



## LIST OF CALIBRATION COEFFICIENTS - EXAMPLE

Customer order:

Revision: A

Print date: 07.12.2020

Quality supervisor: tsalat@sylex.sk

Production supervisor: mmucka@sylex.sk

### EQUATIONS

#### STRAIN EQUATION

$$\Delta \varepsilon = \frac{\Delta \lambda - B \cdot \Delta T}{A}$$

$$\Delta \lambda = \frac{\lambda_{act} - \lambda_0}{\lambda_0} \quad \Delta T = (T_{act} - T_0)$$

Measurand	Description
$\Delta \varepsilon$ [ $\mu\varepsilon$ ]	Strain shift
$\lambda_{0,inst,strain}$ [nm] **1	Initial strain wavelength
$T_{0,inst}$ [°C] **1	Initial temperature
$T_{act}$ [°C] **2	Actual temperature
$\lambda_{act,strain}$ [nm] **2	Actual strain wavelength
$L_{FFL}$ [m]	Free fiber length

#### STRING EXPRESSION

$$\Delta \varepsilon = ((\Delta \lambda - B \cdot \Delta T) / A)$$

$$\Delta \lambda = ((\lambda_{act} - \lambda_0) / \lambda_0)$$

$$\Delta T = (T_{act} - T_0)$$

For the determination of the strain sensitivity the free fiber length was used as a basis

\*\*1 To be measured after installation of the sensor

\*\*2 Measured value during monitoring of the sensor

### CALIBRATION COEFFICIENTS

Nr.	Serial number	Customer code	Product	STRAIN COEFFICIENTS		
				A [ $\mu\varepsilon^{-1}$ ]	B [°C <sup>-1</sup> ]	L <sub>FFL</sub> [m]
1	197366/0001	FBG1	MSA-01; 6xFBGs (8x anchors); WL:1520-1570nm; TL = 13m, LCP-03: 1x 7,8mtr, 1x FC/APC, 1x WCP-01	7,75842E-07	5,89292E-06	0,500
		FBG2				0,500
		FBG3				0,500
		FBG4				0,500
		FBG5				0,500
		FBG6				0,500