

# SOLUTIONS FOR DISCRETE AND DISTRIBUTED MECHANICAL AND TEMPERATURE SENSORS

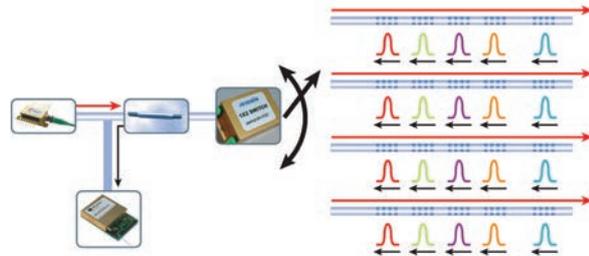
- Wideband SLEDs
- Circulators
- MEMS Switches
- Interrogators
- Lasers & laser modules
- Strain and Temperature Sensors



## COMPONENTS, MODULES AND INSTRUMENTATION FOR DISCRETE AND DISTRIBUTED SENSORS

AMS Technologies is a pan-European supplier of components, modules and instrumentation for discrete and distributed sensors covering distances from few meters up to 100 km or more. Discrete sensors can be used for either static and dynamic applications. In the static sensors sensitivity and steady performances are the main features, in the dynamic sensors speed of acquisition and low noise are the relevant parameters.

Distributed sensors can be interrogated by instrumentation based on the Brillouin back-scattering. Temperature and mechanical strengths can be monitored in real time with a high level of precision, accuracy and time response.



### Discrete Sensors



#### Wideband SLEDs

AMS Technologies offers SLEDs at many different wavelengths that provide the wide optical spectrums required by fiberoptic sensor applications. Wavelengths range from 650 to 1700 nm, with different output power and bandwidth values and in various packages or form factors, including cooled 14-pin dual-in-line (DIL) and butterfly modules or low-cost uncooled TOSA and TO-56 packages.

- Output power up to 20 mW (@1550 nm)
- Bandwidth up to 65 nm
- Ripple as low as 0.1 dB
- Excellent optical performances and stability



#### Circulators

The miniature inline circulators available from AMS Technologies are ideal for OEM applications. The PM fiberoptic circulators are employed in 40 Gbit systems or Raman pump applications. They are also used in double pass amplifiers and in chromatic dispersion compensation modules.

- SM and PM fibers
- Insertion loss: < 1 dB
- Isolation up to 40 dB
- Return loss up to 60 dB
- Miniaturised package



#### MEMS Switches

Our product range of switches consists of fast, latching/non-latching devices able to work in the most demanding applications in fiberoptic communication networks. Their main benefits are solid state reliability and accurate precision. They are available both in single mode and multimode variants. The miniature package withstands rugged environments and is well suited for direct mounting on printed circuit boards.

- For static sensors
- Configuration: from 1 x 2 to 1 x 24
- Repeatability better than 0.001 dB
- Less than 0.5 dB loss
- Switching time < 0.5 ms
- Crosstalk > 50 dB





### Interrogators

The FBGA interrogation analysers are integrated spectral engines simultaneously covering multiple wavelengths for precise and rapid fiber bragg grating (FBG) sensor system measurements. The devices cover wide wavelength ranges and provide simultaneous measurements at very fast response rates and excellent wavelength resolution. Periodic calibration is not required. Input/Output (I/O) is provided through a dual port RAM interface accessed through ADD/DAT bus direct connection or serial (RS232 or USB) communications.

- Static AND dynamic measurement
- Sampling frequency: 5 kHz
- Extended wavelength: 1510-1595 nm
- Repeatability/Resolution: 5/1 pm
- Accuracy: 1pm
- Athermal design, high reliability, suitable to portable operations
- No moving parts



### OPI – Strain Sensing with POF

This unique, cost-effective POF based strain sensor solution utilizes a patented optical phase interrogation (OPI) technique. It enables readily available POF to be used as a high-precision strain sensor on par with current fiber Bragg grating (FBG) based strain sensors for a broad range of applications including structural health monitoring in a variety of other structures.

- Cost-efficient POF as the sensor element
- High elastic strain range (>5%) large dynamic range
- Easy handling and easy installation
- High sensitivity and accuracy
- EMI/EMC Immunity

## Distributed Sensors



### Narrow linewidth lasers & laser modules

Demanding applications such as oil & gas, perimeter security, test & measurement and infrastructure sensing require high performance laser solutions capable of deployment in harsh environments and suitable for volume production. The lasers available from AMS Technologies combine the low cost and simplicity of semiconductor lasers with the high performance of fiber lasers for advanced fiberoptic sensing applications, such as interferometric Brillouin sensing and coherent Rayleigh.

- ECL, gain chip, planar lightwave circuit and waveguide with FBG
- Narrow linewidth (3 -5 kHz)
- Side mode suppression ratio better than 50 dB
- Low Relative Intensity Noise
- Excellent wavelength stability vs. temperature (12 pm/°C)
- operating wavelength from 1545 to 1565 nm



### Distributed Strain and Temperature Sensors DSTS Instruments

Distributed Strain and Temperature Sensors DSTS Instruments The fiberoptic Distributed Strain and Temperature Sensors (DSTS) are sophisticated sensor systems using Brillouin back-scattering in optical fibers to measure changes in both temperature and strain along the length of an optical fiber. By wrapping or embedding a fiber inside a structure it is possible to detect when the structure is being strained or heated/cooled and correct the problem before failure occurs. The range of systems can detect and report larger signals within one second.

- Real-time measurement of strain and temperature
- BOTDA, OTDR and even BOTDR in one instrument
- High spatial (0.1-50 m), strain (-2% till +3%) and temperature resolution (0.005 °C, 0.1), high accuracy (0.1 °C, 2)
- Up to 100 km round-trip sensing range
- Multiple channel monitoring



## WHAT CAN WE DO FOR YOU?

Please contact us for further information

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