

Optical Sensing Interrogator | si225

Applications

- Measurement 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 si225 is an industrial grade, rack mounted optical sensing instrument based on swept wavelength laser technology that is used for ultra-high accuracy, static applications. Its versatility allows measurements of Fiber Bragg Grating, Extrinsic Fabry-Perot, and Long Period Grating based sensors.

The “si” in the Micron Optics si225 interrogator name indicates that it is a “Sensing Instrument” (not an “sm”, or “Sensing Module”). The si platform uses an MOI optimized integrated ENLIGHT^{Pro} environment built upon Windows XP Embedded technology. This facilitates on-board management of all x25 optical core settings, data acquisition, sensor calibration, data visualization, and data storage. Users of Integrated ENLIGHT^{Pro} interface to the si through a touchscreen LCD, external keyboard/mouse/monitor, or Windows Remote Desktop connections.



si225 Rack Mount Instrument

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.

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Specifications ¹

	si225-200	si225-500	si225-800
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	0.5pm, 0.2pm with 10 averages		
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

Operating Environment	Integrated MOI ENLIGHT Environment (based on XP Embedded)
Enhanced Data Management	ENLIGHT ^{Pro} Sensing Analysis Software
Interfaces	Remote Desktop via Ethernet, USB, External Keyboard/Mouse/Monitor
Storage Capacity	Internal 100 GB HDD
Ethernet Pass-through	Supports direct data acquisition from Optical Sensing Interrogator Core

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 convertor included
Power Consumption at 12V	40 W typ, 55 max

Options

Scan Frequency ⁶ 2, 5, or 10 Hz

Notes:

- Beta product. For details see www.micronoptics.com/product_designation.php.
- Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.1, definition of "accuracy of measurement".
- Captures effects of long term use over full operating temperature range of the instrument.
- Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.2, definition of "repeatability [of results of measurements]".
- Defined as laser launch power minus detection noise floor.
- 10 Hz scan rate available with 40 nm (1525-1565nm) wavelength range.

