

Fiber Sensing Rod (FSR)

COMPOSITES REINFORCED SENSING ROD

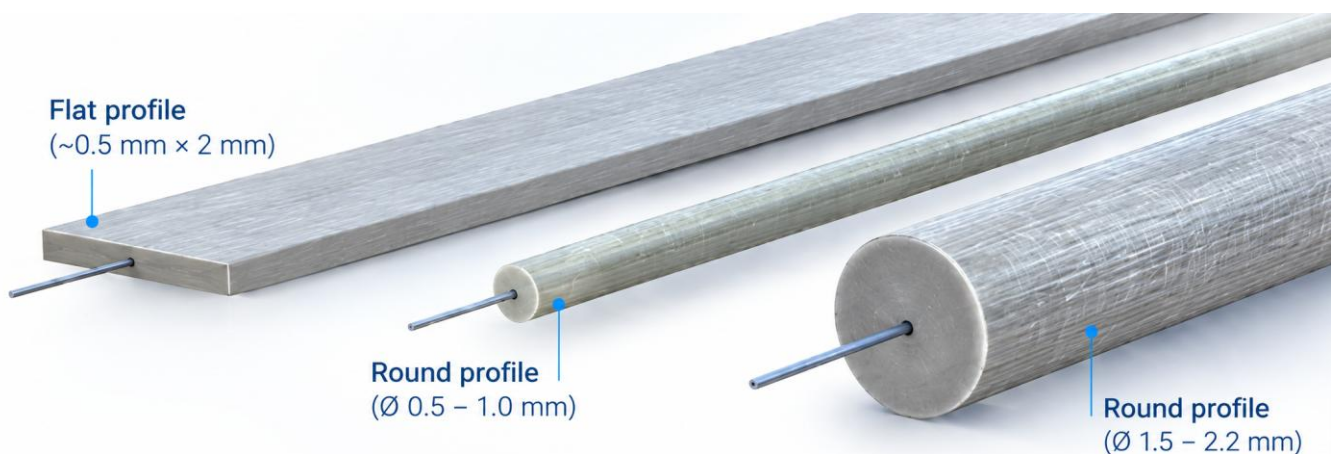
DESCRIPTION.

The fiber sensing rod is a fiber optic strain sensor with a glass fiber reinforced jacket featuring high robustness & easy installation in harsh environment.

STANDARD CONFIGURATION

20 m rod length
FBG every 1.5 m
Ø 0.9 mm GFRP jacket

PRODUCT GEOMETRY



KEY FEATURES

MULTIPOINT FBG CHAIN

Fiber optic sensing chain based on FBG-technology with multiple sensing points in series.

FAST INTEGRATION

Embedded during manufacturing or surface mounted. UV bonding can be used for rapid surface installation.

COMPRESSION & TENSION

Monitoring compression as well as tension.

RUGGEDIZED

Fiberglass reinforced jacket designed for harsh industrial environments and exposure to water, oil, chemicals, temperature and pressure.

APPLICATIONS

Condition and structural monitoring of concrete, steel and composite structures, including beams, piles, pipelines and other long structural elements. The FSR can be installed on the surface or embedded. Temperature compensation is recommended when significant temperature variations are expected.

AT A GLANCE

PARAMETER	VALUE
Standard rod	20 m Ø 0.9 mm GFRP FBG every 1.5 m
Geometry	Round Ø 0.5 - 2.2 mm; flat profile ~0.5 x 2 mm
Optical fiber	Ø 125 µm single-mode fiber with FBG sensing points
Temperature range	-20 °C to +100 °C
Installation	Embedded or surface mounted
Connection	FC/APC or LC/APC; up to 2 connectors

GEOMETRICAL & PHYSICAL

PARAMETER	VALUE
Rod length	Standard: 20 m. Configurable from >1 m; legacy specification states up to 800 m in one continuous length.
Lead in / out length	> 0.5 m
FBG spacing	Standard: 1.5 m. Custom positions possible; legacy minimum spacing > 0.01 m.
Sensing points	Standard configuration: up to 20 FBGs per rod.
Jacket material	Fiberglass reinforced polymer (GFRP). Legacy variants also referenced PET.
Round jacket diameter	Ø 0.9 mm typical; approximately Ø 0.5 - 2.2 mm available depending on configuration.
Flat profile	Approximately 0.5 x 2 mm.
Optical fiber diameter	Ø 125 µm.
Resin	Mono-acrylate (legacy specification).
Temperature range	-20 °C to +100 °C.
Strain resolution	0.85 µε*

* Legacy value based on a depolarized measurement device with 1 pm wavelength resolution and precision.

MECHANICAL

PARAMETER	VALUE
Elastic modulus	~45 GPa for GLASS reinforcement; depends on resin and reinforcement fibers.
Maximum tensile strain	25,000 µε (legacy specification).
Minimum bend radius	150 mm.
Measurement	Compression and tension.

OPTICAL CONNECTION

PARAMETER	VALUE
Fiber / sensing technology	Single-mode optical fiber with Fiber Bragg Gratings (FBG).
Connector type	FC/APC or LC/APC; other connector types on request.
Number of connectors	Up to 2; redundant connection from both ends possible.
Pigtail	3 mm standard diameter; ≤ 15 m; LDPE.