

Optical Sensing Interrogator | si225

Applications

- Full Spectrum Measurements of fiber Bragg grating (FBG), extrinsic Fabry-Perot, long period grating (LPG), and other optical sensor components.
- Continuous lifetime health monitoring of bridges, dams, buildings, tunnels, ships, aircraft, trains, and other complex structures.
- Development of fiber optic sensors and transducers.

Features

- High accuracy absolute measurements of strain, temperature, pressure and other static sensors.
- On-board NIST traceable wavelength reference.
- Wide wavelength swept laser supporting more sensors per channel.
- Up to 16 integrated measurement channels.
- Integrated ENLIGHT eases configuration, data acquisition, and on-board data storage.
- Direct mounting to any standard 19" EIA/IEC equipment rack.

Deployment

- Civil structures (bridges, dams, tunnels, mines, buildings).
- Oil & gas (well reservoir management, platform structural health, pipeline condition).
- Marine vessels (hull, mast, rudder, deck, cargo containers).
- Transportation (railways, trains, roadways, specialty vehicles, cranes).
- Homeland security (perimeter intrusion, heat detection, security gate monitoring).

Description

The si225 is a full-featured, industrial grade, rack mounted static optical sensor interrogation instrument, powered by Integrated ENLIGHT and featuring local data storage, remote configuration control/data transfer, and up to 16 internal fiber measurement channels.

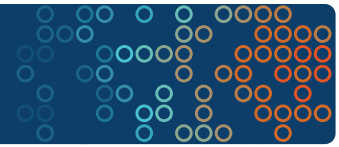
The si225 Optical Sensing Interrogator is built upon the Micron Optics x25 optical interrogator core, featuring a high power, low noise swept wavelength laser, realized with Micron Optics patented Fiber Fabry-Perot Tunable Filter technology. The x25 interrogator core employs full spectral scanning and data acquisition, providing measurements with high absolute accuracy, flexible software post-processing, and high dynamic range performance. 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. Well over half of the fiber optic sensors deployed today are measured with instrumentation that uses Micron Optics technology.

The Micron Optics "si - Sensing Instrument" platform features an optimized Integrated ENLIGHT environment built on Windows XP Embedded technology. In contrast with the "sm - Sensing Module" platform, Sensing Instruments support on-board management of all optical interrogator core configuration, data acquisition, sensor calibration, data visualization, and data storage tasks. Users of Integrated ENLIGHT interface to the Sensing Instruments through a touch screen LCD, external keyboard/mouse/monitor, or Windows Remote Desktop connections.



si225 Rack Mount Instrument

ENLIGHT combines the useful features of traditional sensor software with the specific tools needed to optimize optical properties during the design, implementation, and operations phases of an optical sensor system. Tables, graphs, and additional data visualization features make ENLIGHT easy to use. Learn more about ENLIGHT at http://www.micronoptics.com/sensing_software.php.



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 at 1Hz, 0.2 pm at 0.1Hz		1pm at 0.5Hz
Dynamic Range ⁵	40 dB	50 dB	40 dB
Full Spectrum Measurement		Included	
Internal Peak Detection Mode		Included	
Optical Connectors		FC/APC	

Data Processing Capabilities

Operating Environment	Integrated ENLIGHT Environment (based on XP Embedded)		
Enhanced Data Management	ENLIGHT Sensing Analysis Software		
Interfaces	Remote Desktop via Ethernet, USB, External Keyboard/Mouse/Monitor		
Relays	3 included, driven by ENLIGHT		
Storage Capacity	Internal 100 GB HDD		
Ethernet Pass-through	Supports direct data acquisition by user PC 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:

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.

