



optical sensing



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 **os100-100 FBG Sensor** is the key component in optical sensing. 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 **os100-100** 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.



Advantages of FBG Sensors

- ◆ **Multi-Sensor Arrays** - easily facilitates many sensors on a single fiber
- ◆ **Remote Sensing** - long distances between sensors or between sensors and instrument
- ◆ **Small Physical Size** - can be embedded directly into concrete or composite structures
- ◆ **Simple, Low Cost Installation** - due to multi-sensor array feature
- ◆ **Passive Sensor** - eliminates ESD and spark hazard, and immune to electromagnetic interference
- ◆ **Insensitive to Corrosion**
- ◆ **Hard to Detect** - 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

Standard fiber Bragg grating (FBG) sensor, custom center wavelength, polyimide coated fiber, polyimide re-coating over FBG, optional splice-free FC/APC connector(s)

Optical (See Diagram A)

Center Wavelength	1527nm, 1537nm, 1547nm, 1557nm and 1567nm
Peak Reflectivity (Rmax)	>80%
FWHM (-3dB point)	0.3nm (+/-0.1nm; apodized grating)
Isolation	15dB (@ +/-0.4nm around center wavelength; apodized grating; Refer to Diagram A)

Environmental & Mechanical

Number of Sensors	1 (one)
Sensor Distribution (Even, Uneven)	N/A
Fiber Type (SMF28 Compatible)	SMF28-C
Fiber Original Coating	Polyimide
Fiber Re-Coating Type	Polyimide
Loose Buffer Tube ¹	None
Connectorization	Optional FC/APC
Proof Strength	>100kpsi
Fiber Bend Radius	>25mm
FBG Sensor Length	5mm (+/-2mm)
Accuracy in Marking Sensors	+/-5mm

Sensors Positioning (See Diagram B)

Total Fiber Length (L _T)	3 meters (+/-100mm)
Sensor 1 (S ₁)	1.5 meters (+/-10mm, See Optical Specifications section for available standard wavelengths)
End Fiber Length (L _E)	1.5 meters (+/-100mm)

¹ Buffer available when sensor ordered with FC/APC connectors. Buffer covers ~75% of L₁ (see Diagram B).

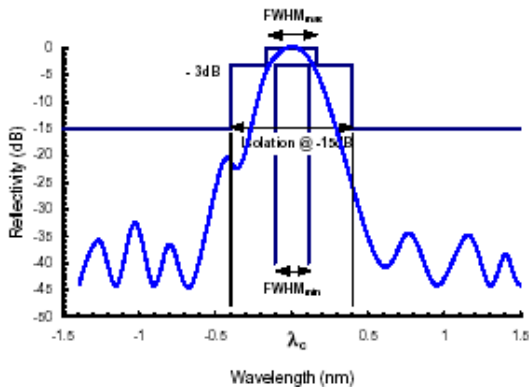


Diagram A - Definition of Optical Specifications

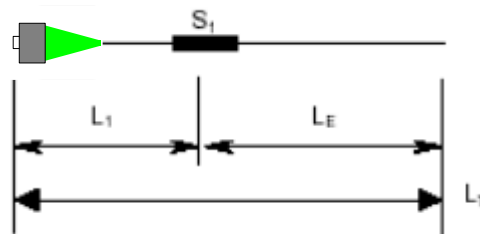


Diagram B - Sensor Positioning Diagram