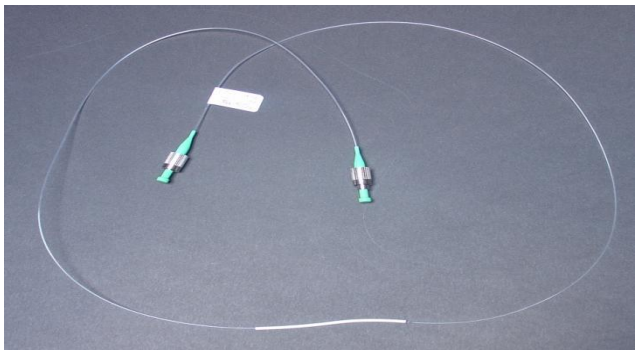
Strain Gage SG-01

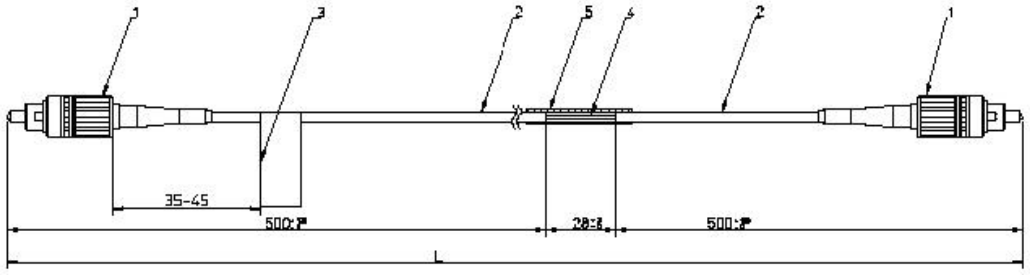
Description

The Strain Gage SG-01 is the fibre 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 fibre sensor makes direct contact with the surface and therefore measures directly the strain at the surface. Installation of the optical Strain Gage happens preferably by means of the FOS&S Strain Gage Installation Kit (SGK-01).



The sensors are produced using a unique production process which ensures high strength of the fibres which in turns makes sure that the sensors have an excellent fatigue behaviour. Also the fibre coating is specifically developed for strain sensing applications and so it need not to 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 a protective tubing before (2) and after (2) the sensor area (4) and it has a free fibre length of 28 mm centred around this area (4). A rubber sleeve (5) is placed over the free fibre part for protective purposes and needs to be removed before installation. The fibre is fixed to the tubing so that it can be kept straight by slightly pulling at the tubing.



Features

- High strength sensors implying excellent fatigue resistance
- Direct fixation of the sensors to the surface(s) to be monitored.

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Applications

The fibre optic Strain Gage SG-01 can be applied to measure strain changes (due to tension, compression and bending) of metallic or composite structures. In this way, it allows to deduce the stresses which act upon the structure that is being monitored. In combination with high speed interrogators, also vibrational analysis can be performed.

Standard specifications

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 ®
Fibre diameter (coated)	195 μm
Tubing material	PVDF
Tubing diameter	0.9 mm
Tubing length (left and right)	45 cm
Connector type	FC/APC

[1] Taking into account a depolarized measurement device with a 1 pm wavelength resolution and precision.
[2] Of the free fibre. The temperature range for the fixed fiber depends also on the used adhesive and on the bonding conditions. The temperature range is only specified for the sensor, not for the connector. Splicing is recommended for the extreme temperatures.
[3] The length of the sensitive 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.

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Ordering information

A standard package includes 5 SG-01 sensors. The wavelengths of all these gages are 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	-	S	9

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
Strain Gage Kit refills	
1A	1527 nm
2A	1534 nm
3A	1541 nm
4A	1548 nm
5A	1555 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	

This product has been developed in the framework of a joint collaboration between the Belgian Science Policy and the Federal Public Service of Economy, SMEs, Independent Professions and Energy of Belgium.

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