

The os1100 Fiber Bragg Grating (FBG) is designed for use in fiber optic sensing applications. It is a single FBG centered in a two meter length of polyimide coated optical fiber. It may be used individually or can be spliced into an array of many FBGs.

Fiber Bragg gratings are the fundamental elements upon which most fiber optic sensors are based. An FBG is an invisible reflector inside the core of the fiber that is set to a specific wavelength of light. When the fiber where the FBG is located is exposed to strain or temperature, the FBG's "center wavelength" shifts to a higher or lower wavelength. The direction and magnitude of the shift is proportional to the change in strain or temperature. os1100's are available in dozens of distinct center wavelengths. Using different wavelengths allows multiplexing of dozens of FBGs on a single fiber.

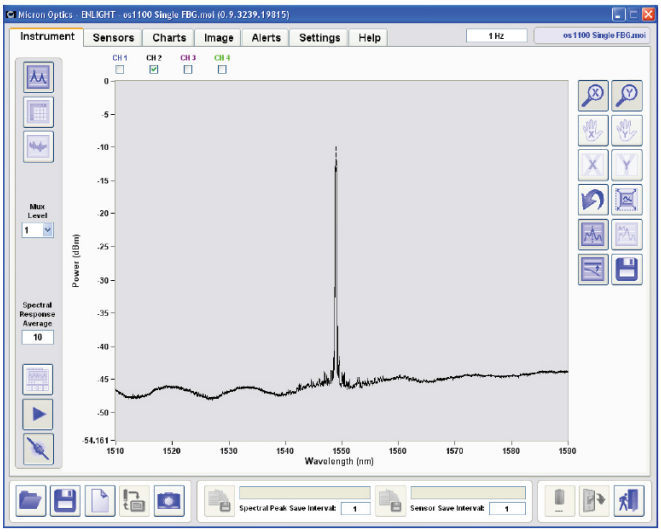


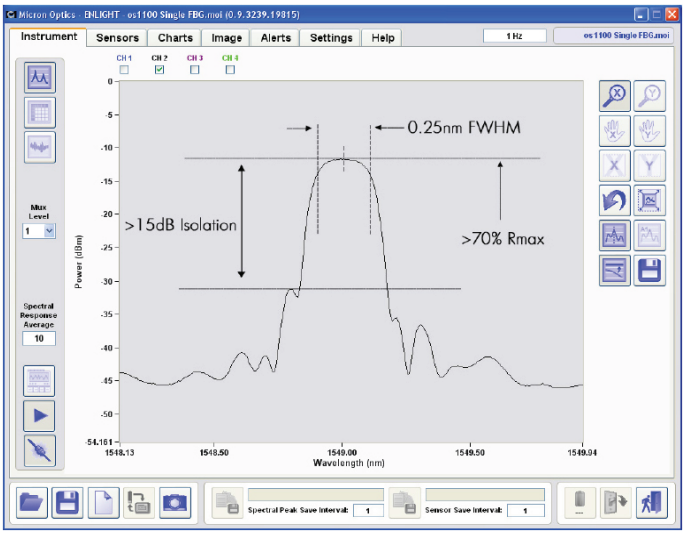
os1100 single FBG with optional FC/APC connector

os1100's are used in applications ranging from basic experiments to construction of complex transducers containing one or more FBGs. The polyimide coating provides excellent transfer of strain through the fiber coating to the FBG in the fiber core. Polyimide also performs well over a wide temperature range.

One or two FC/APC connectors, and loose buffer tube protection, are available as packaging options.

Specifications	os1100
Physical Properties	
Number of FBGs	1
FBG Length	10 mm
Strain Limit	5,000 με
Strain Sensitivity	~ 1.2 pm/με
Operating Temperature Range	- 40 to 120°C
Thermal Response	~ 9.9 pm/°C
Fiber Lead Length	1 m (± 10 cm), each end
Fiber Type	SMF28-Compatible
Fiber Coating	Polyimide
Fiber Re-Coating Diameter	145 - 165 µm
Buffer Tube	1 mm loose tube included with optional FC/APC connector
Fiber Bend Radius	≥ 17 mm
Optical Properties	
Peak Reflectivity (Rmax)	> 70%
FWHM (-3 dB point)	0.25 nm (± .05 nm)
Isolation	> 15 dB (@ ± 0.4 nm around center wavelength)





Ordering Information

os1100-wwww-1xx-1yy (Example: os1100-1560-1FC-1UT)

wwww: Wavelength (+/- 1nm)	1xx: Fiber Lead 1, Length & Connector	1yy: Fiber Lead 2, Length & Connector
Standard: 1512 to 1588nm in 4nm intervals.	1 Standard Lead Length, 1m	1 Standard Lead Length, 1m
Extended: 1460 to 1620nm	UT Unterminated	UT Unterminated
	FC FC/APC Connector	FC FC/APC Connector

MICRON OPTICS
Micron Optics, Inc.
1852 Century Place NE
Atlanta, GA 30345 USA
phone 404 325 0005
fax 404 325 4082
www.micronoptics.com