

- **FBG displacement sensor**
- **Zero power, EMI immune, intrinsically safe**
- **High accuracy and stability**
- **Calibrated temperature sensor option**
- **Dense multiplexing capability**
- **Rugged metal housing**
- **Simple bolted installation**
- **Suitable for long-term SHM**



SmartBridge Displacement Sensor

SmartBridge is a fibre Bragg grating based displacement sensor that is ideal for monitoring structural movement in one axis, e.g. relative movement between concrete bridge deck panels or crack-growth monitoring on ancient monuments. The sensor can be easily installed using the mounting holes provided and the heavy-duty, polyurethane coated, armoured cable is suitable for use in harsh outdoor environments. Multiple SmartBridge sensors can be connected in series on a single channel of a FBG interrogator. An inbuilt temperature sensor provides compensation for thermal variations in the installation and, on request, can provide a calibrated temperature sensing capability. SmartBridge was developed for a structural health monitoring campaign on a UK road bridge in which 85 sensors were installed and are providing ongoing bridge health and usage statistics.

SmartBridge Specifications (typ):

	Unit	Standard	Options*
Displacement range	mm	10	Alternative range
Displacement accuracy [†] <small>Over displacement and temperature range</small>	% of FS	≤ 0.5	
Displacement resolution [†]	% of FS	≤ 0.05	
Operating temperature range	°C	-20 to +50	
Temp accuracy (typ) [†]	°C	-	0.05
Enclosure dimensions	mm	150 x 90 x 35	Scalable with displacement range
Fibre type		Single Mode SMF-28, 9/125µm	
Typical FBG type		CWL 1510 - 1590 nm, FWHM ~0.7 nm R > 70%, Apodised profile, SLSR > 15dB	Alternative CWL or spectral profile
Cable and connections		To suit application	

[†] with 0.5 pm resolution, 1 pm accuracy interrogator (e.g. SmartScan)

* Custom SmartBridge available on request for volume applications

All specifications are correct at the time of writing and may change without notice.

Certain specifications may be speculative or untested - please contact us to confirm the specification meets with your requirements.

Example SmartBridge Installation:



Motorway Bridge Deck and Soffit