



Model FP4000 Fiber Optic Strain Gauge

The Model FP4000 Fiber Optic Strain Gauge is designed for use in environments where it may be difficult to use conventional types of strain gauges because of space considerations, high levels of electrical interference or where intrinsic safety is an issue. Measurements of dynamic events are also possible with these gauges and the requisite dataloggers. The strain gauges have a very low coefficient of thermal expansion and can be used to measure both mechanical and thermo-mechanical strains in a variety of different materials.

| Specifications | FP4000-1.0 | FP4000-2.5 | FP4000-5.0 |
|------------------------------------|--|--|--|
| Ranges | -1000 to +1000 $\mu\epsilon$ | -2500 to +2500 $\mu\epsilon$ | -5000 to +5000 $\mu\epsilon$ |
| Resolution | 0.15 $\mu\epsilon$ | 0.30 $\mu\epsilon$ | 0.50 $\mu\epsilon$ |
| Gauge Factor Accuracy ¹ | $\pm 3\%$ F.S. | $\pm 3\%$ F.S. | $\pm 10\%$ F.S. |
| Temperature Sensitivity | 0.85 to 1.22 $\mu\epsilon/^\circ\text{C}$ | 0.85 to 1.22 $\mu\epsilon/^\circ\text{C}$ | 0.85 to 1.22 $\mu\epsilon/^\circ\text{C}$ |
| Transverse Strain Sensitivity | transverse strain insensitive | transverse strain insensitive | transverse strain insensitive |
| Temperature Operating Range | -40 $^\circ\text{C}$ to +80 $^\circ\text{C}$ | -40 $^\circ\text{C}$ to +80 $^\circ\text{C}$ | -40 $^\circ\text{C}$ to +80 $^\circ\text{C}$ |
| Dimensions (L x W x H) | 100 x 25 x 1 mm | 100 x 25 x 1 mm | 100 x 25 x 1 mm |

¹The accuracy of the OSP sensors is determined by sample testing of controlled batches at the factory. The manufacturing technique results in the spans shown above and is confirmed by actual strain tests performed on samples from batch lots.



Model FP4700 Fiber Optic Temperature Sensor

The Model FP4700 Fiber Optic Temperature Sensor is designed for use in environments where high levels of electrical interference exist or where intrinsic safety is an issue. The FP4700 uses the temperature-dependent birefringence of a specially selected crystal as the temperature transduction mechanism. This crystal does not show thermal creep or aging as with some other fiber optic sensors.

| Specifications | |
|---------------------------------|---|
| Temperature Ranges ¹ | -40 $^\circ\text{C}$ to +250 $^\circ\text{C}$ |
| Resolution | 0.1 $^\circ\text{C}$ |
| Accuracy ² | ± 1.0 $^\circ\text{C}$ |
| Response Time | 1.5 s typical |
| Operating Humidity Range | 0-100% |
| Dimensions (L x ϕ) | 50 x 4.8 mm (sensor) |

¹The available operating range is dependent on cable type (contact GEOKON with temperature parameters).
²Total accuracy over the full range including both signal conditioner and sensor errors. Higher accuracy available on request.



FP4911 Fiber Optic Rebar Strainmeter

The Model FP4911 Fiber Optic Rebar Strainmeter is designed for measuring strains in foundations, slurry walls, precast piles, caissons, bridge abutments, tunnel liners, etc. The standard Model FP4911 (#4 rebar), known as the "Sister Bar," is installed alongside structural rebar. The Fibre Optic element employed in this sensor makes it particularly suitable where dynamic measurements are to be made and/or on projects where other fiber optic sensors are deployed.

| Specifications | |
|--|--|
| Range | -1000 to +1000 $\mu\epsilon$ |
| Resolution | 0.15 $\mu\epsilon$ |
| Accuracy | $\pm 0.25\%$ F.S. |
| Nonlinearity | < 0.5% F.S. |
| Temperature Sensitivity | 0.85 to 1.22 $\mu\epsilon/^\circ\text{C}$ |
| Temperature Operating Range ¹ | -40 $^\circ\text{C}$ to +80 $^\circ\text{C}$ |
| Rebar Size | 4 (Sister Bar) |
| Active Gauge Length | 914 mm |

¹Other ranges available on request.