

Optical Sensing Interrogator | sm225

Applications

- Measurements of Fiber Bragg Grating (FBG) based strain, temperature, displacement, angle, pressure and other sensors
- Measurements of Long Period Grating (LPG) and Extrinsic Fabry-Perot (EFP) sensors
- Display, analysis, and alarm configuration for commercial sensing applications

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, rack mounted, optical sensing instrument for ultra-high accuracy, static applications. Its versatility allows measurements of Fiber Bragg Grating, Extrinsic Fabry-Perot, and Long Period Grating based sensors. In its standard 16 channel configuration, the instrument seamlessly integrates:

- Wide-scanning swept laser technology
- State-of-the-art dynamic range full-spectrum detection system
- Advanced parallel PC control-analysis-communications architecture (coming soon)
- Solid-state electro-optical switching
- ENLIGHT^{Pro} sensing analysis software

Like all Micron Optics instruments, the sm225 uses patented state-of-the-art sub-picometer optical referencing technology so that the instrument never requires recalibration. Balancing world-leading capabilities with a sensible price, the commercial grade sm225 is available in various configurations and targets to delight both users desiring to monitor merely a handful of sensors and heavy-users whose applications demand parallel monitoring of hundreds of sensors.



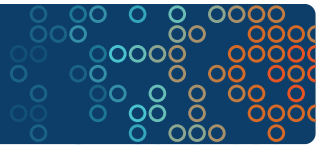
Front Panel



Back Panel

ENLIGHT^{Pro} 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.

Optical Sensing Interrogator | sm225



Specifications ¹

	sm225-200	sm225-500	sm225-800
Optical Properties			
Number of Optical Channels ²	1	4	16
Wavelength Range	1520-1570 nm	1510-1590 nm	1510-1590 nm
Wavelength Accuracy ³	10 pm	1 pm	1 pm
Wavelength Stability ⁴	5 pm	1 pm	1 pm
Wavelength Repeatability ⁵	0.5 pm at 1 Hz, 0.2 pm at 10 avgs		
Dynamic Range ⁶	40dB	50 dB	40dB
Scan Frequency	1 Hz	1 Hz	0.25 Hz
Optical Connectors	FC/APC (SC and E2000 available)		

Data Processing Capabilities

Enhanced Data Management	ENLIGHT ^{Pro} in Windows XP Environment
Processor Speed/ Type	1.4 GHz/ Low Voltage Pentium (fanless)
Interfaces	Dual USB 2.0, Dual Serial (RS232/422/465), Dual Ethernet, GPIO, 3 in 3 out, Keyboard, Mouse, Video
Memory & Storage Media	512 MB DDR, 100 GB 2.5" HDD

Mechanical Properties

Dimensions	17.5 mm x 18 mm x 1.75 mm
Weight	4.1 kg (9 lbs max)

Environmental Properties

Operating Temperature	0° to 50°C
Operating Humidity	0 to 80%, non-condensing
Storage Temperature	-20° to 70°C
Storage Humidity	0 to 95%, non-condensing

Electrical Properties

Input Voltage	7 - 36 VDC
AC/DC Convertor	Included (100~240 VAC, 47~63Hz)
Power Consumption	18 W typ., 30 max
	40 W typ., 75 max
	40 W typ., 75 max

Options

8 or 16 Channel Expansion	Via internal multiplexer
Expanded Sensor Capacity ⁷	λ range of 1460 - 1620nm doubles max sensors to 160nm per channel, 1pm λ repeatability at 1Hz
Scan Frequency ⁸	2, 5, or 10 Hz

Notes:

1. Denotes Beta product. For details see www.micronoptics.com/product_designation.php.
2. sm225 accommodates up to 16 integrated optical channels via internal multiplexer.
3. Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.1, definition of "accuracy of measurement".
4. Captures effects of long term use over full operating temperature range of the instrument.
5. Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.2, definition of "repeatability [of results of measurements]".
6. Defined as laser launch power minus detection noise floor.
7. Available now in Beta prototype release.
8. 10 Hz scan rate available with 40 nm (1528-1568nm) wavelength range.