

Optical Sensing Interrogator | sm225

Applications

- Measurements of fiber bragg grating (FBG) strain, temperature and other static measurements.
- Extrinsic Fabry-Perot (EFP) and long period Grating (LPG) for strain, temperature and pressure measurements.
- Development of fiber optic sensor packages and transducers.
- Full Spectrum Measurement capability for analysis of FBG, EFP and LPG sensor behavior and shape.
- On-board NIST traceable wavelength reference.

Where are Micron Optics Instruments Deployed?

- Civil structures/civionics (bridges, dams, tunnels, buildings, etc.)
- Energy (wind turbines, pipelines, nuclear reactors, etc.)
- Aerospace vehicles (composite structures, wind tunnels, dynamic tests, etc.)
- Oil & gas (well reservoir management, platform structural health monitoring, etc.)
- Marine vessels (hull, mast, rudder, submarine pressure tests, etc.)
- Transportation (railways, roadways, etc.)
- Homeland security (perimeter intrusion, shipping container integrity, etc.)
- Research (medical devices, military armor, chemical sensing, etc.)

Description

The Micron Optics sm225 is an industrial grade, rack mounted optical sensing interrogator module for ultra-high accuracy, static applications. Its versatility allows measurements of Fiber Bragg Grating, Extrinsic Fabry-Perot, and Long Period Grating based sensors. The module seamlessly integrates:

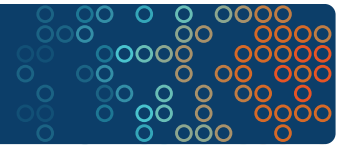
- Wide-scanning, high power, low noise swept laser technology
- State-of-the-art dynamic range full-spectrum detection system
- Advanced parallel PC control-analysis-communications architecture
- ENLIGHT^{Pro} Sensing Analysis Software

Like all Micron Optics interrogators, the sm225 uses patented state-of-the-art sub-picometer optical referencing technology so that the module never requires recalibration. Balancing world-leading measurement capabilities with a sensible price, the commercial grade sm225 is available in three configurations to serve a range of users from those monitoring a handful of sensors to heavy users whose applications demand parallel monitoring of hundreds of sensors.



sm225 Rack Mount Module

ENLIGHT^{Pro} Sensing Analysis Software is included with Micron Optics sensing interrogator systems and provides a single suite of tools for data acquisition, computation, and analysis of optical sensor networks. ENLIGHT^{Pro} combines the useful features of traditional sensor software with the specific needs of the optical sensor system, making it easy to optimize optical properties during the design and implementation phase of an optical sensor system. Intuitive data display and additional graphing and data visualization features make ENLIGHT^{Pro} easy to use. Learn more about ENLIGHT^{Pro} at: http://www.micronoptics.com/sensing_software.php.



Specifications ¹

	sm225-200	sm225-500	sm225-800
Optical Properties			
Number of Optical Channels	1	4	16
Scan Frequency	1 Hz	2 Hz	0.5 Hz
Wavelength Range	1520-1570 nm	1510-1590 nm	1510-1590 nm
Wavelength Accuracy ²	10 pm	1 pm	1 pm
Wavelength Stability ³	5 pm	1 pm	1 pm
Wavelength Repeatability ⁴	1pm, 0.2 pm with 10 averages		0.5pm at 0.5Hz
Dynamic Range ⁵	40dB	50 dB	40dB
Full Spectrum Measurement	Included		
Internal Peak Detection Mode	Included		
Optical Connectors	FC/APC (E2000 available)		

Data Processing Capabilities

Interfaces	Ethernet - other interfaces available via an sp1xx Sensing Processor Module
Protocols	Custom Micron Optics protocol via Ethernet (others available)
Remote Software	Spectral analysis, peak detection, data logger, peak tracking, and instrument control
LabVIEW™ Source Code	Allows for customization of remote software
Enhanced Data Management	ENLIGHT ^{Pro} Sensing Analysis Software

Mechanical, Environmental, Electrical Properties

Dimensions; Weight	435 mm x 442 mm x 45 mm; 4.1 kg (9 lbs max)
Rack Mount Hardware	Included
Operating Temperature; Humidity	0° to 50°C; 0 to 80%, non-condensing
Storage Temperature; Humidity	-20° to 70°C; 0 to 95%, non-condensing
Input Voltage	7 - 36 VDC (100~240 VAC, 47~63Hz), AC/DC converter included
Power Consumption at 12V	20 W typ, 30 max

Options

Scan Frequency ⁶	2, 5, or 10 Hz
Internal Sensing Processor Module	Windows XP Professional or Linux OS, See sp1xx datasheet

Notes:

1. Beta product. For details see www.micronoptics.com/product_designation.php.
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. 10 Hz scan rate available with 40 nm (1525-1565nm) wavelength range.