

FIBER OPTICS

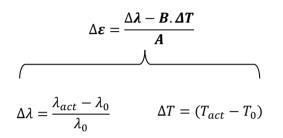
LIST OF CALIBRATION COEFFICIENTS - EXAMPLE

Customer order: Revision: **Print date:** 09.12.2020

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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
$\lambda_{act,strain}$ [nm] **2	Actual strain wavelength
L _{EE} [m]	Free fiber length

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

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

STRING EXPRESSION

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

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

**1 To be measured after installation of the

**2 Measured value during monitoring of the sensor

CALIBRATION COEFFICIENTS											
	_		STRAIN COEFFICIENTS				TEMPERATURE COEFFICIENTS				
Nr. Serial number	Customer code	Product	Α [με ⁻¹]	B [°C ⁻¹]	L _{FFL} [m]	T _{S1} [°C]	T _{S2} [°C]	T _{S3} [°C]	$\lambda_{T,ref}$ [nm]		
1 193077/0001		SDS-01; WL: 1539,9/1540,9nm, LCP-03: 2x1mtr, 2x FC/APC	7,69636E-07	5,89292E-06	0,03	-1,86937E+06	5,31386E+04	2,25040E+01	1539,65589		