

Optical Sensing Analyzer | si725

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.
- Intuitive touch screen user interface (for easy configuration and visualization of monitoring application).

Deployment

- Civil structures/civionics (bridges, dams, tunnels, mines, buildings).
- Energy (wind turbines, pipelines, nuclear reactors, solar panel forms).
- Oil & gas (well reservoir management, platform structural health monitoring, pipeline condition).
- Aerospace vehicles (airframes, composite structures, wind tunnels, dynamic tests).
- Marine vessels (hull, mast, rudder, deck, cargo containers).
- Transportation (railways, trains, roadways, specialty vehicles, cranes).
- Homeland security (perimeter intrusion, heat detection, security gate monitoring).
- Medical devices (probes, catheters).

Description

The si725 is a convenient, full-featured static optical sensor interrogation instrument, powered by Integrated ENLIGHT and featuring up to 16 internal fiber measurement channels, a large 17" touch screen LCD, and is ideally suited for laboratory use.

The si725 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.



si725 Laboratory 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 ^B 1

si725-500

si725-800

Optical Properties

Number of Optical Channels	4	16
Scan Frequency	2 Hz	0.5 Hz
Wavelength Range	1510-1590 nm	
Wavelength Accuracy ²	1 pm	
Wavelength Stability ³	1 pm	
Wavelength Repeatability ⁴	0.5 pm at 1 Hz, 0.2 pm at 0.1 Hz, 1 pm at 0.5 Hz	
Dynamic Range ⁵	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	USB 2.0, Ethernet, 17" Touchscreen LCD	
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	520 mm x 499 mm x 165 mm; 18.1 kg (40 lbs)	
Operating Temperature; Humidity	10° to 35°C; 20 to 80%, non-condensing	
Storage Temperature; Humidity	-20° to 60°C; 5 to 95%, non-condensing	
Input Voltage	7 - 36 VDC (100~240 VAC, 47~63Hz), AC/DC converter included	
Power Consumption at 12V	60 W typ, 75 max	

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.

