Description

FISO’s Fiber Optic Temperature (FOT) sensors are perfectly suited for harsh environmental conditions such as in cryogenics, nuclear and strong RF applications. They are not electronically active and do not emit nor are they affected by any type of EM radiation, whether it is microwave, RF or MRI.

Those are built-in safety for hazardous environments, extreme temperature resistance, high precision, and resistance to corrosive environments.

An important advantage of optical fibers is the capability it provides to produce miniature components without compromising the physical characteristics of the bulk material. It may feature tip diameters as small as 0.8 mm.

FISO’s fiber optic temperature sensors provide accurate, stable, and repeatable measurements. These measurements are based on variations of the reflected light — when compared to the emitted light — due to thermal expansion of the highly stable glass used within the sensor.

Key Features

- Intrinsically safe / Explosion proof
- Miniature size
- Immune to EMI / RFI / MW
- Up to 300°C
- High accuracy
- No interference due to cable bending
- No corrosion
- Long distance interrogation

Applications

- Microwave
- High EMI / RFI environments
- Nuclear environments (call FISO for details)
- Battery testing
- Aerospace
- Metallurgy & Defense
- Industrial in-situ process monitoring
- HV cable testing
- Harsh and hazardous environments
- Wood drying in microwave
- Food packaging development

Specification

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>R1: -40°C to 250°C</th>
<th>R1: -40°C to 300°C</th>
<th>R2: 20°C to 85°C</th>
<th>R4: 25°C to 45°C</th>
<th>R5: -10°C to 120°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>FOT-L-BA-...-R1</td>
<td>FOT-L-SD-...R1</td>
<td>FOT-L-BA-...-R2</td>
<td>FOT-L-BA-...-R4</td>
<td>FOT-L-BA-...-R5</td>
</tr>
<tr>
<td></td>
<td>FOT-L-SD-...R2</td>
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</tbody>
</table>

Performance with EVOLUTION conditioners (FPI-HR and FPI-HS)

<table>
<thead>
<tr>
<th>Accuracy (°C)</th>
<th>Resolution (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>±1.0</td>
<td>±0.1</td>
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</tbody>
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Performance with CLASSIC conditioners (FTI, UMI)

<table>
<thead>
<tr>
<th>Accuracy (°C)</th>
<th>Resolution (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>±0.25</td>
<td>±0.40</td>
</tr>
<tr>
<td>±0.40</td>
<td>±0.25</td>
</tr>
</tbody>
</table>

Note 1. Accuracy of the system (conditioner and sensor together)

Note 2. Signal conditioner dependent

Response time (s)  Model FOT-L-SD ≤ 1.5 s, Model FOT-L-BA ≤ 0.5 s, Model FOT-L-M ≤ 0.75 s
Storage temperature -30°C to 80°C
Description

FOT-L-BA Model

- 2 ± 0.5 mm
- 800 µm
- Sensitive area
- 1 mm O.D. PTFE cable
- 16 ± 1 mm
- 20 ± 10 mm
- 2 m, 5m and 10 m standard
- ST connector
- SCAI² connector
- 9.9 mm
- 9.7 mm
- 8.5 ± 0.5 mm

FOT-L-SD Model

- 4 ± 1 mm
- 1.7 ± 0.2 mm
- Sensitive area
- 1 mm O.D. PTFE cable
- 20 ± 10 mm
- 2 m, 5m and 10 m standard
- ST connector
- SCAI² connector
- 9.9 mm
- 9.7 mm
- 8.5 ± 0.5 mm

FOT-M-SD Model

- 2 ± 1 mm
- 800 µm
- Sensitive area
- 1.1 mm O.D. Hytrel cable
- 0.9 mm O.D.
- Shrink
- 300 ± 4 mm
- 2 m, 5m and 10 m standard
- ST connector
- SCAI² connector
- 9.9 mm
- 9.7 mm
- 8.5 ± 0.5 mm

Ordering information

Example: FOT-L-BA-C1-F1-M2-R1-ST

- Detail tip packaging
- Cable
- Sensor overall length
- Connector
- Range
- 2 m, 5m and 10 m standard

FOT-BA-20mm section of 0.8 mm O.D.
FOT-L-BA Packaged 1.7 mm O.D. PTFE tube
FOT-M-BA-0.8mm O.D., 30 cm long tip
FOT-L-BA or SD-C1-1 mm O.D. PTFE cable
FOT-L-BA or SD-C2-1.7 mm O.D. PTFE cable
FOT-M-SD-C4-1 mm O.D. Hytrel cable
F1-50µm CLASSIC (FTI, UMI, DMI, DMI-LR)
F2-62.5µm, EVOLUTION (FPI-HR, FPI-HS)
FOT-L-BA-20°C to 85°C
FOT-L-BA or SD-25°C to 45°C
FOT-BA or SD-10°C to 120°C

Note 1. The sensitive area of the sensor should not be bent
Note 2. SCAI is a SCA connector with smart chip communicating calibration data to the signal conditioner module

Other configurations may be possible. Call FISO for availability.