DATA SHEET

FS76ARD
Aramid Cable Sensor Array

SPECIAL FEATURES

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

DESCRIPTION

The Aramid 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

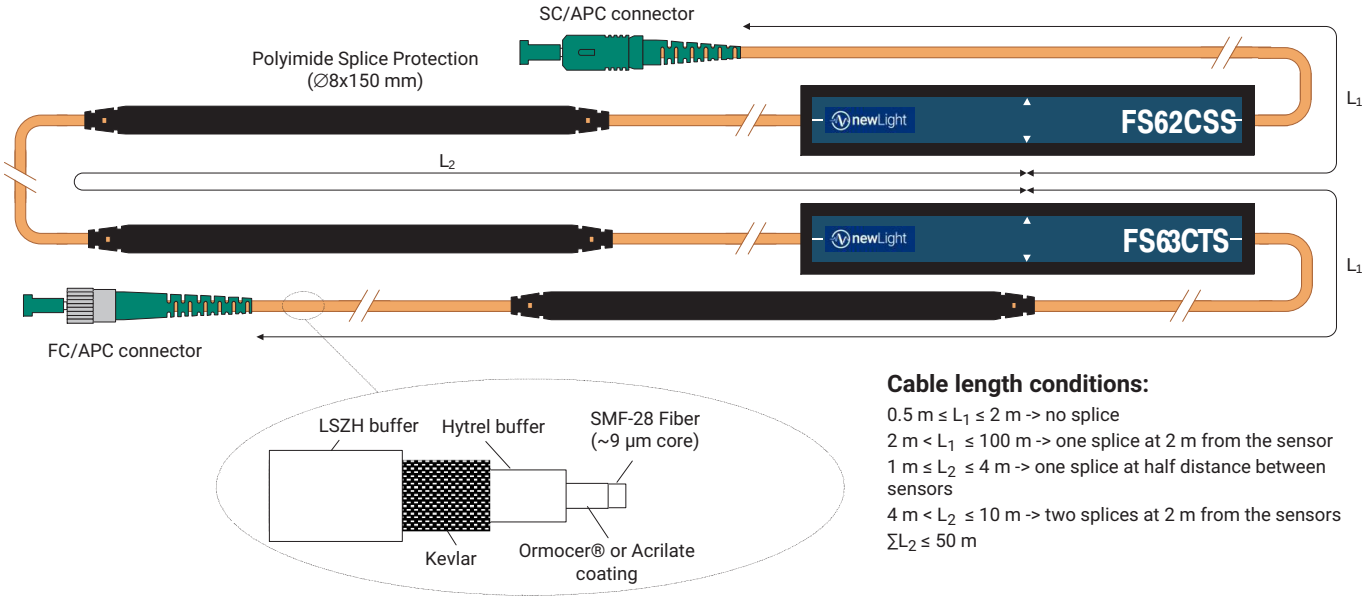
Design

- Installation time and cost reduction
- No need for special tools
- Easy whilst robust cable handling
- Ready for applications where no major risks of mechanical damage exist

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 m ≤ L_1 ≤ 2 m -> no splice
2 m < L_1 ≤ 100 m -> one splice at 2 m from the sensor
1 m ≤ L_2 ≤ 4 m -> one splice at half distance between sensors
4 m < L_2 ≤ 10 m -> two splices at 2 m from the sensors
$\sum L_2 \leq 50$ m

SPECIFICATIONS

Sensor		
Strain Sensors[1)]	n.a.	FS62CSS (aramid cable) FS62WSS (aramid cable)
Temperature Sensors[1)]	n.a.	FS63CTS_0 (aramid cable and no calibration) FS63CTS_1 (aramid cable and calibrated) FS63WTS_0 (aramid cable and no calibration) FS63WTS_1 (aramid cable and calibrated)
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[5)]	m	Between sensors: 1 … 10 Terminations: 0.5 … 100
Cable diameter	mm	3
Cable materials[2), 3)]	n.a.	Hytrel, Kevlar® and LSZH
Extension cable fiber type	n.a.	SMF-28 compatible
Extension cable fiber cladding and coating diameter	µm	125/250
Extension cable fiber coating	n.a.	Acrylate
Extension cable bend radius[4)]	mm	> 30
Splices		
Shrunk dimensions	mm	Ø8x150
Splice materials[2)]	n.a.	Steel; polyolefin, vinyl acetate; polyimide
Connectors		
Possible types	n.a.	FC/APC, SC/APC

1) For integrating different sensors from the listed into arrays, please contact HBK FiberSensing.
2) The full composition of the sensors, cables, splices and connectors complies with RoHS, REACH, Conflict Minerals and fire propagation prevention directives.
3) Aramid cables start changing their mechanical characteristics above 70 °C. Sensor behavior and measurement is not affected by this change within their operating temperature range.
4) Induced loss due to one complete turn around a mandrel lower than 0.05 dB.

ORDERING INFORMATION

Configurable Item K-FS76ARD	
Options	
Number of sensors	2 ≤ Total number of sensors in the array ≤ 18 Where: Strain sensors ≤ 9 Temperature sensors ≤ 9
Fiber terminations	Options for both ends of the sensor array are: **NC** - No connector; **FC** - FC/APC; **SC** - SC/APC
Cable lengths[5)]	Total array length is limited to 250 m Cable lengths must be defined in steps of 0.5 m Left and right cables must be between 0.5 m and 100 m Length between sensors must be between 1 m and 10 m Total length between first and last sensor is limited to 50 m
Sensor types	Strain and temperature sensors with aramid cable
Sensor wavelengths[6)]	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.

5) 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 polyimide (Ø8x150 mm). Specified cable length is ensured on delivery. A margin of up to 20 cm can be present on cable lengths between sensors. Between sensor and connector, this margin is 10 cm for cables up to 20 m and 25 cm for longer cables. Extension cables are delivered with acrylate coated fiber. For different cable lengths or splice position please contact HBK FiberSensing.

6) For different wavelengths please contact HBK FiberSensing.

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