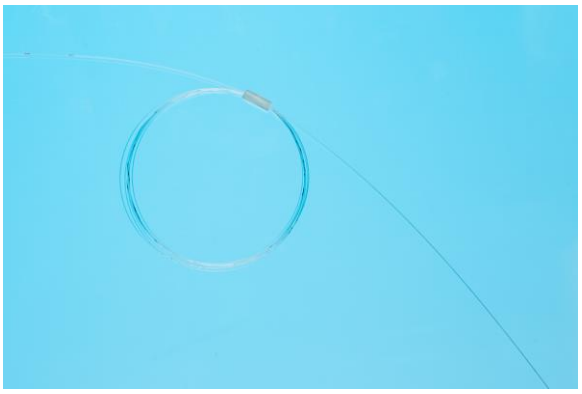
SmartFBG

Fibre Bragg Grating Sensor



FBG Sensor in Acrylate Coated Fibre

Key Features

- Optical Strain and/or Temperature Sensor
- Zero Power, EMI Immune
- Intrinsically Safe
- Highly Stable
- Multiple km Signal Integrity
- Available Singly or in Multiple FBG Arrays
- Suitable for Composite Embedment
- Can be used to manufacture Smart Sensors and Transducers
- Suitable for Long-Term SHM

About SmartFBG

A Fibre Bragg Grating (FBG) is a novel optical sensor recorded within the core of a standard optical fibre. It reflects a narrow bandwidth of light, which responds faithfully to changes in temperature and strain. Many FBG sensors can be recorded onto a single optical fibre to make a SmartFBG Array and interrogated simultaneously with a single instrument - the effect is a very low cost mechanism for distributed monitoring of strain and/or temperature of structures. SmartFBGs can be supplied in standard singlemode fibre or specialist fibre. Inscription techniques may involve the removal and reinstatement of the fibre coating, writing through the coating, or writing on the fibre Drawtower prior to coating application. Applications include surface strain sensing, or use as part of a packaged FBG sensor or transducer.

Specifications

Parameter	Standard				Options
Centre Wavelength	1528 to 1608 nm				Alternative wavelength range
FBG Length	1 mm	2 mm	5 mm	10 mm	
Peak Reflectivity	>=50 %	>=50 %	>=70 %	>=80 %	
3 dB Bandwidth	<1.5 nm	<1.2 nm	<0.7 nm	<0.3 nm	
SLSR Single Sensor	15 dB				>15 dB
Strain Range	± 9,000 µstrain				> ± 9,000 µstrain
Strain Sensitivity	1.2 pm/µstrain				
Strain Resolution[‡]	0.4 µstrain				

Temperature Sensitivity‡	11 pm/˚C		
Temperature Resolution‡	0.05 ˚C		
Fibre Type	Single Mode SMF-28, 9/125 µm		
Fibre Coating and FBG Recoating Options*	Acrylate	Polyimide	High temperature acrylate Other custom coatings
Temperature Range‡	-270 to +85 ˚C	-270 to +300 ˚C	
Cable and Connections	To suit application		

† with 0.5 pm resolution interrogator
‡ decreased temperature sensitivity below -170 ˚C - no temperature sensitivity below -220 ˚C

* Polyimide recoating recommended for strain applications

Specifications may change without notice