

EX FIBER OPTICS

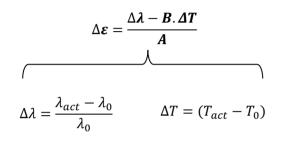
LIST OF CALIBRATION COEFFICIENTS - EXAMPLE

Customer order: Revision: Α **Print date:** 29.03.2021

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EQUATIONS

STRAIN EQUATION



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

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

TEMPERATURE EQUATION

STRING EXPRESSION

Description
Temperature
Actual temp. wavelength
Reference temp. wavelength
Temperature sensitivity 1
Temperature sensitivity 2
Temperature sensitivity 3

STRING EXPRESSION

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

**1 To be measured after installation of the

**2 Measured value during monitoring of the sensor

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

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

CALIBRATION COEFFICIENTS											
					STRAIN COEFFICIENTS	TEMPERATURE COEFFICIENTS					
Nr	. Serial number	Customer code	Product	Α [με ⁻¹]	B [°C ⁻¹]	T _{S1} [°C]	T _{S2} [°C]	T _{S3} [°C]	$\lambda_{T,ref}$ [nm]		
1	193075/0001		SWA-00/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	1538,31052		