



**Fiber Optic Strain Sensor for composite material & industrial applications**

**Small size, Accuracy and Reliability for Extreme Temperatures and Hostile Environments.**

## Description

The FOS-N is a fiber optic strain sensor, ideal for composite material engineering research, medical devices and civil-engineering applications such as structural health monitoring of buildings, bridges, tunnel linings and supports.

The FOS-N strain sensor offers small size, high accuracy, immunity to EMI / RFI / MW, and resistance to corrosive environments with a high temperature range.

Based on proven Fabry-Pérot interferometer technology, FISO's fiber optic strain sensors are the best choice for high performance strain measurements. The technology upon which are based the FOS-N strain sensor and the compatible monitoring system provide absolute strain measurements at very long distances without affecting the reliability of the readings.

It's not sensitive to any pulling or manipulation of the incoming fiber. This feature is advantageous when the sensor is embedded into composite materials. It's withstands harsh chemical environments and offers ruggedness and flexibility.

As FOS-N consume no power, there is no self-heating effect which might be critical when measuring strain on low heat conductive materials, and due to its design based on Fabry-Pérot (F-P) technology, the thermal sensitivity of this sensor (that could be as low as 0.5  $\mu\epsilon/^\circ\text{C}$ ) is more than one order of magnitude smaller than the one obtained by fiber Bragg grating (FBG) sensors (typically around 10  $\mu\epsilon/^\circ\text{C}$ ). This is a great advantage for measuring strain in environments with changing temperature.

## Key Features

- Immune to EMI / RFI / MW / lightning
- Intrinsically safe
- Static / dynamic response
- No interference due to cable bending
- Signal transmitted over long distances
- Absolute measurement in engineering units
- Unidirectional along fiber axis
- No corrosion

## Applications

- Medical devices
- Torque measurement
- New material research and development
- Structural health monitoring
- Ships, tankers
- Power transformers
- Nuclear power plants (for options call FISO)
- Corrosive environments
- Wind turbines

## Specification of the sensors

**Performance** with EVOLUTION conditioners (FPI-HR-2X, FPI-HR and FPI-HS)

CLASSIC conditioners (FTI, UMI, VELOCE <sup>1</sup>)

<b>Resolution</b> <sup>2</sup> (%)	± 0.01% of full scale		
<b>Transverse sensitivity</b>	< 0.1% of full scale, 90° to the fiber orientation		
<b>Storage temperature</b>	-30°C to 80°C		
<b>Operating temperature</b> <sup>3</sup>	-40°C to +250°C (cable dependent, refer to ordering information table)		

<b>Strain Range</b> <sup>4</sup>	R1: ± 1000 $\mu\epsilon$	R2: ± 2500 $\mu\epsilon$	R3 <sup>5</sup> : ± 5000 $\mu\epsilon$
<b>Glass tube dimensions</b>	L: 11 mm $\phi$ 225 $\mu\text{m} \pm 10 \mu\text{m}$	L: 8.5 mm $\phi$ 225 $\mu\text{m} \pm 10 \mu\text{m}$	L: 8.5 mm $\phi$ 225 $\mu\text{m} \pm 10 \mu\text{m}$

1. VELOCE is an obsolete product

2. Signal conditioner dependent

3. Adhesive dependent, installation over 200°C (392°F) susceptible to creeping

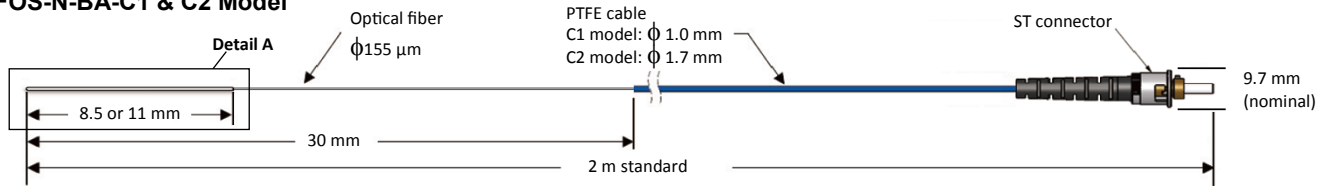
4. In the fiber orientation

5. ±5000 $\mu\epsilon$ : not available for Veloce-50 neither than for the regular FPI-HR and FPI-HS



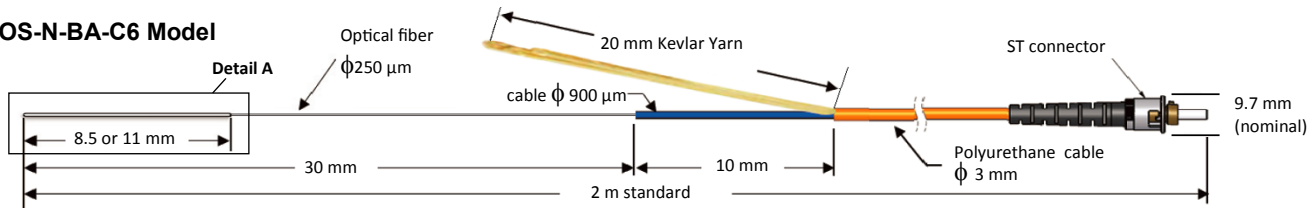
## Dimensions

### FOS-N-BA-C1 & C2 Model



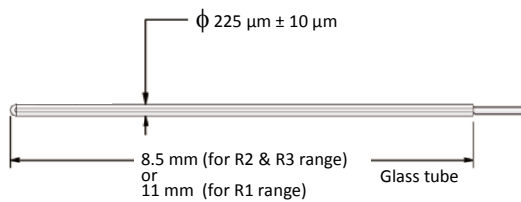
Other configurations may be possible contact FISO for availability

### FOS-N-BA-C6 Model



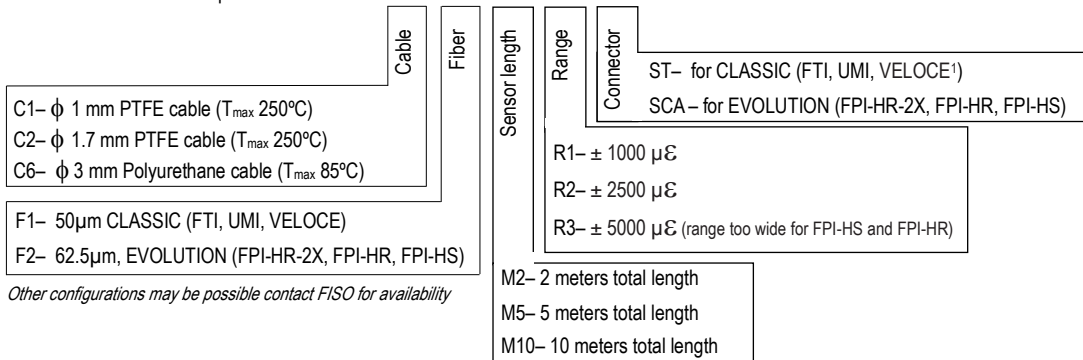
Other configurations may be possible contact FISO for availability

### Detail A



## Ordering information

Example: FOS - N - BA - C1 - F1 - M2 - R1 - ST



Other configurations may be possible contact FISO for availability

1. VELOCE is an obsolete product

