SmartTape

FBG Strain and Temperature Sensor

Example SmartTape Construction

Key Features

- FBG Strain and/or Temperature Sensor
- Available Singly or in Multiple Arrays
- Flexible, Unobtrusive Veil Cloth Construction
- Highly Stable
- Zero Power, Electrically Immune
- Multiple km Signal Integrity
- Intrinsically Safe
- Suitable for Long-Term SHM
- Developed by Smart Fibres for Composite Embedment

About SmartTape

SmartTape is a lightweight and highly flexible FBG strain and temperature sensor, constructed by integrating the sensing fibre within an unimpregnated glass fibre mat (veil cloth). The sensor is embedded or attached by simply brushing on with a suitable resin. The result is a sensor that is convenient for composite manufacturers to handle and embed, or suitable for surface mount attachment to irregular shaped structures, or in installations where a very low sensor profile is desired.

Installations to date include wind turbine, yacht masts, civil structures and riser pipes.

Specifications

Parameter	Standard	Options*
Tape Dimensions	As required	
Gauge Length (approx.)	5 mm	As required within sensor length
Strain Range	± 9,000 µstrain	> ± 9,000 µstrain
Strain Sensitivity	1.2 pm/µstrain	
Strain Resolution‡	0.4 µstrain	
Temperature Range	-20 to +50 °C	Extended temperature range
Temperature Sensitivity	11 pm/°C	
Temperature Resolution‡	0.05 °C	
Fibre Type	Single Mode SMF-28, 9/125 µm	

Typical FBG Type	CWL 1510 to 1590 nm, FWHM ~0.7 nm R > 70 %, Apodised profile, SLSR > 15dB	Alternative CWL or spectral profile
Cable and Connections	To suit application	
Recommended Bonding Agents (subject to temperature range)	Composite matrix (embedded) Unfilled epoxy resin (surface mounted)	

[†]with 0.5 pm resolution/1 pm accuracy (e.g. SmartScan) interrogator
[*]Custom SmartTape available on request for volume applications

Specifications may change without notice