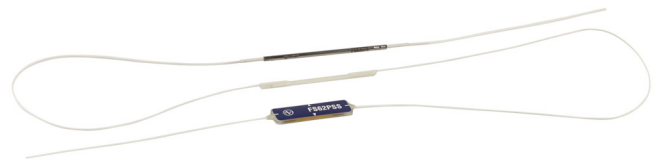


## DATA SHEET

# FS76BRD Braided Cable Sensor Array

## SPECIAL FEATURES

- Ready to install sensor chains
- Definable sensor distances
- Configurable wavelengths, cable lengths and connector types



## DESCRIPTION

The Braided Cable Sensor Array combines newLight® Strain and Temperature sensors on the same line connected via splices and customized cable distances. The supply of sensors' preassembled arrays reduces installation costs. It shortens installation time and eliminates the need for dedicated optical tools or specialized technicians whilst keeping the advantages of a spliced connection. Several arrays can be connected together to the same optical connector of an interrogator providing that sensors' selection prevents signal overlapping.

The newLight® technology developed by HBK FiberSensing employs high strength fiber coatings

ensuring increased measurement ranges and enhanced fatigue resistance for strain sensors, as well as increased sensitivity and higher measurement accuracy for temperature sensors. 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.

## BENEFITS AND APPLICATIONS

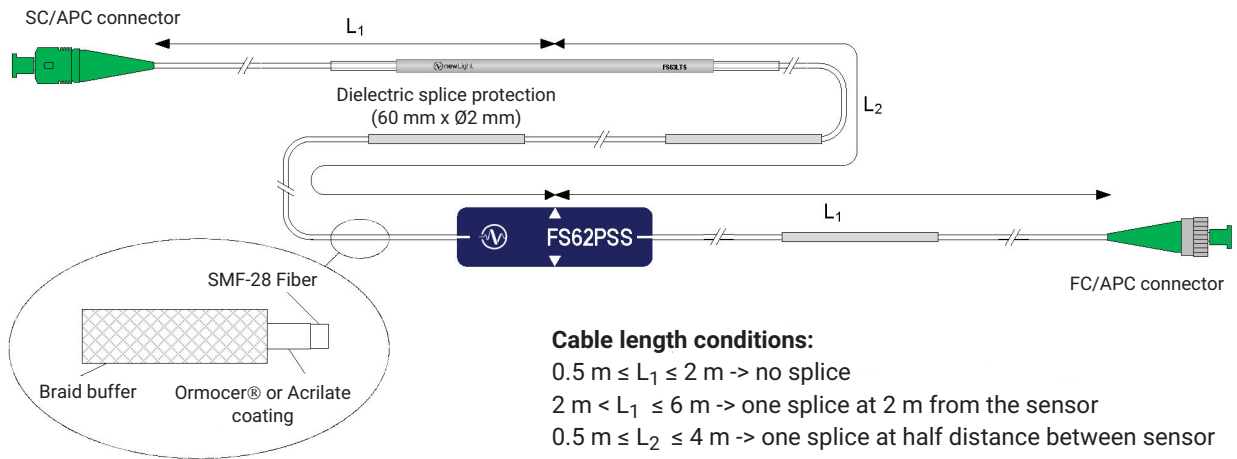
### Sensor design

- Installation cost and time reduction
- No need for special tools
- Ready for laboratory applications where small size, high strain or extended temperature conditions occur

### 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

## SCHEMATICS



### Cable length conditions:

$0.5 \text{ m} \leq L_1 \leq 2 \text{ m}$  -> no splice

$2 \text{ m} < L_1 \leq 6 \text{ m}$  -> one splice at 2 m from the sensor

$0.5 \text{ m} \leq L_2 \leq 4 \text{ m}$  -> one splice at half distance between sensor

$4 \text{ m} < L_2 \leq 8 \text{ m}$  -> two splice at 2 m from the sensors

$\sum L_1 + \sum L_2 \leq 50 \text{ m}$

## SPECIFICATIONS

Sensor		
Strain Sensors	n.a.	FS62PSS; FS62WSS (braided cable option)
Temperature Sensors	n.a.	FS63LTS (no calibration option) FS63LTS (calibrated option)
Maximum allowed power difference between first and last sensor	dB	2 to 6 sensors: 5; 7 to 12 sensors: 7; 13 to 18 sensors: 9
Bragg wavelengths	nm	1500 ... 1600
Cables		
Cable lengths <sup>1)</sup>	m	Between sensors: 0.5 ... 8 Terminations: 0.5 ... 6
Cable diameter	mm	1
Cable materials <sup>2)</sup>	n.a.	fiber glass, silicone varnish
Fiber type	n.a.	SMF-28 compatible
Extension cable fiber cladding and coating diameter	$\mu\text{m}$	125/250
Extension cable fiber coating	n.a.	Ormocer®
Extension cable bend radius <sup>3)</sup>	mm	> 16
Splices		
Shrunk dimensions	mm	Ø2x60
Splice materials <sup>2)</sup>	n.a.	Polyolefin; vinyl acetate; glass fiber
Connectors		
Possible types	n.a.	FC/APC, SC/APC

<sup>1)</sup> Cable lengths are measured from: connector to sensor center, or sensor center to sensor center. For cable length longer than 2 m from the sensor, splice(s) is(are) included at 2 m from the sensor or at mid length, protected with dielectric shrinking tube (Ø3x60 mm). Specified cable length is ensured on delivery. A margin of up to 20 cm can be present on cable lengths. Extension cables are delivered with acrylate coated fiber. For different cable lengths or splice position please contact HBK FiberSensing.

<sup>2)</sup> The full composition of the sensor including cable, complies with RoHS, REACH, Conflict Minerals and fire propagation prevention directives.

<sup>3)</sup> Induced loss due to one complete turn around a mandrel lower than 0.05 dB.

## ORDERING INFORMATION

Configurable Item K-FS76BRD	
Options	
Number of sensors	$2 \leq \text{Total number of sensors in the array} \leq 18$ Where: Strain sensors $\leq 9$ Temperature sensors $\leq 9$
Fiber terminations	Options for both ends of the sensor array are: <b>NC</b> - No connector; <b>FC</b> - FC/APC; <b>SC</b> - SC/APC
Cable lengths <sup>1)</sup>	Total array length is limited to 50 m Cable lengths must be defined in steps of 0.5 m L <sub>1</sub> : Left and right cables must be between 0.5 m and 6 m L <sub>2</sub> : Length between sensors must be between 0.5 m and 8 m
Sensor types	Strain and temperature sensors with braided cable
Sensor wavelengths <sup>4)</sup>	Strain Sensors: 1510, 1520, 1530, 1540, 1550, 1560, 1570, 1580 or 1590 nm; Temperature Sensors: 1515, 1525, 1535, 1545, 1555, 1565, 1575, 1585 or 1595 nm.

<sup>4)</sup> For different wavelengths please contact HBK FiberSensing.