

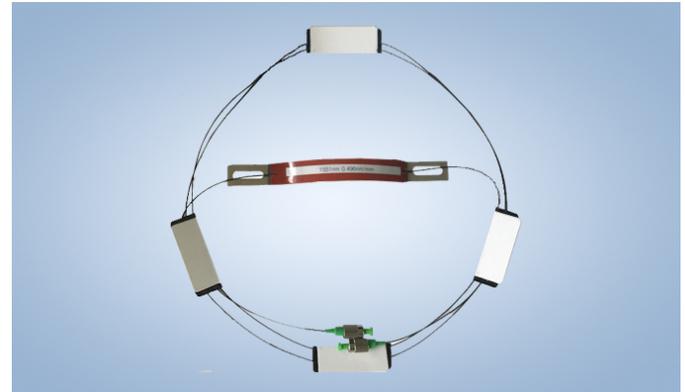
Description

The T405 is a small dimension high sensitivity displacement sensor designed for monitoring cracks and vibrations in surface mounted applications.

The T405 optical sensor consists of a Fiber Bragg Grating (FBG) sensing element embedded in a curved steel frame. This patented sensor yields excellent wavelength to crack growth linearity and its fast response time also makes it ideal for vibration monitoring.

The T405 crack sensor is designed to make handling and installation fast, easy and intuitive. It delivers the many advantages inherent to all FBG based sensors. The sensor's cable specifications listed herein represent the most popular configuration. The manufacturing process for the T405 allows for significant variations in sensor and cable construction including self-temperature compensation, termination by other types of optical connectors, as well as cable availability in custom lengths and with customer defined spacing between sensing points.

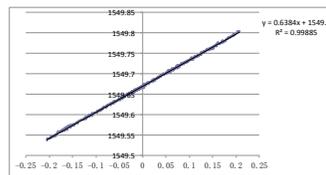
Used extensively in various civil structures, including buildings, pillars, and bridges. Well suited for geotechnical applications.



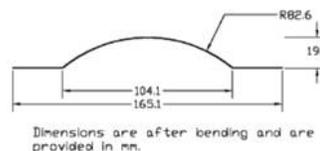
Sensor manufactured and sold by Technica under International License from The University of Illinois at Chicago.

Key Features

Excellent linearity. The curved steel structure of the T405 and the advanced fiber to steel bonding technique used in producing this sensor yield a simple transducer configuration of high linearity and repeatability.



Crack growth monitoring. Well suited for projects that include the need to monitor uneven or grossly misaligned cracked surfaces. Produced in sizes to serve an expanding spectrum of applications.



Vibration monitoring. The FBG element at the core of this sensor responds in nanoseconds. The steel frame is an ideal vibration transfer mechanism from the structure under test to the FBG core.

Low cost, long lifetime, and easy deployment. Low cost per sensing point and stable operation over the long-term. The original design eliminates the need for high precision alignment in the field.



Parameter	Specifications
Maximum Gap or Crack	100 mm
Maximum Displacement (Gap or Crack Change)	3mm or +/-1.5mm, Linear Cal 8mm or +/-4mm, Pwr Fn Cal
Gap Change Sensitivity	~1.6µm/pm
Gap Change Accuracy	0.05% F.S.
Vibration Range	0-10 kHz
Wavelengths / Tolerance	1460 to 1620 nm, +/-0.5
FBG Length and SLSR	<10mm, >15 dB
Reflection FWHM	0.2 nm to 0.3 nm
Reflectivity %	>70%
Cable Pigtail Diameter	250 µm, 0.9 mm, or 3mm
Temperature Range	-40°C to +80°C
Temperature Calibration Constant for -40C to 80C	~10 pm/°C
Optical Connector	FC/APC, or custom

Applications in Civil Engineering, Geotechnical, Mining, Energy and Structural Dynamics

Technica undertakes a rigorous development process before products release. The company is also firmly committed to continuous improvements after release to insure performance to the highest standards, hence, specifications are subject to update without notice.

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