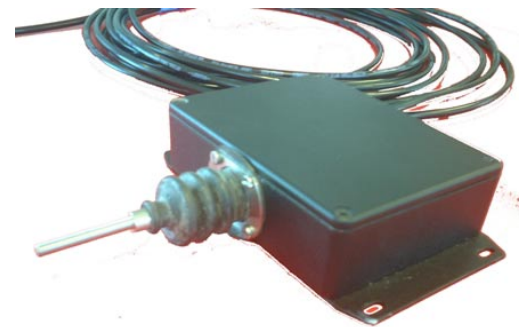


- ◇ **FBG displacement sensor**
- ◇ **Zero power, EMI immune, intrinsically safe**
- ◇ **High accuracy and stability**
- ◇ **Calibrated temperature sensor option**
- ◇ **Dense multiplexing capability**
- ◇ **Rugged metal housing**
- ◇ **Simple bolted installation**
- ◇ **Suitable for long-term SHM**



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 | Scaleable 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. W4)

* 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