DATA SHEET

FS63RTS
Rugged Temperature Sensor

SPECIAL FEATURES

- Easy and straightforward installation
- For multi-purpose usage
- Configurable wavelengths, cable lengths and connector types

DESCRIPTION

The Rugged Temperature Sensor is a Fiber Bragg Grating (FBG) based sensor designed to feel temperature changes while at the most diverse environments. It can be used as a temperature sensor for accurate and reliable temperature measurements, as well as an uncalibrated element for temperature compensation of Roughed Strain Sensors.

The FS63RTS is based on the newLight® technology developed by HBK FiberSensing. newLight sensors employ high strength fiber coatings ensuring robustness, increased sensitivity, and higher measurement accuracy. HBK FiberSensing offers innovative sensor designs compatible with standard telecommunication fibers. This eases network design and significantly reduces installation time and cost, even when a large number of sensors are multiplexed on the same fiber, sometimes kilometers apart. The technology is completely passive - fitting explosive environments -, self-referenced - providing measurement long term stability -, and compatible with most interrogators in the market.

Combine this with other strain and temperature sensors from HBK FiberSensing with aramid or armor cables by using the configurator K-FS76ARM.

BENEFITS AND APPLICATIONS

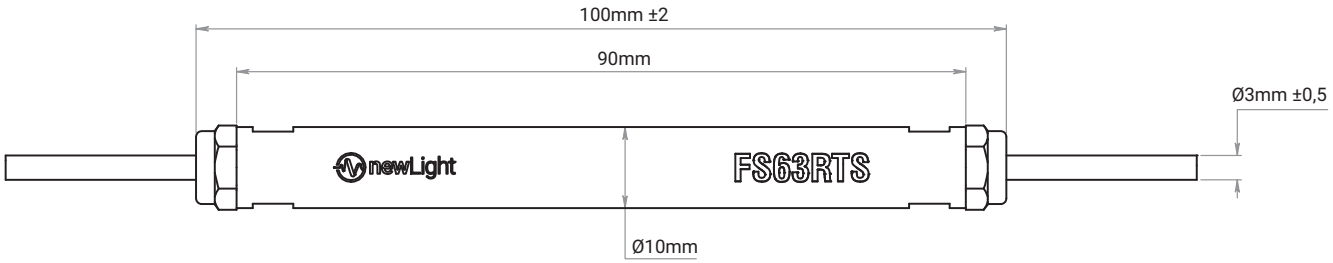
Sensor design

- To be used as temperature sensor or for temperature compensation
- Suited for outdoor applications and embedding in concrete with IP68 protection
- Fitting applications from R&D to structural health monitoring of large structures across several industries (civil engineering, wind...)

Fiber Bragg grating technology

- No drift, absolute referenced measurements
- Immune to electro-magnetic and radio frequency interferences
- Passive technology fitting applications in explosive areas
- Reduced cable requirements with intrinsic multiplexing capability
- Long distances between sensors and the interrogators attainable
- Combinable with other FBG sensor types on the same fiber and same interrogator

DIMENSIONS



SPECIFICATIONS

Sensor		
Sensitivity[1)]	pm/ºC	30
Temperature compensation factor[2)]	(µm/m)/ºC	20
Resolution[3)]	°C	0.02
Maximum calibration error[4)]	°C	±0.5
Measurement range	°C	-20 … +80
Storage temperature	°C	-20 … +80
Operation and storage humidity	%	<95
Sensor bend radius	n.a.	Cannot be bent
Degree of protection[5)]	n.a.	IP68
Attachment method	n.a.	Directly cast; Glue (X60, X120, X280); Any other that ensures contact (e.g. cable tie)
Dimensions	mm	100±0.5 x Ø10±0.5
Weight[6)]	g	117
Main materials[7)]	n.a.	Stainless steel, ormocer®
Bragg wavelengths	nm	1500 … 1600 (±0.5)
Fiber type	n.a.	SMF-28 compatible
Fiber cladding and coating diameter	µm	125/195
FWHM, reflectivity and side lobe suppression	n.a.	≤ 0.3 nm, 21±4%, > 10 dB
Inputs / Outputs		
Cable type	n.a.	Ø 3 mm armor (Hytrel, stainless steel spiral, Kevlar®, stainless steel mesh and LDPE)
Cable bend radius[8)]	mm	> 30
Cable length[9)]	m	0 … 20
Connectors	n.a.	FC/APC, SC/APC or NC (No Connectors)

1) Typical. Considering an FBG with 1550 nm wavelength.
2) Temperature Compensation Factor (TCF) is the apparent induced strain on the temperature caused by a 1 ºC change. This value can be used for compensation of strain sensors.
3) For 0.5 pm resolution in wavelength measurement, as found in FS22SI interrogator.
4) To achieve absolute measurements as presented in this data sheet, an interrogator with an accuracy of at least ±2 pm is required. Typical traceability uncertainty of ±0.7 ºC.
5) DIN EN 60529.
6) With 2 m cable each side and no connectors.
7) The full composition of the sensor including cable, complies with RoHS, REACH, Conflict Minerals and fire propagation prevention directives.
8) Induced loss due to one complete turn around a mandrel lower than 0.05 dB.
9) For cables longer than 2 m, a splice with polyimide protection is included at 2 m from the sensor (Ø8x150 mm). Specified cable length is ensured on delivery. A margin of up to 10cm can be present. Extension cables are delivered with acrylate coated fiber. For different cable lengths or splice position please contact HBK FiberSensing.

ORDERING INFORMATION

Configurable Item **K-FS63RTS** – 1 – 2 3 – 4 – 5 6			Standard item[10]
Options			1-FS63RTS-1515
2	**NC** - No connector; **FC** - FC/APC; **SC** - SC/APC		1-FS63RTS-1525
3	0.5 m ≤ **Cable length** ≤ 20 m @0.5 m steps		1-FS63RTS-1535
4	1515 nm ≤ **Wavelength**[11] ≤ 1595 nm @10nm steps		1-FS63RTS-1545
5	0.5 m ≤ **Cable Length** ≤ 20 m @0.5 m steps		1-FS63RTS-1555
6	**NC** - No connector; **FC** - FC/APC; **SC** - SC/APC		1-FS63RTS-1565
			1-FS63RTS-1575
			1-FS63RTS-1585
			1-FS63RTS-1595

[10] Standard Items correspond to a configuration: Standard Calibration, with 2 m length to each side terminated with FC/APC connectors. Wavelengths from 1515 to 1595 spaced at 10 nm.
[11] For different wavelengths please contact HBK FiberSensing.

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