Accelerometer | os7100

Description

The os7100 is a fiber optic accelerometer based on Fiber Bragg Grating (FBG) technology.

Optimized for large structures and long term measurements, the os7100 measures accelerations from DC up to a few hundred Hertz. Like most conventional accelerometers, the os7100 can be attached to a structure using a standard threaded connection, and is available in one, two or three axis configurations. A rugged, sealed metallic body, armored cables, available weatherproof junction boxes and connector protection fittings make the os7100 ideal for outdoor installations on exposed structures.

For low frequency signals, the os7100 yields measurements that are as accurate and stable as conventional accelerometers and offers the added benefits of EMI immunity and lightning/ corrosion resistance that are needed for long term outdoor installations. Additionally, the os7100 is inherently compatible with FBG based strain and temperature sensors, thereby enabling comprehensive fiber-based sensing networks

The os7100's single-ended design is ideally deployed in coupled-star sensor network architectures, thus maximizing overall sensor capacity on each optical sensing interrogator channel. Installation and cabling requirements for these types of fiber arrays are much less expensive and easier to manage than those of conventional electronic sensor networks.

Key Features

Qualified to same rigorous standards used for comparable electronic gages.

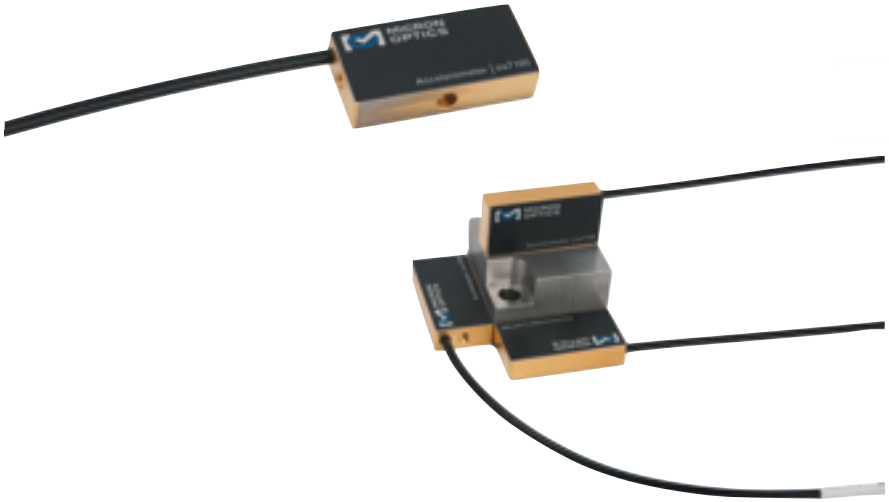
Cable integrated with sensor package for fiber protection and strain relief.

Standard threaded connection with sensor package for fiber protection and strain relief.

Available mounting block for two and three axis applications.

Connector protection fittings available for harsh environments

Armored fiber cable and rugged sensor package



Deployments

Structures (bridges, dams, tunnels, mines, buildings, oil platforms)

Energy (wind turbines, oil wells, pipelines, nuclear reactors, generators)

Transportation (railways, trains, roadways, specialty vehicles, cranes)

Marine vessels (hull, deck, cargo containers)

Aerospace (airframes, composite structures, wind tunnels, static and dynamic tests).

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Performance Properties[1]	os7100
Operating Temperature Range	-40 to 80°C
Reference Sensitivity[2]	~16 pm/g
Strain Sensitivity[2]	See charts below
Frequency Range[3]	DC to 300 Hz
Mounted Resonance Frequency	~700 Hz
Transverse Sensitivity	< 5% Reference Sensitivity
Temperature Transient Sensitivity	10.7 ms^{-2}/°C
Maximum Operational Shock	100 g Peak
Physical Properties	
Dimension[4]	38 x 9 x 19 mm
Weight[4]	28 g
Case Material / Plating	ASTM F-15 Kovar/Gold over electrolytic nickel
Cable Length	User specified, 1 m max (± 10 cm)
Fiber Type	SMF28-Compatible
Cable Bend Radius	≥ 17 mm
Cable Type	3 mm Armored Cable
Connectors	FC/APC optional
Mounting Method[5]	I0-32 Tapped Hole
Optical Properties	
Peak Reflectivity (Rmax)	> 70%
FWHM (- 3 dB point)	0.25 nm (± .05 nm)
Isolation	> 15 dB (@ ± 0.4 nm around center wavelength)

Accessories

PF	Universal IP-67 Connector Protection Fitting.
MB	3 axis mounting block
CB	1x2, 1x3, 1x4 coupler box

Notes

1 Beta product. For more details see http://www.micronoptics.com/products/product_designations/.

2 At 159.2 Hz (ω = 1000 Hz), 20 m/s RMS and 24 C.

3 Aliasing can occur for frequencies > 0.5 the sampling frequency.

4 Excluding cable.

5 3D mounting block available for 2 and 3 axis applications. See http://www.micronoptics.com/support_downloads/Sensors/ for sensor drawings and installation details.

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Ordering Information

os710**a**-**bb**-**wwww**/**wwww**/**wwww**-1**xx**-**Eee**-**cc**-**Ddd**

a Model
1 One axis
2 Two axis
3 Three axis

bb Mounting block
00 No block
MB Mounting block

wwww Wavelengths for x/y/z axes (+/-1 nm)
Standard - 1516 to 1588 nm in 4 nm intervals
Extended - 1466 to 1618 nm in 4 nm intervals
0000 Axis not used

xx Termination type
00 No cable, axis not used
CB Terminated in coupler box
UT Unterminated
FC FC/APC Connector

E "Extra end", Cable length from coupler box to termination in meters +/- 10 cm. Enter 0 if no extra end.

ee Termination type
00 No extra end
UT Unterminated
FC FC/APC Connector

cc Coupler box
00 No coupler box
C2 1x2 NEMA 4x coupler box
C3 1x3 NEMA 4x coupler box
C4 1x4 NEMA 4x coupler box

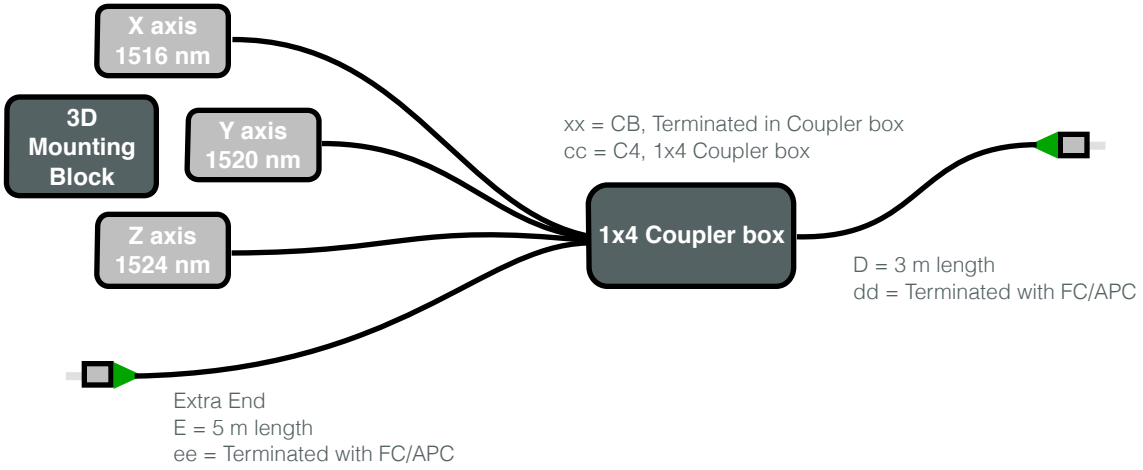
D "Coupler input", Cable length from coupler box to termination in meters +/- 10 cm. Enter 0 if no Coupler box.

dd Termination type
00 No extra end
UT Unterminated
FC FC/APC Connector

Ordering Information Example

os7103-**MB**-**1516/1520/1524**-1**CB**-**5FC**-**C4**-**3FC**

A 3-axis accelerometer with:
Mounting block
Extra end (5 m long with FC/APC connector)
1x4 Coupler box with an input 3m long with FC/APC



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