FS63 - High Temperature Dielectric Probe

Optical Dielectric Temperature Sensor

Fiber optic technology
Heat-resistant
Extended temperature range
Highly dielectric
Ruggedized construction

The **FS63 - High Temperature Dielectric Probe** is a Fiber Bragg Grating (FBG) based sensor, specifically designed to withstand high temperatures and intense electromagnetic fields.
This sensor is completely non-metallic and employs only heat-resistant and highly dielectric materials.

Characteristics

- Robustness
  Ruggedized construction with Kevlar® and PTFE strength layers, offering high longitudinal and transversal protection.
- Completely passive
  Inherent immunity to all electromagnetic effects (EMI, RFI, sparks, etc.) and safe operation in hazardous environments.
- High multiplexing capability
  Possibility of connecting several sensors to the same optical channel in a single measurement unit, by using active and/or passive multiplexers.
- Remote sensing
  Large distance between sensors and interrogator (several kilometers).
- Compatible with most interrogators
  Provided with calibration sheet, allowing easy and accurate configuration.
- Self-referenced
  Based on the measurement of an absolute parameter - the Bragg wavelength - independent of power fluctuations.

Applications

HBM FiberSensing high temperature dielectric sensor can be used in a large range of monitoring applications, such as thermal mapping in power generators.

- Energy
- Industry
- R&D

Accessories

The implementation of complex sensing networks in large structures is made simpler with HBM FiberSensing accessories. These include cables especially designed to resist harsh environments as in industrial applications. HBM FiberSensing multiplexers may also be employed to increase the number of probes connected to a single optical channel.

Quality

All HBM FiberSensing's processes are strictly controlled from development to production. Each product is subjected to high standard performance and endurance tests, individually calibrated and checked before shipping.
HBM FiberSensing, S.A. concentrates all optical sensing activity of HBM and is an ISO 9001:2008 certified company.

Specifications

Sensor	
Sensitivity[1]	100 ºC/nm
Measurement range[2, 3]	0 to 200 ºC
Resolution[4]	0.1 ºC
Maximum calib. error[5,6]	1.2 ºC
Sensing point	20 mm (from the tip)
Optical	
Central wavelength	1500 to 1600 nm
Spectral width (FWHM)	< 0.2 nm
Reflectivity	> 65%
Side lobe suppression	> 10 dB
Inputs/Outputs	
Cable type	Ø 3 mm high temperature dielectric (polyimide, Kevlar, PTFE)
Cable length	3 m (±5 cm)
Connectors	FC/APC SC/APC
Environmental	
Storage temperature[7]	-20 to 80 ºC
Mechanical	
Materials	
Sensing Head	Polyimide, PTFE (Teflon®)
Cable	Perforated PTFE/Kevlar cable
Dimensions	Ø 3.0±0.5 mm
Weight	40 g

[1] Typical values.
[2] Temperature on the sensing head and cable
[3] Extended temperature calibration down to -50ºC available upon request.
[4] For 1 pm resolution in wavelength measurement, as found in FS22SI interrogator.
[5] To achieve absolute measurements as presented in this datasheet, an interrogator with an accuracy of at least ±2 pm is required.
[6] Typical traceability uncertainty of ±0.5ºC.
[7] Limited by the connector.

Ordering Information

FS63 – High Temperature Dielectric Probe

P/N

K-FS63 08 **bb** 703 **d**

WAVELENGTH
- N - 1503.3 nm
- O - 1509.7 nm
- K - 1516.1 nm
- L - 1522.5 nm
- A - 1528.9 nm
- B - 1535.1 nm
- C - 1541.5 nm
- D - 1547.9 nm
- E - 1554.3 nm
- F - 1560.8 nm
- G - 1567.2 nm
- H - 1573.8 nm
- I - 1580.2 nm
- J - 1586.6 nm
- W - Custom

CONNECTIONS
- 01 – Optical Connector FC/APC
- 03 – Optical Connector SC/APC

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HBM Fiber Sensing