



Applications

- Useful in the design and selection of fiber Bragg grating based sensors for strain, temperature, pressure, etc.
- High accuracy, resolution and full profile data provide comprehensive feedback on fiber Bragg grating and extrensic Fabry-Perot sensor capabilities.
- Both built-in and LabVIEW™ peak detection functions provide high resolution, high accuracy fiber Bragg grating center wavelength measurements.
- Full-spectrum measurements can be an effective aid in understanding how sensors' characteristics change under various physical conditions.
- Useful for analysis of a wide variety of passive optical sensors - FBGs, Fabry-Perot sensors, Long Period Gratings, etc.



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 **si720** is a high power, high accuracy, high resolution complement to the **Micron Optics** si425. It provides higher accuracy and repeatability than the si425 and can be used for a wide variety of fiber optic sensors.

The system provides users with a complete understanding of how the spectral shape of the fiber Bragg grating sensors react to varying physical conditions - rather than only reporting shifts in central wavelengths. This instrument is used both as the first step in the development of high-volume custom sensing systems and in long term field measurements.



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Specifications

si720

Optical

Number of Optical Channels	2
Wavelength Range	1520-1570 nm (1510-1590 nm available)
Wavelength Accuracy ^a	1 pm
Wavelength Repeatability ^b	0.05 pm at 0.5 Hz; 0.2 pm at 5 Hz
Dynamic Range ^c	>60 dB
Scan Frequency	5 Hz or 0.5 Hz
Optical Connectors	FC/APC (E2000 available)

Mechanical

Dimensions	134 mm x 432 mm x 451 mm
Weight	15.5 kg (34 lbs)
Color LCD Display	162 mm (Diagonal)

Environmental

Operating Temperature	0° to 50° C
Storage Temperature	-5° to 55° C

Electrical

Input Voltage	100 VAC to 240 VAC, 50/60 Hz input (24 VDC available)
Interfaces	GPIO

Data Management

On-Board Firmware	Instrument control, GUI management
Remote Software	Full spectrum, peak detection and table view
LabVIEW™ Source Code	Allows for customization of remote software

Options

Printer for Screen Capture	160 mm x 164 mm x 59 mm
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Notes:

- a Measured at 1529 nm at 23°C. Accuracy is 2.5 pm (2σ) across entire wavelength range and operating temperature range.
 b Per NIST Technical Note 1297, 1994 Edition, Section D.1.1.2, definition of "repeatability [of results of measurements]"
 c Defined as laser launch power minus detection noise floor.

Features

- Two input detection channels coupled with our powerful and extremely low-noise fiber ring laser allow simultaneous monitoring of more than 100 sensors per channel
- Dual-detector design enables either input channel to measure FBGs in transmission or reflection
- System can be quickly adapted to interrogate many types of sensors
- Laser is continuously swept across a 80nm spectrum at user-selectable rates of 5.0 or 0.5 Hz
- Automatic calibration is achieved with every scan using an integrated NIST-traceable absolute wavelength reference
- Combination of absolute wavelength reference and proprietary MOI instrument design provides a stunning and reliable wavelength repeatability of 0.5pm and a wavelength accuracy of 1pm
- Fast analog-to-digital conversion and proprietary LINUX-based software
- Built-in single board computer, display, and instrument control panel
- 5 Hz Data transfer to PC via standard Ethernet I/O or through optional GPIB interface

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optical sensing



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