

Applications

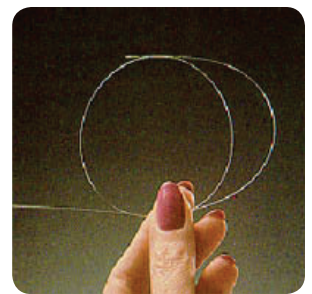
Long-term Monitoring, Risk and Damage Assessment of:

- Civil Structures/Civionics (bridges, dams, tunnels, buildings)
- Energy (wind turbines, pipelines, nuclear reactors)
- Aerospace Vehicles (composite structures, wind tunnels, dynamic tests)
- Oil & Gas (platform structural health monitoring)
- Marine Vessels (hull, mast, rudder, submarine pressure tests)
- Transportation (railways, roadways)

Description

The **os120 Fiber Bragg Grating (FBG) Sensor Array** is five sensors in series in polyamide coated fiber and without any splices. It can be mounted directly on a structure to provide an optical alternative to conventional strain or temperature sensors (see advantages). Installation is easy as the **os120** is mounted using conventional techniques and is designed for use as a single sensor or in series as part of a FBG array of sensors.

All Micron Optics' sensors demonstrate excellent compatibility with Micron Optics sensing instruments and the combination is shown to be as accurate and linear as conventional sensing systems. Please feel free to contact Micron Optics or one of our authorized Value-Added Resellers about your particular optical sensing application.



Some Advantages of FBG-Based Sensors

- **Multi-Sensor Arrays:** Easily facilitates many sensors on a single optical connection
- **Remote Sensing:** Long distances between sensors or between sensors and instrument
- **Easy to Install:** In most cases, can be mounted directly to concrete or composite structures
- **Simple, Low Cost Installation:** Due to multi-sensor array feature
- **Non-Electrical Sensor Design:** Eliminates ESD and spark hazard, and immune to electromagnetic interference
- **Ideal for Harsh Environments:** Small in size, made of glass fiber, uses lightwaves not visible to the naked eye, no electromagnetic field generation by the sensor
- **Variety of Sensors Available:** Strain, temperature, displacement, pressure, etc...



Specifications

os1200

Environmental & Mechanical

Number of Sensors	5 (five)
Sensor Distribution	Even
Gage Type	Bare FBG
Gage Factor	~ 1.2 pm/με or ~10 pm/°C
Pigtail Length	~1 m
Fiber Type	SMF28-C
Fiber Coating	Polyimide
Fiber Re-Coating Diameter	145 - 165 μm
Buffer Tube	Only when ordered with FC/APC connector (Refer to Diagram B)
Connectorization	None (FC/APC available)
Proof Strength	5,000 με OR 10,000 με
Fiber Bend Radius	> 25 mm
Splices Between Sensors	No

Optical

Center Wavelength (±1 nm)	1526, 1536, 1546, 1556 and 1566 nm (others available upon request)
Peak Reflectivity (Rmax)	> 70%
FWHM (-3 dB point)	0.25 nm (± .05 nm; apodized grating)
Isolation	> 12 dB (@ ± 0.4 nm around center wavelength; Refer to Diagram A)

Sensor Positioning (see Diagram B)

Total Fiber Length (L _T)	~6 meters (± 200 mm)
Sensor 1 (S ₁)	~1 meter (± 100 mm) distance from beginning of fiber to S ₁ (1526 nm)
Sensor 2 (S ₂)	1 meter (± 50 mm) distance from S ₁ to S ₂ (1536 nm)
Sensor 3 (S ₃)	1 meter (± 50 mm) distance from S ₂ to S ₃ (1546 nm)
Sensor 4 (S ₄)	1 meter (± 50 mm) distance from S ₃ to S ₄ (1556 nm)
Sensor 5 (S ₅)	1 meter (± 50 mm) distance from S ₄ to S ₅ (1566 nm)
End Fiber Length (L _E)	~1 meter (± 100 mm) distance from S ₅ to L _E

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Connectorization Options

Option 1: Fusion-Spliced FC/APC	Includes metal splice sleeve and loose buffer (adds ~1m to pigtail length)
Option 2: Splice-Free FC/APC	Includes loose buffer (adds no length to pigtail)
Option 3: Fusion-Spliced E2000	Includes metal splice sleeve and loose buffer (adds ~1m to pigtail length)
Option 4: Other	Contact MOI

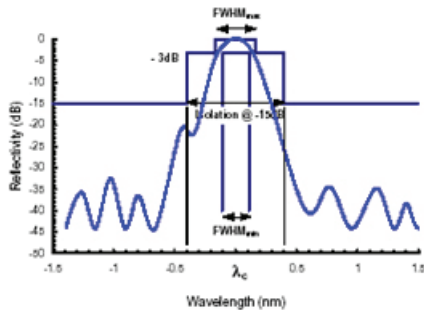


Diagram A - Definition of Optical Specifications

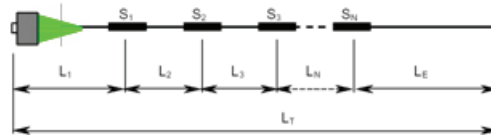


Diagram B - Sensor Positioning Diagram
Sensor shown with optional Splice-Free connectorization.



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