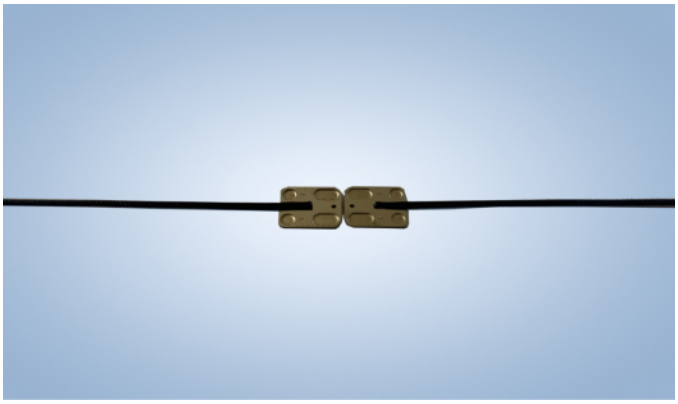
T210 / Mini Surface Strain Sensor

Description

The T210 is a Single-Mode Fiber (SM) based Fiber Bragg Grating (FBG) Mini Packaged Surface Sensor for use in environments from -20°C to +120°C.

Available in a wide range of optical specifications. Ultra-small packaging. Ready for direct mounting steel construction exhibiting excellent wavelength to strain linearity. Calibration service available upon request. The full-scale (FS) accuracy and precision specifications take into account any hysteresis, non-linearities, and the repeatability of the sensor. The T210 sensor handling and installation is fast, easy and intuitive. Delivers the advantages inherent to FBG based sensors. Immune to lightning and electromagnetic interference (EMI).

T210 series Surface Strain Sensors are fabricated using licensed and proprietary state-of-the-art laser manufacturing technologies and product designs. The sensor packaging described herein represents the most popular configuration and can be customized.



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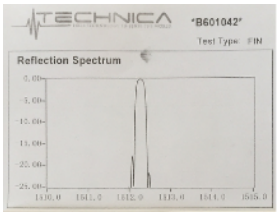
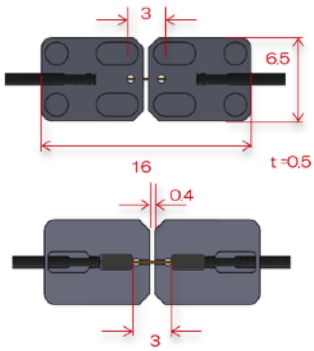
Key Features

Strain and temperature linearity. The T210 design for both temperature and strain measurements uses a precision made FBG written into the fibers' core for producing a transducer configuration of high linearity, resolution, accuracy, and precision. SLSR & BW options.



Ultra-small packaging format. The T210 sensor is well suited for precisely measuring strains in small spaces and can be manufactured with ultra-low bend radius fiber.



Pre-Strain level is set at the factory. The T210 pre-strain level can be factory set to accommodate any strain range within the strain limits of -2000ue to +7,000ue. Typically it is set for the whole range.

Spot-welded. The T210 is designed to be surface mounted by spot-welding. Installation video available upon request.

Ready to be daisy chained. Well suited for projects that include the need to monitor strain at one or many locations. Provided as single connectorized sensors or in ready to install arrays of various lengths and with a flexible number of sensors.

Low cost and field proven. For demanding projects that require both low cost per sensing point and stable operation for long-term.

Parameter	Specifications
Wavelengths and Tolerance	1459 to 1621 nm, +/-0.5 nm; 980, 1060, 1310 nm, other
Reflection BW (FWHM)	0.6 nm to 1.2 nm; other opt.
Reflectivity %	>50%; other options
SLSR	10dB, 12dB, 15dB; other
Strain Range	-2000με to +7,000με
Strain Sensitivity	1.2pm/με
Strain Precision	<0.05% FS (<0.02% FS typical)
Strain Accuracy	<0.25% FS (<0.1% FS typical)
Gage Length, Gage Factor	3mm, 0.7936
Sensor Pigtail (Length, DIA)	1m, 900um
Min Cable Bend Radius	24mm std; 2mm option
Optical Connector	FC/APC std; LC/APC option
Housing Material	Stainless Steel SUS304
In-Shell Dimensions (LxWxH) Sensor Dimensions (LxWxH)	26x13x1mm 16x6.5x0.5mm
Weight	170 g
Mounting Methods	Spot Welding, Screws, Glue

Applications in Civil Engineering, Energy, Industrial, and Research Laboratories

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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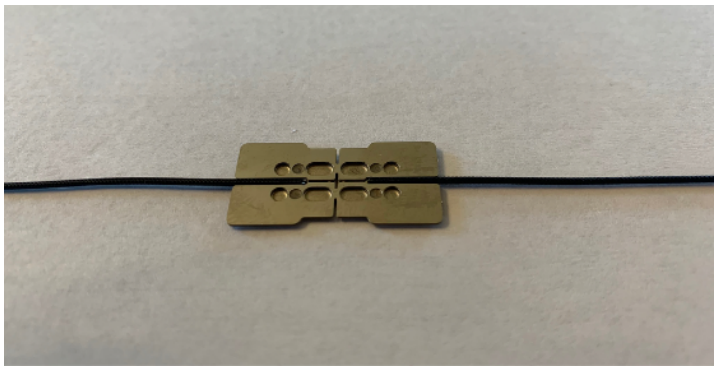
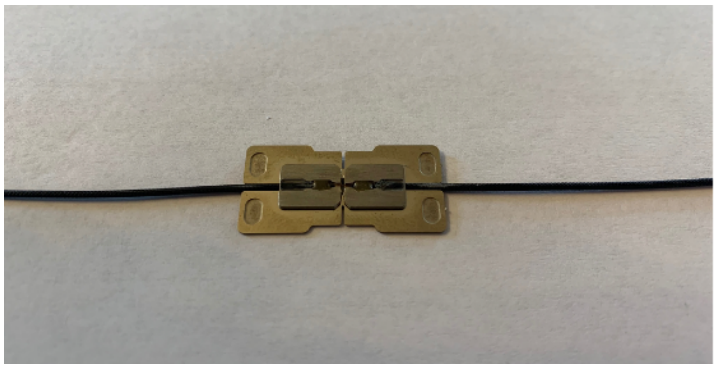
Spot-welding is the primary recommended method for achieving a long term stable bond between the monitored structure and the T210 sensor. It takes 10 minutes.

Tools: (1) TS900 or equivalent spot welder for 0.2mm steel plates, (2) FBG interrogator

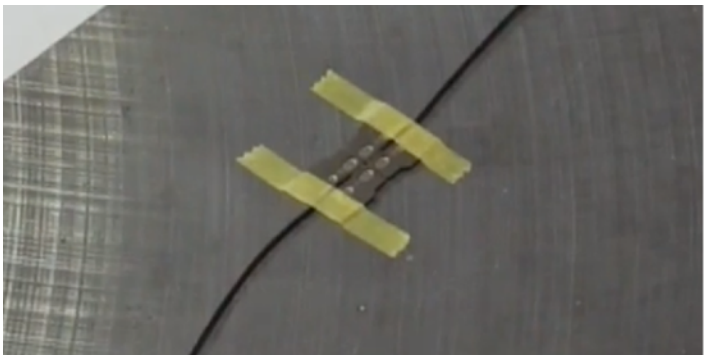
T210 Top View before Installation



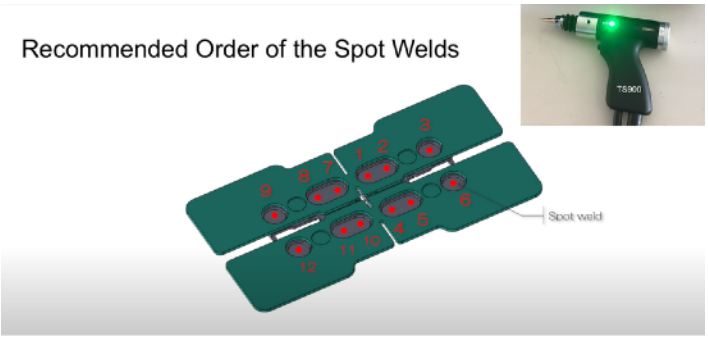
T210 Bottom View before Installation



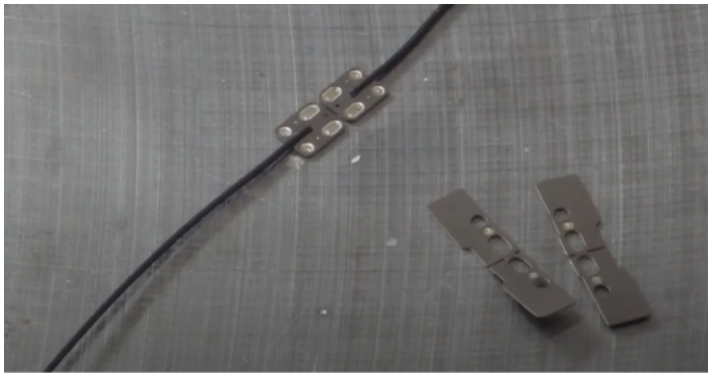
T210 is secured with tape to the clean surface



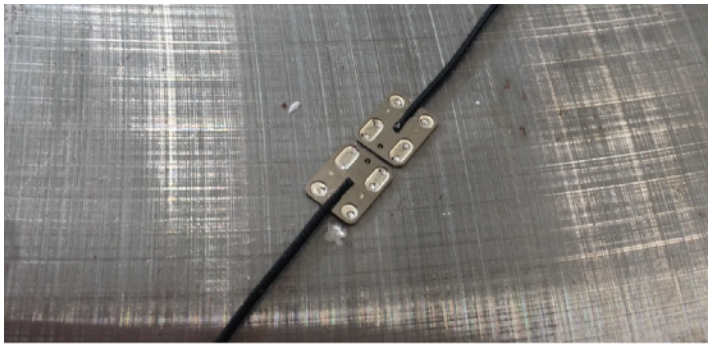
Spot welding of the sensor to the surface: The T210 is surrounded by two SS304 metal shells which enable spot-welding the sensor to the monitored structure. There are 8 spot-welds needed to be done in order to properly secure the T210.



Pull-up / snap-off the shells from T210 Strain Sensor:



Installed T210 Strain Sensor:



Spot Welder: We recommend using our TS900 Spot Welder, which has been optimized for Optical Sensing Applications. Other spot-welders may be compatible too.

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