Clearfield®

Steel Armored Strain Sensing Cable

Application

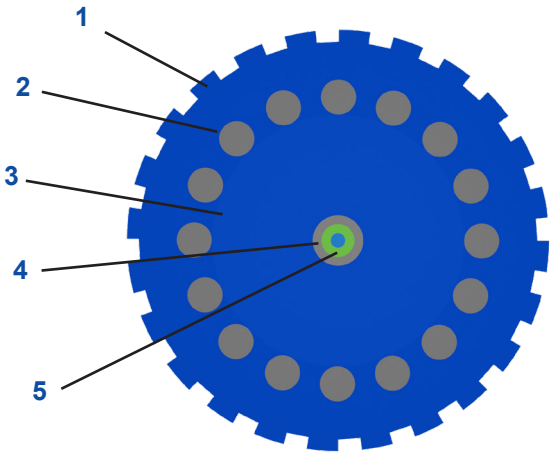
- Brillouin Distributed Strain Sensing (DSS)
- Structural Health Monitoring (SHM)
- Pipeline monitoring
- Soil movement, ground monitoring
- Precision measurement and alarm systems
- Direct burial in soil, concrete, composite structures
- Harsh environment, subsea, outdoors

Description

Robust Distributed Fiber-Optic Strain Sensing (DFOSS) cable with a Fiber in Metal Tube (FIMT) encapsulated optical fiber, armoring, and a PA outer sheath, for strain sensing up to 1% (10000 µstrain).

Construction

1. PA outer sheath, with structured surface
2. Galvanized steel wire armoring
3. Plastic protection layer with interlock system
4. Stainless steel tube, 316L
5. Strain sensing fiber with interlock system



- Hermetically sealed metal tube with a tight buffered optical fiber
- High tensile strength
- Longitudinally and laterally watertight
- Excellent rodent protection
- High strain sensitivity
- Structured surface for optimized strain transfer
- Halogen-free cable sheath

Customization Options and Services

- Accessories such as loops, fan-outs, connectors, mounting brackets, anchors etc. available
- Splicing kit for strain sensing cables
- Custom fiber types

Technical Specifications

Steel Armored Strain Sensing Cable	
Standard Optical Fiber	Singlemode fiber
Standards	Cable tests complying with IEC 60794-1-2
Jacket color	Blue, similar to RAL 5005
Operating temperature	-30 °C … +70 °C
Storage temperature	-30 °C … +70 °C
Installation temperature	-5 °C … +50 °C

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Technical Data at 20°C

Type	Max. nb. of fibers	Cable ø mm	Weight kg/km	Max. tensile strength - Installation N	Typical load at 1% elongation N
12F	1	7.2	75	600	1600

Type	Min. Bending Radius With Tensile	Min. Bending Radius Without Tensile	Max. Crush Res. N/cm
1F	20xD	15xD	500

Optical Fiber Data (Cabled) at 20°C

Fiber Type	Attenuation, dB/km 850 nm	Attenuation, dB/km 1300/1310 nm	Attenuation, dB/km 1550 nm
SMF	-	-	≤ 0.5

Typical Brillouin Parameters BOTDR or BOTDA at 1550nm

	Temperature sensitivity df_B / dT	Strain sensitivity $df_B / d\varepsilon$	Central Brillouin Frequency
SMF (DSS)	~ 2 MHz/°C	~ 450 MHz/%	~ 10.7 GHz