Fiber Bragg Grating Array | os1200

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.
- Demonstration of FBG multiplexing.
- 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 locations.
- Splice-free array.
- Non metallic construction.

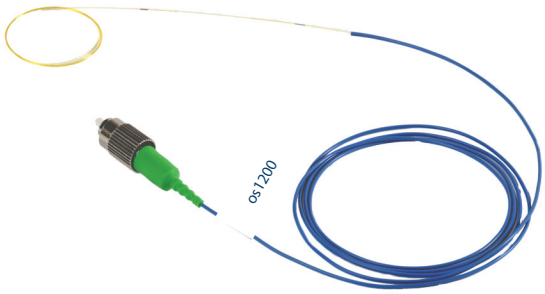
Advantages of FBG Sensor Technology

- 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 os1200 Fiber Bragg Grating (FBG) Array is designed for use in fiber optic sensing applications. It is a six meter long polyimide coated optical fiber with five FBGs spaced at one meter intervals.

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 an 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. Each os1200 is built with five FBGs at standard center wavelengths.



os1200 FBG array with optional FC/APC connector

os1200's are used in applications ranging from basic experiments with FBGs 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. The splice free array provides a convenient way to take advantage of the multiplexing capabilities of FBGs.

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

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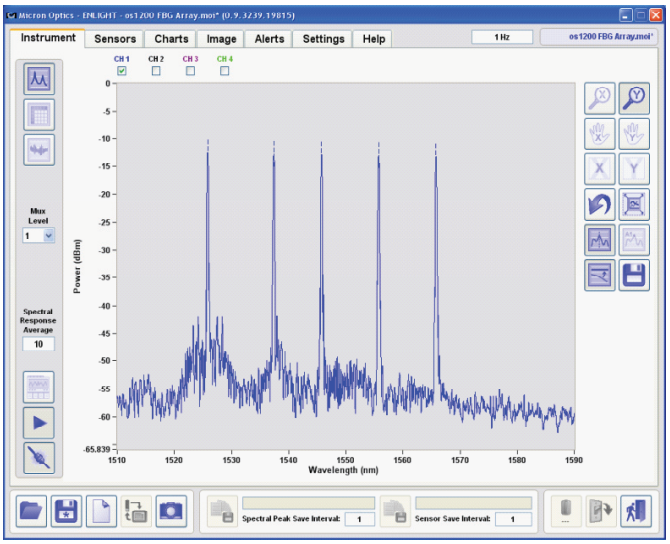
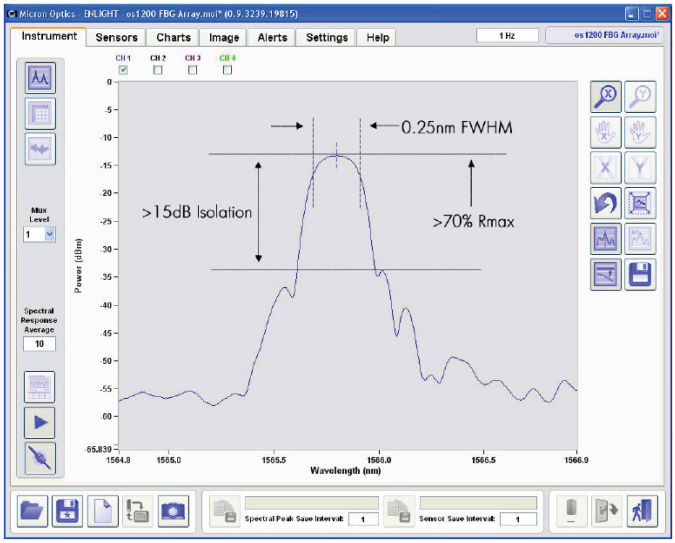
Specifications	os1200
Physical Properties	
Number of FBGs	5
FBG Length	10 mm
FBG Spacing	1 m ± 50 mm
Strain Limit	5,000 με
Strain Sensitivity	~ 1.2 pm/με
Operating Temperature Range	- 40 to 120°C
Thermal Response	~ 9.9 pm/°C
Fiber Lead Length	1 m (± 10 cm), each end
Fiber Type	SMF28-Compatible
Fiber 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	
Center Wavelengths	1526, 1536, 1546, 1556 and 1566 nm (±1 nm)
Peak Reflectivity (Rmax)	> 70%
FWHM (-3 dB point)	0.25 nm (± .05 nm; apodized grating)
Isolation	> 15 dB (@ ± 0.4 nm around center wavelength)





Ordering Information

os1200-1xx-1yy (Example: os1200-1FC-1UT)

1xx: Fiber Lead 1, Length & Connector	1yy: Fiber Lead 2, Length & Connector
1 Standard Lead Length, 1m	1 Standard Lead Length, 1m
UT Unterminated	UT Unterminated
FC FC/APC Connector	FC FC/APC Connector

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