

FiberSensing

bringing light to measurement

FS 6200 – STRAIN SENSORS
HIGH PERFORMANCE FBG STRAIN SENSORS

STRAIN

- : high sensitivity
- : self-referenced
- : polyimide, stainless steel and composite housing
- : long-term reliability
- : large scale integration
- : intrinsically safe design
- : immunity to EMI/RFI
- : compatible with most FBG measurement units
- : automatic calibration for FiberSensing measurement units

The FiberSensing strain gages are designed to be bonded, spot welded to structures and components (metallic, concrete, etc.) or directly cast into concrete wet mix. These sensors are fibre optic versions of the conventional resistance strain gages but completely passive, offering inherent insensitivity to environmental induced drift.

SENSOR

FiberSensing strain gages feature high accuracy and resolution, and immunity to electric sparks and EMI/RFI. They are compatible with most common FBG measurement units and suitable for remote sensing being possible to install them kilometers away from the measurement unit and connect a large number of sensors in a single optical fibre.

FS 6200 strain sensors are available in five formats optimized for different applications:

- : Polyimide Strain Sensor
- : Miniature Polyimide Strain Sensor
- : Weldable Strain Sensor
- : Composite Strain Sensor
- : Embedded Strain Sensor

The polyimide strain sensor is the equivalent to the electrical strain gage and can be installed using the same supplies and procedures.

The weldable strain gage is designed to be spot welded to metallic surfaces, offering a significant increase of productivity in the installation process.

The composite strain gage is a light weight and rugged sensor packaging due to the ability to embed the optical fibre FBG in CFRP material. This sensor is suited for application in both steel and concrete structures.

The embedded strain gage is specially designed for embedding in concrete and is available with stainless steel armor buffer and connector protection.

INTEGRATION

Each FiberSensing sensor is provided with a configuration file allowing its characteristics to be automatically inserted into FiberSensing Measurement Units.

APPLICATIONS

FiberSensing strain sensors can be used in a large range of monitoring applications, such as:



- : civil engineering structures
- : large concrete and metallic components
- : nuclear power plants and experiments

ACCESSORIES

The implementation of complex sensing networks in large structures is made simpler with FiberSensing accessories. These include metallically protected jumpers and connections especially designed to resist the harsh civil engineering environments, not only during the construction of the structures but also during its lifetime (humidity, corrosion, etc.). FiberSensing polyimide, composite and weldable strain sensors have an optional metallic protection for installation in severe environments.

ORDERING INFORMATION

FS 6200 – Strain Sensor

p/n	WL
006 2XX XXX XXX	X
	A - 1528.9 nm
	B - 1535.1 nm
	C - 1541.5 nm
	D - 1547.9 nm
	E - 1554.3 nm
	F - 1560.8 nm
	G - 1567.2 nm
	H - 1573.8 nm
	I - 1580.2 nm
	J - 1586.6 nm
	K - 1516.1 nm
	L - 1522.5 nm
	W - xxxx.x nm (custom)
	101 - Ø 0.9 mm cable
	201 - Ø 3 mm cable Indoor
	301 - Ø 3 mm cable Outdoor ¹
	401 - Ø 5 mm Armor ²
010 - terminal	
110 - series	
10 - polyamide 40 mm	
20 - weldable 50 mm	
30 - composite 100 mm	
50 - embedded	
60 - miniature polyamide 40 mm	

- ¹ protection for embedded connectors not available
- ² only available for embedded sensors



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SPECIFICATIONS

Sensor	
sensitivity	1.2 pm/ $\mu\epsilon$
measurement range ³	4 000 $\mu\epsilon$
accuracy	$\pm 2 \mu\epsilon$
resolution	$\pm 1 \mu\epsilon$
Optical	
central wavelength	1510.0 to 1590.0 nm
spectral width (FWHM)	< 0.2 nm
reflectivity	> 75%
insertion loss	< 0.1 dB
side lobe suppression	> 10 dB
Inputs / Outputs	
cable type	\varnothing 0.9 mm
	\varnothing 3 mm Indoor
	\varnothing 3 mm Outdoor
	\varnothing 5 mm
cable length	1 m each side
connectors	FC/APC

³ Measurement range may be customized upon request

Environmental	
operation temperature	-20 to 80° C
relative humidity	< 90% at 80° C
cross sensitivity	10 pm/°C
Mechanical	
packaging	polyimide film stainless steel composite material
effective elasticity modulus ⁴	embedded 30 GPa
dimensions ⁵	polyimide 40 x 12 x 0.25 (mm)
	weldable 45 x 15 x 0.3 (mm)
	composite 100 x 20 x 0.9 (mm)
	embedded 104 x 8 (mm)
weight	polyimide 5 g
	weldable 5 g
	composite 25 g
	embedded 150 g

⁴ Effective elasticity modulus and dimensions may be customized upon request

⁵ Dimensions may be customized upon request

Specifications may change without notice