Static Optical Sensing Interrogator | sm125

Description

The sm125 is a compact, industrial grade, static optical sensor interrogation module that has been field proven for robust and reliable long term operation.

Built upon the Micron Optics x25 optical interrogator core, the sm125 Optical Sensing Interrogator features a high power, low noise swept wavelength laser, realized with Micron Optics patented Fiber Fabry-Perot Tunable Filter technology. The x25 interrogator core employs full spectral scanning and data acquisition, providing measurements with high absolute accuracy, high dynamic range performance, and flexible software post-processing. The x25 based interrogators support continuous on-board NIST traceable wavelength reference components and are ideally suited to measure many different optical sensor types, including FBGs, long period gratings, extrinsic Fabry-Perot sensors, and many others.

High accuracy absolute measurements of strain, temperature, displacement, pressure and many other sensors

The Micron Optics "sm - Sensing Module" platform responds directly to user commands that control the interrogator and outputs sensor wavelength data via TCP/IP through the ethernet port. The Sensing Module platform is ideal for client developed system management tools, while also being compatible with Micron Optics ENLIGHT sensing analysis software. ENLIGHT is includ with x25 interrogator systems and provides a single suite of tools for data acquisition, computation, and analysis of optical sensor networks.

Micron Optics ENLIGHT Sensing Analysis Software is included with x25 interrogator systems and provides a single suite of tools for data acquisition, computation, and analysis of optical sensor networks.

Key Features

Capacity of 100s of sensors resulting from multiple channels, wide wavelength range and high dynamic range. Expandable to 16 channels.

Proven reliability and longevity with over 100 million hours logged since 2000

Detailed optical spectrum enables versatile measurements of fiber Bragg gratings, long period gratings and Fabry-Perot sensors

Automatic calibration with on-board NIST traceable reference

Deployments

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

Oil & gas (well reservoir management, platform structural health, pipeline condition)

Medical devices (probes, catheters)

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

Industrial measurements (industrial heaters and metal fabrication process control)

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Performance Properties	sm125-500
Number of optical channels[1]	4
Scan frequency	2 Hz
Wavelength range	1510-1590 nm
Wavelength stability; accuracy[2,3]	1; 1 pm
Wavelength repeatability[4]	0.5 pm at 1 Hz, 0.2 pm at 0.1 Hz
Dynamic range[5]	50 dB
Typical FBG sensor capacity[1]	60 - 120
Full spectrum measurement	Included
sm041 switch compatible	Yes
Optical connectors	FC/APC
Interfaces and Software	
Interfaces	Ethernet
Enhanced data management	ENLIGHT Sensing Analysis Software
Remote software	Spectral analysis, peak detection, data logger, peak tracking, and instrument control
Physical Properties	
Dimension; weight	117 mm x 234 mm x 135 mm; 2kg (4.5 lbs)
Operating temperature; humidity	0 to 50 degrees C; 0 to 80%, non-condensing
Storage temperature; humidity	-20 to 70 degrees C; 0 to 95%, non-condensing
Input voltage	7 - 36 VDC, AC/DC converter included (100~240VAC, 47~63Hz),
Power consumption at 12 VDC	20W typ, 30 max

sm125 interrogators comply with the following [6]

Accessories

sm041: Expansion from 4 channels to 8 or 16 channels.

rmk-25: 19" Rack Mount Kit for 125

Options

Below are options and customizable features:

Wavelength scan range: 60 or 80 nm

Connectors: E2000 Connectors

Premium extended warranty: 3 years

Notes

1. Expansion requires 4 integrated optical channels to operate an sm041-408 or sm041-416 switch-type multiplexer.
2. Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.1, definition of "accuracy of measurement."
3. Captures effects of long term use over full operating temperature range of the instrument.
4. Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.2, definition of "repeatability [of results of measurements]."
5. Defined as laser launch power minus detection noise floor.
6. Complies with the WEEE Directive 2012/19/EU for the following European countries: UK, IT, DE, FR, NL, BE, ES, CH.

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1852 Century Place NE
Atlanta, GA 30345 USA
www.micronoptics.com