

DATA SHEET

FS62WSR

Weldable Strain Rosette

Braided

SPECIAL FEATURES

- Spot welding installation
- Robust design
- Configurable wavelengths, cable lengths and connector types



DESCRIPTION

The Weldable Strain Rosette is a Fiber Bragg Grating (FBG) based sensor designed to be spot welded to metallic surfaces using a low power welding machine. It has three FBG at 0°/60°/120° on a weldable substrate. This rosette on its lighter version can be used in particular applications with demanding temperature ranges as seen in industrial environments.

The FS62WSR 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. Please contact HBK FiberSensing for support.

BENEFITS AND APPLICATION

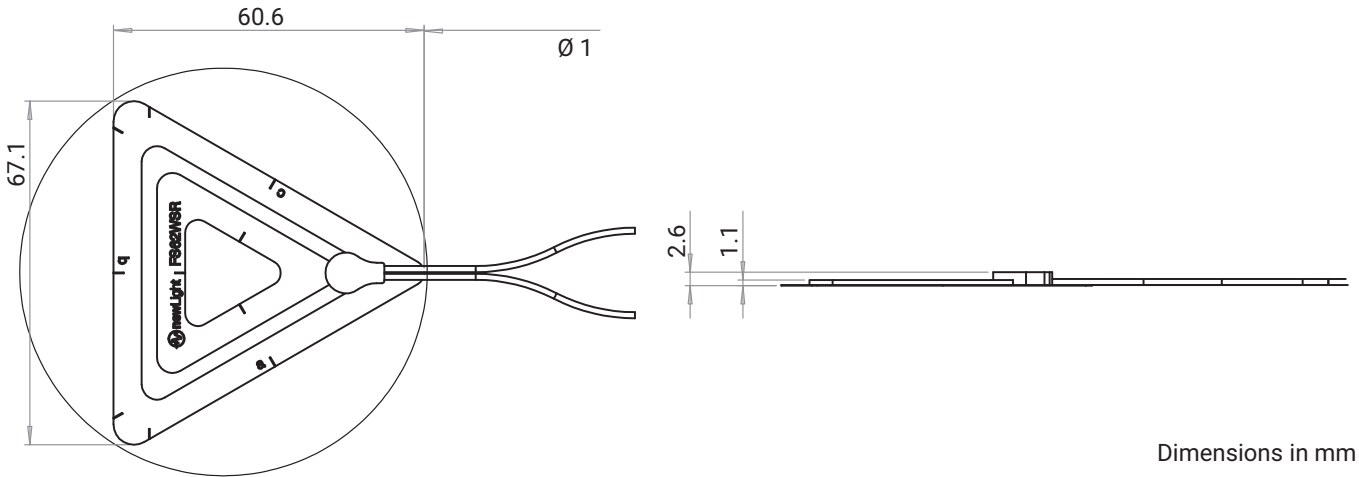
Sensor design

- Bi-dimensional stress analysis with 0°/60°/120° rosette strain measurement
- 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±0.02
Sensitivity ¹⁾	pm/(µm/m)	1.2
Resolution ²⁾	µm/m	0.5
Measurement range ³⁾	µm/m (%)	±2000 (0.2)
Gauge length	mm	36
Operation temperature	°C	-40 ... +100
Storage temperature ⁴⁾	°C	-20 ... +80
Operation and storage humidity	%	< 95
Temperature cross sensitivity ⁵⁾	(µm/m)/°C	7.5 ±1
Insertion loss ⁶⁾	dB	0.2
Sensor bend radius ⁷⁾	mm	> 300
Attachment method	n.a.	Spot welding ⁸⁾
Dimensions	mm	67.1.±1 x 60.6±1 x 2.6±0.5
Weight ⁹⁾	g	8
Main materials ¹⁰⁾	n.a.	Stainless steel, epoxy and ormocer®
Bragg wavelengths	nm	1500 ... 1600 (±1)
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, 20±3 %, >10 dB

1) Typical. Considering an FBG with 1550 nm wavelength.

2) For 0.5 pm resolution in wavelength measurement, as found in FS22SI interrogator.

3) Maximum elongation per Fiber Bragg Grating. To ensure that signals from the same rosettes do not overlap at high strain measurements, care must be taken on the wavelength selection. Standard wavelength options for high strain are 1510/1530/1550 nm or 1550/1570/1590 nm.

4) Limited by the connectors area.

5) Temperature Cross Sensitivity (TCS) is the thermal strain induced by a 1 °C change in temperature.

6) Typical value. Without connectors and dual splice to standard telecom fiber (ITU-T G.652.D).

7) At room temperature. Bragg wavelength may change at maximal bending radius about ±1 nm. For higher Bragg wavelength changes, a bending radius up to 10 cm is acceptable

8) Required spot welding machine with low power, 20 to 70 V, 26 to 80 Ws.

9) With 2 m cable each side and no connectors.

10) The full composition of the sensor including cable, complies with RoHS, REACH, Conflict Minerals and fire propagation prevention directives.

ORDER INFORMATION

Inputs/Outputs		
Cable type	n.a.	Ø 1 mm braided (Fiber glass, silicone varnish)
Cable bend radius ¹¹⁾	mm	>16
Cable length ¹²⁾	m	0.5 ... 6
Connectors	n.a.	FC/APC, SC/APC or NC (No Connectors)

¹¹⁾ Induced loss due to one complete turn around a mandrel lower than 0.05 dB.

¹²⁾ 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-FS62WSR -1 -2 -3 -4 -5 -6	
Options	
1	BRD - Braided Cable
1	NC - No connector; FC - FC/APC; SC - SC/APC
2	0.5 m ≤ Cable Length ≤ 6 m @0.5 m steps
3	1505 nm ≤ 3 Wavelengths ¹³⁾ ≤ 1590 nm
4	0.5 m ≤ Cable Length ≤ 20 m @0.5 m steps
5	NC - No connector; FC - FC/APC; SC - SC/APC

¹³⁾ Available wavelength trios are 1505/1510/1515 nm, 1520/1525/1530 nm, 1535/1540/1545 nm, 1550/1555/1560 nm, 1565/1570/1575 nm, 1580/1585/1590 nm, 1510/1530/1550 nm and 1550/1570/1590 nm. For different wavelengths please contact HBK FiberSensing

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