

Optical Sensing Analyzer | si730

Applications

- Measurements of fiber bragg grating (FBG) strain gages, temperature probes, accelerometers, pressure sensors and other FBG sensors.
- Simultaneous dynamic and static measurements of hundreds of sensors.
- Permanent installations for tracking the condition and performance in smart structures like bridges, dams, buildings and tunnels.
- Continuous, decades-long, structural health monitoring of ships, aircraft, trains and other complex structures.

Features

- More sensors - Wide range swept laser scanning means more sensors per channel (4x the competition).
- More channels – Up to 16 channels can be built into the si730 package.
- Fast dynamic measurements.
- Spectral Diagnostic View – Observe sensor optical characteristics during setup.

Description

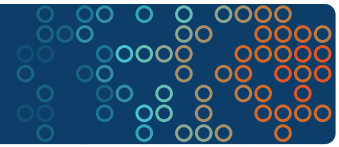
The Micron Optics si730 is a convenient, full-featured, optical sensing instrument that provides simultaneous static and dynamic interrogation of hundreds of fiber optic sensors. Its large touchscreen and built in ENLIGHT^{Pro} graphical user interface make it ideal for laboratory use. The combination of high speed and repeatability of the swept wavelength laser-based system allows a single instrument to interrogate dynamic sensors and measure static sensors with ultra-high resolution.

The “si” in the Micron Optics si730 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 x30 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.



si730 Laboratory 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.



Specifications ^β

| | si730-500 | si730-800 |
|---------------------------------------|---|-----------|
| Optical Properties | | |
| Number of Optical Channels | 4 | 16 |
| Scan Frequency | 1kHz | 250 Hz |
| Wavelength Range | 1510-1590 nm | |
| Wavelength Stability ² | 2 pm typ, 5 pm max | |
| Wavelength Repeatability ³ | 1 pm, 0.05 pm with 1,000 averages | |
| Dynamic Range ⁴ | 25 dB with user-selectable gain | |
| Max FBGs per Channel | 80 (up to 160 with expanded λ range) | |
| Internal Peak Detection | Included | |
| Spectral Diagnostic View | Included | |
| Optical Connectors | FC/APC | |
| FBG Requirements ⁵ | 0.25 +/- 0.05nm, FWHM (-3dB point); >15dB Isolation | |

| Data Processing Capabilities | |
|-------------------------------------|---|
| Operating Environment | Integrated MOI ENLIGHT Environment (based on XP Embedded) |
| Enhanced Data Management | ENLIGHT ^{Pro} Sensing Analysis Software |
| Interfaces | USB 2.0, Ethernet, 17" Touchscreen LCD |
| Storage Capacity | 100 GB HDD |
| Ethernet Pass-through | Supports direct data acquisition 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 | 65 W typ, 80 max |

Notes:

1. Beta product. For details see www.micronoptics.com/product_designation.php.
2. Captures effects of long term use over full operating temperature range of the instrument. (Assumes an FBG bandwidth of 0.25nm).
3. Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.2, definition of "repeatability [of results of measurements]". (Assumes an FBG bandwidth of 0.25nm).
4. Defined as laser launch power minus detection noise floor. Adjustable 13 dB window within total range.
5. Used for performance qualification (See Notes 2 and 3). Bandwidths of 0.1 to 1.0nm may reduce performance.

