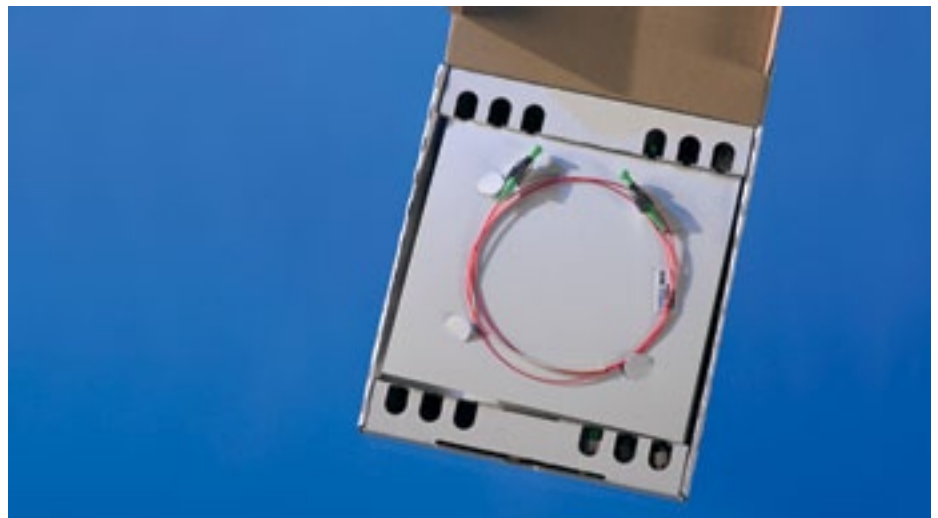


## Strain Gage SG-01

### Fibre Bragg Gratings reinvented

*Draw Tower Gratings (DTG®s) are produced during the drawing process of the fibre itself, before the primary coating is applied. This is a cost effective production process for high quality Fibre 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.*

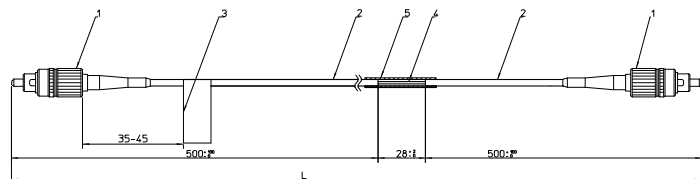


### Description

The Strain Gage SG-01 is the 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 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 fibres a very high strength which in turns ensures that the sensors have excellent fatigue behaviour. Also the fibre 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 fibre length of 28 mm centred around this area (4). A rubber sleeve (5) is placed over the exposed fibre area for protective purposes and must be removed before installation. The fibre 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 <sup>1</sup>	0.85 µε
Strain precision <sup>1</sup>	1.7 µε
Strain range	1 % (long term) 5 % (short term)
Operating temperature range <sup>2</sup>	-50 °C to +130 °C
Active gage length <sup>3</sup>	8 mm
Overall gage length <sup>4</sup>	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

<sup>1</sup> Using a depolarized measurement device with a 1 pm wavelength resolution and precision.

<sup>2</sup> Of the free fibre. The temperature range for the fixed fibre 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.

<sup>3</sup> The length of the sensing part of the fibre. The strain is averaged over this length.

<sup>4</sup> The total length of fibre 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:

							Nominal wavelength		Nominal wavelength	
S	G	0	1	-	X	X	Standard		Strain Gage Kit refills	
							S1	1510 nm	1A	1527.0 nm
							S2	1515 nm	2A	1534.0 nm
							S3	1520 nm	3A	1541.0 nm
							S4	1525 nm	4A	1548.0 nm
							S5	1530 nm	5A	1555.0 nm
							S6	1535 nm	1B	1530.5 nm
							S7	1540 nm	2B	1537.5 nm
							S8	1545 nm	3B	1544.5 nm
							S9	1550 nm	4B	1551.5 nm
							S10	1555 nm	5B	1558.5 nm
							S11	1560 nm	MA	Mix: 1A, 2A, ..., 5A
							S12	1565 nm	MB	Mix: 1B, 2B, ..., 5B
							S13	1570 nm		
							S14	1575 nm		
							S15	1580 nm		
							S16	1585 nm		
									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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