DATA SHEET

FS62WSS
Weldable Strain Sensor
Braided cable

SPECIAL FEATURES

- Spot welding installation
- High strain measurements
- Extended operating temperature
- Applicable on curved surfaces

DESCRIPTION

The Weldable Strain Sensor is a Fiber Bragg Grating (FBG) based sensor designed to be easily spot welded to metallic surfaces using a low power welding machine. The weldable sensor on its lightest version can be used in particular applications with demanding temperature ranges as seen in industrial environments.

The FS62WSS is based on the newLight® technology developed by HBK FiberSensing. newLight sensors employ high strength fiber coatings ensuring increased strain ranges, enhanced fatigue resistance 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 braided cable using the configurator K-FS76BRD.

BENEFITS AND APPLICATIONS

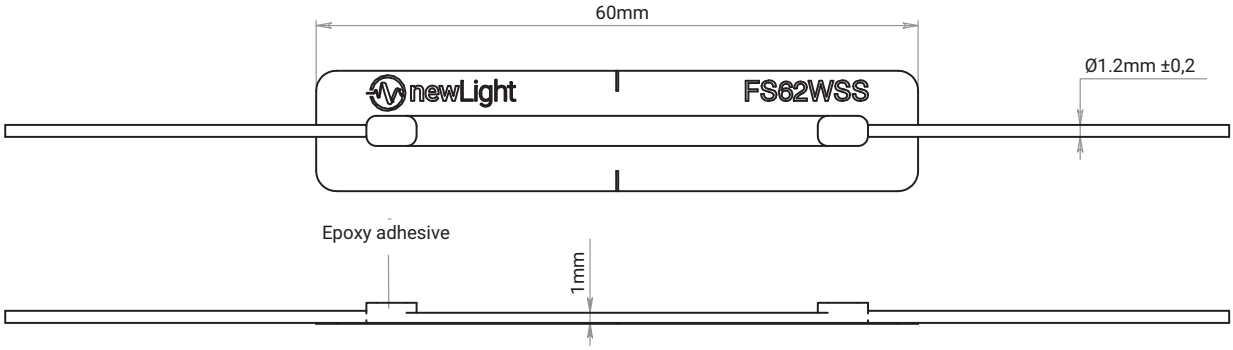
Sensor design

- Easy installation by spot-welding with immediate measurements after installation
- Fitting new materials with high strain measurement range and high fatigue resistance
- Extended operating temperature range
- Suited for measuring on curved surfaces
- Rated for laboratory applications, but also fitting outdoor installation with appropriate protection

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		
k-factor	n.a.	0.76±0.03
Sensitivity[1)]	pm/(µm/m)	1.2
Resolution[2)]	µm/m	0.5
Measurement range	µm/m [%]	±10000 [1]
Gauge length	mm	<10
Transverse sensitivity[3)]	%	0
Operation temperature	°C	-40 … +100
Storage temperature[4)]	°C	-20 … +80
Operation[5)] humidity	%	≤ 100
Storage humidity	%	< 95
Temperature cross sensitivity[6)]	(µm/m)/°C	7.8±1
Sensor bend radius[7)]	mm	> 300
Attachment method	n.a.	Spot weld[8)]
Dimensions[9)]	mm	60±1 x 12±1 x 2.5±0.5
Weight[10)]	g	6
Main materials[11)]	n.a.	Stainless steel, epoxy, ormocer®
Bragg wavelengths	nm	1500 … 1600 (±0.75)
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 1 mm braided (fiber glass, silicone varnish)
Cable bend radius[12)]	mm	> 16
Cable length[13)]	m	0.5 … 6
Connectors	n.a.	FC/APC, SC/APC or NC (No Connectors)

1) Typical. Considering an FBG with 1550 nm wavelength.
2) For 0.5 pm resolution in wavelength measurement, as found in FS22SI interrogator.
3) As per VDI/VDE/GESA 2635. A tolerance cannot be given as the transverse sensitivity is 0.
4) Limited by the connector areas.
5) For long term operation extra protection is recommended.
6) Temperature Cross Sensitivity (TCS) is the thermal strain induced by a 1 °C change in temperature.
7) Bragg wavelength change up to ±1 nm at maximum allowed sensor curvature.
8) Required spot welding machine with low power, 20 to 70 V, 26 to 80 Ws.
9) Welding plate thickness of 100 µm.
10) With 2 m cable each side and no connectors.
11) The full composition of the sensor including cable, complies with RoHS, REACH, Conflict Minerals and fire propagation prevention directives.
12) Induced loss due to one complete turn around a mandrel lower than 0.05 dB
13) For cables longer than 2 m, a splice is included at 2 m from the sensor protected with dielectric shrinking tube (Ø3x60 mm). Specified cable length is ensured on delivery. A margin of up to 10 cm can be present. For different cable lengths or splice position please contact HBK FiberSensing.

ORDERING INFORMATION

Configurable Item **K-FS62WSS** – 1 – 2 3 – 4 – 5 6	
Options	
1	**BRD** - Braid cable
2	**NC** - No connector; **FC** - FC/APC; **SC** - SC/APC
3	0.5 m ≤ **Cable length** ≤ 6 m @0.5 m steps
4	1510 nm ≤ **Wavelength**[14)] ≤ 1590 nm @10 nm steps
5	0.5 m ≤ **Cable Length** ≤ 6 m @0.5 m steps
6	**NC** - No connector; **FC** - FC/APC; **SC** - SC/APC

14) For different wavelengths please contact HBK FiberSensing.

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