



FIBER OPTICS

LIST OF CALIBRATION COEFFICIENTS - EXAMPLE

Customer order: Revision: A Print date: 30.03.2021
 Quality supervisor: tsalat@sylex.sk Production supervisor: mmucka@sylex.sk

EQUATIONS

STRAIN EQUATION

$$\Delta\varepsilon = \frac{\lambda_{act, strain} - \lambda_{0, inst, strain} - B \cdot (T_{act} - T_{0, inst})}{A}$$

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

STRING EXPRESSION

$(((\lambda_{act, strain} - \lambda_{0, inst, strain}) / (\lambda_{0, inst, strain}) - (B * (T_{act} - T_{0, inst}))) / A)$

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	FBG	Product	A [$\mu\varepsilon^{-1}$]	B [°C ⁻¹]
1	202469/0001	1	SWA-01; WL: 1532-37-42-47-52nm, LCP-03: 2x 1mtr, 2x FC/APC, 2x WCP-01	7,758423E-07	5,892923E-06
		2		7,758423E-07	5,892923E-06
		3		7,758423E-07	5,892923E-06
		4		7,758423E-07	5,892923E-06
		5		7,758423E-07	5,892923E-06