

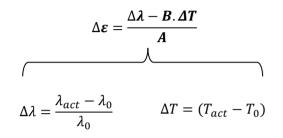
ex FIBER OPTICS

LIST OF CALIBRATION COEFFICIENTS - EXAMPLE

Customer order: Revision: A Print date: 03.05.2021

EQUATIONS

STRAIN EQUATION



Measurand	Description
Δε [με]	Strain shift
λ _{0,inst,strain} [nm] **1	Initial strain wavelength
T _{0,inst} [°C] **1	Initial temperature
T _{act} [°C] **2	Actual temperature
λ _{act,strain} [nm] **2	Actual strain wavelength

TEMPERATURE EQUATION

$$T = T_{S1} \left(\frac{\lambda_{T,act} - \lambda_{T,ref}}{\lambda_{T,ref}} \right)^{2} + T_{S2} \left(\frac{\lambda_{T,act} - \lambda_{T,ref}}{\lambda_{T,ref}} \right) + T_{S3}$$

Measurand	Description
T [°C]	Temperature
$\lambda_{T,act}[nm] **1$	Actual temp. wavelength
$\lambda_{T,ref}[nm]$	Reference temp. wavelength
T _{S1} [°C]	Temperature sensitivity 1
T _{S2} [°C]	Temperature sensitivity 2
T _{S3} [°C]	Temperature sensitivity 3

STRING EXPRESSION

 $\Delta \varepsilon = ((\Delta \lambda - B * \Delta T) / A)$ $\Delta \lambda = ((\lambda act - \lambda 0) / \lambda 0)$ $\Delta T = (T act - T0)$

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

STRING EXPRESSION

 $T = Ts1*((\lambda T,act - \lambda T,ref)/\lambda T,ref)^2 + Ts2*((\lambda T,act - \lambda T,ref)/\lambda T,ref) + Ts3$

CALIBRATION COEFFICIENTS

			STRAIN COEFFICIENTS			TEMPERATURE COEFFICIENTS			
r. Serial number	Customer code	Product	A [με ⁻¹]	B [°C ⁻¹]	T _{S1} [°C]	T _{S2} [°C]	T _{S3} [°C]	λ _{T,ref} [nm	
193075/0001		DSS-01/T; WL: 1538,5/1539,9nm, LCP-03:1x1,1mtr, 1x2,9mtr, 2x FC/APC	7,75842E-07	5,89292E-06	-1,54538E+06	5,33782E+04	2,25017E+01	1538,3105	