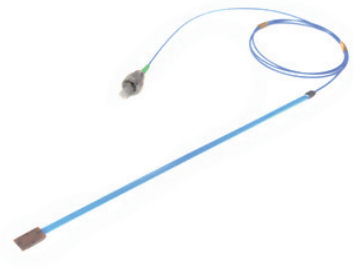
FBG Strain Sensor

Description

FBG strain sensor is a strain measurement sensor based on fiber Bragg grating. It can monitor the strain value of the measured object by measuring the spectral shifts of FBG.

Features

- Gauge length the same as standard resistance strain gauges
- Passive and free from electromagnetic interference
- High networking with series or parallel connected
- Lifespan >10^7 cycles (±1500uε)
- High stability, no zero-point drift



Applications

- Suitable for application scenarios where traditional resistance strain gauges used
- Suitable for application scenarios where traditional surface-mounted resistance strain gauges used
- Suitable for harsh environments with the requirements of high anti-electromagnetic interference and explosion-proof

Specification

Strain	Unit	Specification
Gauge Length	mm	3
Strain Sensitivity k_g	pm/uε	~1.3
Strain Range	uε	±3000
Linearity	%	99.9
Temperature Range	°C	-40 to +85

Temperature	Unit	Specification
Temperature Sensitivity k_r	pm/°C	~28
Temperature Range	°C	-40 to +85

Optics	Unit	Specification
Central Wavelength	nm	1510-1590
Reflectivity	%	≥10
SMSR	dB	≥15

Machinery	Unit	Specification
Dimension	L(mm)×W(mm) ×T(mm)	~19×7×0.7
Connector Type	-	FC/SC/LC/MT
Pigtail Length	m	1.0
Fiber Bending Radius	mm	10
Pigtail Protection Type	-	Optical fiber ribbon +0.9mm tube
Reliability	-	Conform to GR-1221-Core

Microstrain (με) Calculation Formula:

$$\mu\varepsilon = \frac{\lambda_\varepsilon - \lambda_1}{k_\varepsilon} \times 10^3 - (26.0 + \Delta) \times (T_\varepsilon - T_1)$$

Where:

λ_1(nm): The wavelength is measured at ambient temperature T_1(℃) with the strain gauge installed.

λ_ε(nm): The wavelength is measured under load when the ambient temperature is T_ε(℃) and the strain gauge is installed.

Δ(/℃): The difference in the linear expansion coefficient is defined as that between the measured material under test and the strain gauge substrate material. It is calculated as $\Delta=(\alpha-18.4\times10^{-6})\times10^6$, where **α** is the coefficient of linear expansion of the measured material under test.