MULTIZONA READOUT

Description

ZonaSens is the solution for retrieving high speed nanoscale precision information from dedicated parts of your fiber such as acoustics, strain and vibration. As the system is truly simultaneous, readings from different zones can be combined to enable location identification.

ZonaSens is a high-tech optical system that simultaneous interrogates Fiber Brag Gratings (FBG) readings up to 1 MHz between any two FBGs in an optical fiber network. Using this technology it is possible to limitless extend the sensitive part of the fiber instead of measuring locally at the FBG. This makes ZonaSens very flexible and extremely sensitive. The distance between the read-out and/or FBGs can be from centimeters up to several kilometres and in addition ZonaSens is retrofittable to existing FBG networks.

ZonasSens uses interferometry to measure multiple sensors, and therefore provides a reduced cost per sensing point. Our fiber sensors are all-optical and fully passive; no electrical signals are involved. Therefore they can be applied in extremely harsh environments such as in high temperature, liquid environments or in presence of strong electrical and/or magnetic fields.
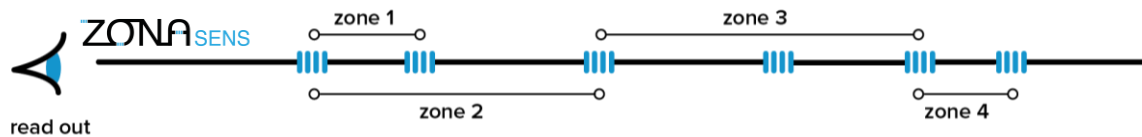
Main characteristics

- *Up to 1000x more sensitive compared to traditional FBG sensors*
  Using interferometry to interrogate our sensors, significant increased sensitivity is achieved down to femtostrain level.
- *High bandwidth*
  Selective measurement up to 1 MHz sampling frequency
- *Remote sensing in extremely harsh environments*
  Up to kilometers between sensors and interrogator and inherent immunity to all electromagnetic effects (EMI, RFI, sparks, etc.), intrinsic safety, and operable in liquids and extreme temperatures.
- *Low cost per sensing point*
  Having multiple sensors measures at the same time reduces cost per sensing point, which can be further optimised when adding optical switches to the network
- *Retrofittable to existing FBG networks*
  Possibility to measure on top of your FBG sensors in an existing network.

Optics11 ZonaSens readout

Performance	MultiZona
Max number of optical channels	8
Noise floor[1]	500 fϵ/√Hz
Sampling speed	1 MHz
Frequency response sensors[2]	Flat up to 500 kHz
Operation wavelength range	1510 nm to 1590 nm
Signal acquiring	1-24 sensors true simultaneous
Max sensors per channel	3
Dynamic range	160 dB at 1 kHz / 80 dB at 300 kHz

Environmental

Operating temperature	-5 to 50 °C
Storage temperature	-10 to 70 °C
Maximum humidity	85% (non-condensing)
Recommended warm-up time	15 minutes
IP rating	From IP52

Physical

Dimensions (W x H x L)	19"rack, 6U
Housing material	Aluminum
Input voltage	220 – 240 VAC, 0.8A 110 – 120 VAC, 1.6A
Power consumption[3]	<300 W
Input voltage frequency	50 – 60 Hz
Output interface / Port	Ethernet / RJ-45
Fiber port	E2000, 2.0 mm Narrow Key

Data properties

Data output	Digital file (TDMS)
Processing requirement	On-board processing

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[1] The final noise floor of the system is a combination of the readout and the sensor.

[2] Independent to the amount of sensors connected to the readout

[3] At room temperature