



*SmartTemp Isolated Coupon Package*

## Key Features

- FBG Temperature Sensors
- Zero Power, EMI Immune, Intrinsically Safe
- Broad Operating Temperature Range
- Highly Stable
- Multi-km Signal Integrity
- Numerous Package Options to Suit Applications
- Available as Multiple Sensor Arrays

## About SmartTemp

Smart Fibres FBG Temperature Sensors operates by one of two methods:

- Loose tube, whereby the FBG is isolated from external strain by a tubular housing and wavelength variations due to the thermo-optic coefficient of the FBG are measured.
- Isolated coupon, whereby the FBG measures the expansion of a coupon of material, isolated from external strain, and wavelength variations due to the coupon thermal expansion plus the thermo-optic coefficient of the FBG are measured.

The loose tube construction benefits from smaller sensor packaging and greater installation flexibility. The isolated coupon construction benefits from greater measurement sensitivity. For a truly, miniature temperature sensor, for example to embed within a composite, a terminal FBG can be housed within a polyimide capillary of typ. 400 µm diameter.

FBG temperature sensors are also available in our SmartPatch, SmartFBG and SmartWeld constructions.

## Specifications

Parameter	Loose Tube	Isolated Coupon	
		Steel	Aluminium
Sensor Construction	Steel or polymer tubing with sensing fibre loose inside	Metallic housing with sensing fibre bonded to metallic coupon inside	
Temperature Sensitivity (typ.) <sup>‡</sup>	11 pm/°C	11 plus 1.2*coupon CTE	
		= ~24	= ~40
Measurement Resolution (typ.) <sup>‡</sup>	0.05 °C	0.02 °C	0.01 °C
Measurement Accuracy (typ.) <sup>†</sup> (with Perfect Calibration)	0.1 °C	0.04 °C	0.025 °C
Measurement Range <sup>‡</sup>	-220 to +150 °C		

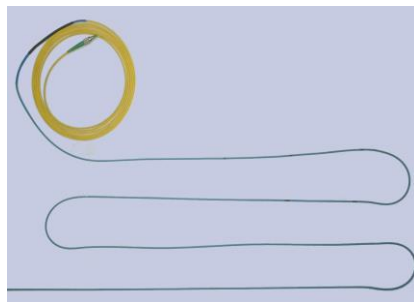
Fibre Type	Single Mode SMF-28, 9/125 $\mu\text{m}$	
Typical FBG Type*	CWL 1510 to 1590 nm, FWHM $\leq 0.7$ nm, R $> 70\%$ , Apodised profile, SLSR $> 15\text{dB}$	
Sensor Dimensions (typ.)	Tubing 2 to 4 mm OD Length to suit application	Housing 8*8*60 mm Cable 2 to 4 mm OD
Cable and Connections	To suit application	

\*Alternative CWL or spectral profile on request

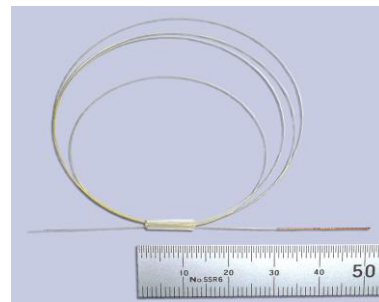
† With 0.5 pm resolution / 1 pm accuracy interrogator. In practice accuracy may be limited by reference measurement

‡ Decreased temperature sensitivity below  $-170^\circ\text{C}$

Specifications may change without notice



*Loose Tube Multi-Point Temperature Sensing Array*



*Composite Embedment Package*