

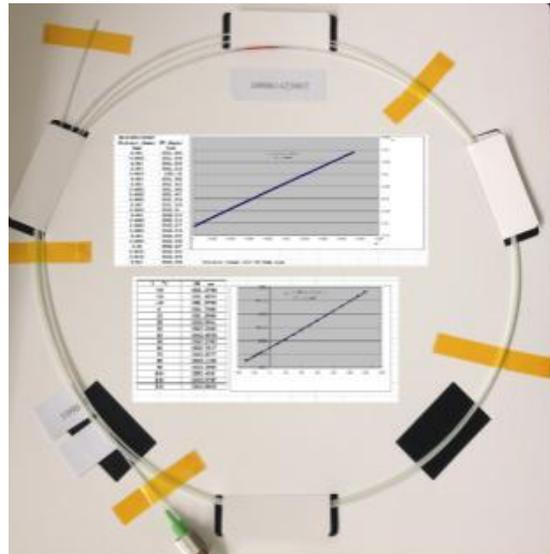
Description

The T130 is a rugged high sensitivity Fiber Bragg Gratings based sensing cable designed for monitoring strain and temperature in surface mounted or embedded applications.

At its core, the T130 optical cable consists of an array of Fiber Bragg Grating (FBG) sensors. The outer layer of the cable is a Glass Fiber Reinforced Polymer (GFRP) coat which protects the FBG sensors and ruggedizes the overall construction of the cable.

The T130 Optical GFRP Strain and Temperature Cable is designed to make handling and installation fast, easy and intuitive. It delivers the many advantages inherent to all FBG based sensors while elevating the degree of ruggedness to be consistent with, if not exceeding, industry expectations.

The cable specifications listed herein represent the most popular configurations. The manufacturing process for the T130 allows for significant variations in cable construction and mounting accessories including anti-slip surface ripples and strain gage length setting mounting brackets. The T130 sensing cable is available in custom lengths and spacings between the sensors.



Key Features

High sensitivity cable. Ideally suited for applications where there is concern that using cables with multiple construction layers may decrease the sensors' required sensitivity and response time and where using an unprotected fiber merely coated with acrylate, polyimide, ormocer, or other "first layer" materials is not enough physical protection for handling and survivability in the field.

Embeddable cable sensor. These rugged GFRP cables are typically used in applications where cable integrity must be maintained despite installation challenges such as the need to embed them in composite structures, roads, aircraft runway asphalt, and concrete.

Surface mount cable sensor. These very same GFRP cables are also well suited for surface mount applications where high sensitivity is a must such as in security intrusion detection systems, in mines and tunnels, and in various civil and geotechnical applications. The gauge length of each FBG sensor within the T130 sensing cable is defined in the field by the customer who can select the locations along the cable where each sensor's optional mounting brackets are to be installed.

Easy handling and deployment. The original design of this cable eliminates the fragility typically associated with single coated fibers and enables significant field installation productivity improvements.

Field proven reliability, long lifetime, low cost. The T130 cable construction focuses on demanding projects that require both low cost per sensing point and stable operation over the long term. Mass produced and deployed in many field applications.

Parameter	Specifications
GFRP Cable Diameter	1mm, 2mm, 3mm std, other options in 0.2 mm steps
Strain Sensing Sensitivity	~0.7 $\mu\text{m}/\mu\epsilon$
Temperature Calibration Constant for -20C to 120C	~17 $\mu\text{m}/^\circ\text{C}$
FBG Wavelengths / Tolerance	980, 1310, 1460 to 1620 nm, +/-0.5nm, other options
FBG Reflectivity %	>75% std, other options
FBG Reflection BW (FWHM)	0.15nm, 0.3nm std, other options
FBG Length	10mm std, other options from 1mm to 25mm
FBG Side Lobes Suppression Ratio	>15 dB, other options
GFRP Diameter Tolerance	+/- 0.05 mm for 1mm OD
GFRP Cable Tensile Strength	>1100 MPa for 1mm OD
GFRP Cable Tensile Modulus	>50 Gpa for 1mm OD
GFRP Sensing Cable Pigtails and Optical Connectors	3mm Armored Cable with FC/APCs, other options

Applications in Civil Engineering, Geotechnical, Mining, Security, Energy and Research

Technica undertakes a rigorous development process before products release. The company is also firmly committed to continuous improvements after release to insure performance to the highest standards, hence, specifications are subject to update without notice.

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