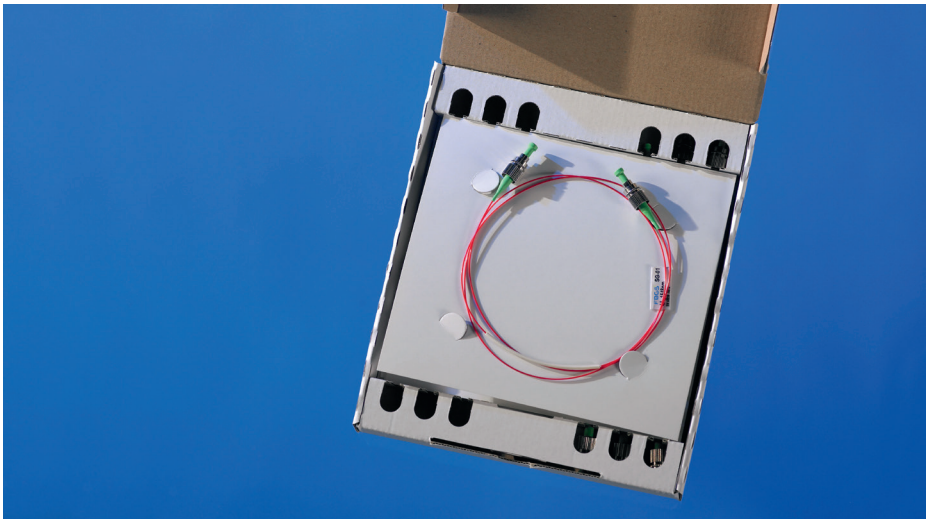
FBGS
DRAW TOWER GRATINGS

Strain Gage
SG-01

Fiber Bragg Gratings reinvented

Draw Tower Gratings (DTG®s) are produced during the drawing process of the fiber itself, before the primary coating is applied. This is a cost effective production process for high quality Fiber Bragg Gratings. This offers unique characteristics such as extremely high breaking strength, insensitivity to bending, spliceless array configurations and uniform coating coverage. FBG parameters and coating material can be selected based on customer needs.

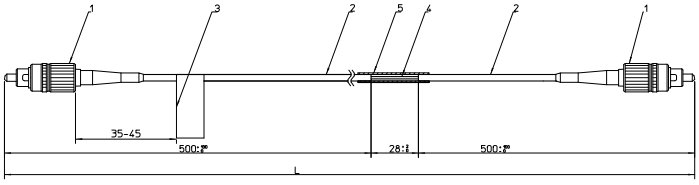


Description

The Strain Gage SG-01 is the fiber optic equivalent of an electrical strain gage. The Strain Gage SG-01 can be mounted directly on the surface of a structure by means of an adhesive. In this way, the fiber sensor makes direct contact with the surface and therefore accurately measures the strain at the surface. Supply of the strain gages, installation tools and instruction manual can be found in the Strain Gage Installation Kit (SGK-01).

The sensors are produced using a draw tower production process which gives the fibers a very high strength which in turns ensures that the sensors have excellent fatigue behaviour. Also the fiber coating is specifically developed for strain sensing applications and so it need not be removed prior to installation of the sensors.

The Strain Gage SG-01 has a connector at both ends (1) in order to make series configurations possible. In its standard configuration, the sensor has protective tubing before (2) and after (2) the sensor area (4) and it has a free fiber length of 28 mm centred around this area (4). A rubber sleeve (5) is placed over the exposed fiber area for protective purposes and must be removed before installation. The fiber is fixed to the tubing so that it can be kept straight by pulling slightly at the tubing.



Features

- High strength sensors with excellent fatigue resistance
- Direct mounting of the sensors to the surface to be monitored

Applications

The fibre optic Strain Gage SG-01 can be used to measure strain changes on the surface of material (due to tension, compression and bending) of metallic or composite structures. In combination with high speed interrogators from FBGS, vibration analysis can be performed also.

Standard Specification

Parameter	Value
Strain resolution[1]	0.85 με
Strain precision[1]	1.7 με
Strain range	1 % (long term) 5 % (short term)
Operating temperature range[2]	-50 °C to +130 °C
Active gage length[3]	8 mm
Overall gage length[4]	28 mm
Coating material	ORMOCER®
Fiber diameter (coated)	195 µm
Tubing material	PVDF
Tubing diameter	0.9 mm
Tubing length (left and right)	45 cm
Connector type	FC/APC

[1] Using a depolarized measurement device with a 1 pm wavelength resolution and precision.

[2] Of the free fiber. The temperature range for the fixed fiber also depends on the adhesive used and on the bonding conditions. The temperature range is only specified for the sensor, not for the connector. Splicing is recommended for extreme temperatures.

[3] The length of the sensing part of the fiber. The strain is averaged over this length.

[4] The total length of fiber that is fixed to the structure by means of an adhesive.

Ordering information

A standard package includes 5 x SG-01 sensors. The wavelength of these gages will be identical and can be chosen according to the table below. A mix of selectable wavelengths can be obtained as well for the strain gauge kit (SGK-01). The wavelengths should be specified as indicated below.

Example:

S	G	0	1	-	X	X

Nominal wavelength	
Standard	
S1	1510 nm
S2	1515 nm
S3	1520 nm
S4	1525 nm
S5	1530 nm
S6	1535 nm
S7	1540 nm
S8	1545 nm
S9	1550 nm
S10	1555 nm
S11	1560 nm
S12	1565 nm
S13	1570 nm
S14	1575 nm
S15	1580 nm
S16	1585 nm

Nominal wavelength	
Strain Gage Kit refills	
1A	1527.0 nm
2A	1534.0 nm
3A	1541.0 nm
4A	1548.0 nm
5A	1555.0 nm
1B	1530.5 nm
2B	1537.5 nm
3B	1544.5 nm
4B	1551.5 nm
5B	1558.5 nm
MA	Mix: 1A, 2A, …, 5A
MB	Mix: 1B, 2B, …, 5B
Custom : Contact sales department	

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