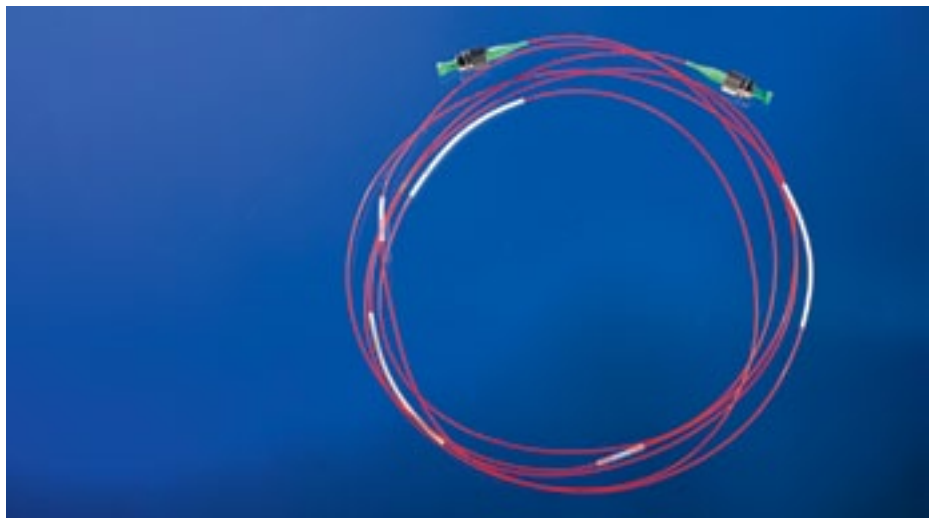


## Strain Gage Chain SGC-01

### Fibre Bragg Gratings reinvented

*Draw Tower Gratings (DTG<sup>®</sup>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 Chain SGC-01 is a spliceless chain of several fibre optic Strain Gages in series. These Strain Gages are the fibre optic equivalent of electrical strain gages. The Strain Gages 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 installation tools and instruction manual can all 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 Chain can be entirely configured according to customer needs i.e. the number of sensors and the intermediate sensor distances can all be specified at time of ordering. The Strain Gage Chain has a connector at both ends in order to make series configurations possible and has a protective tubing over its entire length. At the sensor positions, the tubing is omitted so that the sensors can be directly attached to the surface to be measured.

### Features

- Single fibre cable containing multiple sensing points
- Fully configurable according to customer needs
- High strength sensors offering excellent fatigue resistance
- Direct attachment of the sensors to the surface(s) to be monitored



## Applications

The Strain Gage Chain SGC-01 is used to measure strain changes (due to tension, compression and bending) on the surface of metallic or composite structures under test, at multiple positions employing only a single optical fibre. In this way, an entire strain distribution can be monitored with a single fibre cable so that the loads which act upon the structure can be deduced. 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 $\mu\epsilon$
Strain precision <sup>1</sup>	1.7 $\mu\epsilon$
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
Standard pigtail length	500 mm / 500 mm
Coating material	ORMOCER®
Fibre diameter (coated)	195 $\mu\text{m}$
Tubing material	PVDF
Tubing diameter	0.9 mm
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

Please contact our 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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