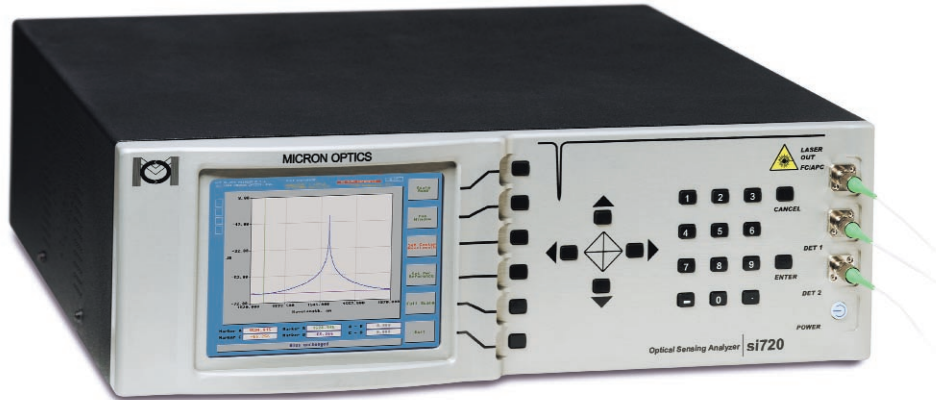


SENSING INSTRUMENTS

	NUMBER OF CHANNELS	FBGs/ CHANNEL	SPEED (Hz)	REPEATABILITY (pm)
si425	1-16	128	250	0.2
si720	2 - 8	full spectrum	5	0.05



**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 extrinsic 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 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.

**Features**

- Two detection channels and the powerful swept laser source simultaneously monitor more than 100 sensors per channel
- All sensors on all channels are scanned at 5 Hz

- Wavelength repeatability is 0.05 pm and wavelength accuracy is 1 pm
- Data is easily transferred to PC via Ethernet at 5 Hz, or through optional GPIB interface

**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.

The self-contained system is composed of:

- an extremely low-noise fiber ring laser
- a NIST-traceable absolute optical reference
- fast analog-to-digital conversion
- proprietary Linux based software
- two detectors enabling the measurement of sensors in transmission and reflection
- Built-in single board computer, display, and instrument control panel

Two sensor channels allow simultaneous interrogation of multiple sensors on two fibers. Either channel can be used to interrogate gratings in transmission or reflection and the system can be adapted to many types of sensors. The wavelength is automatically calibrated with each scan in less than 200 ms.

The laser is continuously swept across a 80 nm spectrum at a rate of 5.0 or 0.5 Hz. All data can be transferred to an external PC via Ethernet or GPIB.



## Specifications

### si720

#### Optical

Number of Optical Channels	2 (8 optional) <sup>1</sup>
Maximum Number of FBG Sensors/Channel	Full Spectrum
Wavelength Range	1520 - 1570 nm (1510 - 1590 nm optional)
Accuracy	1 pm
Repeatability	0.05 pm at 0.5 Hz; 0.2 pm at 5 Hz
Dynamic Range	> 60 dB
Scan Frequency (user selectable)	5 Hz or 0.5 Hz
Typical Fiber Bragg Grating Sensor Spacing	~ 2 x Sensor Bandwidth
Connector	FC/APC

#### Electrical

Power	24 VDC or 100 - 240 VAC, 80 W
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Interface	Ethernet
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#### Mechanical

Operating Temperature	0° to 50° C
Storage Temperature	-5° to 55° C
Dimensions	133 x 432 x 451 mm
Color LCD Display	162 mm (diagonal)

#### Options

GPIB Interface	PCI GPIB Board, PCMCIA GPIB Card and Cable
Printer for Screen Capture	160 x 164 x 59 mm

(1.) si720 expandable to 8 channels using sm040-408 extension module