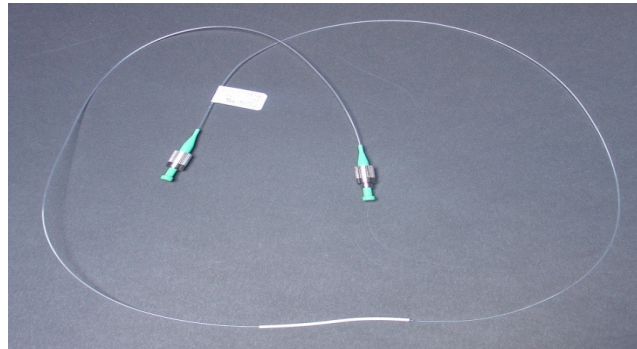


## Strain Gage Chain SGC-01

### 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 measures directly the strain at the surface.

Installation of the optical Strain Gages 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 Chain can be entirely configured according to the customers needs i.e. the number of sensors and the intermediate sensor distances can all be specified according to the customer requirements. 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.

### Features

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

### Applications

The Strain Gage Chain SGC-01 can be applied to measure strain changes (due to tension, compression and bending) of metallic or composite structures at multiple positions employing only a single optical fibre. 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, also vibrational (modal) analysis can be performed.

## Standard specifications

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
Coating material	ORMOCER <sup>®</sup>
Fibre diameter (coated)	195 $\mu\text{m}$
Tubing material	FEP
Tubing diameter	0.9 mm
Connector type	FC/APC

<sup>1</sup> Taking into account 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 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.

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

<sup>4</sup> The total length of fiber that is fixed to the structure by means of an adhesive.

## Ordering information

Contact the FOS&S Sales department on [sales@fos-s.com](mailto:sales@fos-s.com)

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.

FOS&S BVBA reserves the right to make changes without further notice to any products herein. FOS&S BVBA 2009. All rights reserved.