M8 INTERROGATOR

Description

The M8 optical sensing instrument is an economic commercial grade interrogator, featuring 8 monitoring channels. Enclosed in a field deployable enclosure, the instrument can be operated in full spectrum and in sensor peak detection modes. The M8 is optimized for both static and dynamic measurements of up to 30 Fiber Bragg Gratings (FBG) based sensors on each of its 8 channels.

Our family of rugged MX interrogators is used extensively in civil engineering, marine, railways, roads, energy, geotechnical, industrial, security, medical, and many other commercial applications. This economy model is specifically useful for security, civil engineering, energy, process control, material qualification labs, and R&D programs. The industrial grade design scales well for volume production.

Benefits

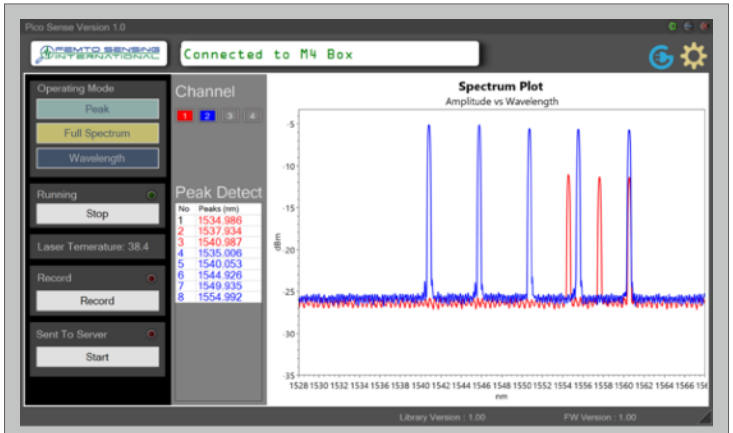
Repeatability, accuracy, and dynamic range: The M8 Interrogator provides measurements across its wavelength scanning range of 40nm. Using US patented laser calibration technology, the instrument features +/- 2pm repeatability, +/-10pm accuracy, and 25dB dynamic range with automatic gain and threshold control adjustments. Manual settings option for thresholds and gain stages also included.

Top reliability: The M8 Interrogator is based on a semiconductor tunable laser that has been deployed in large volume in various field applications and features the world's lowest MTBF. The interrogator has no movable parts, no tunable filters, and no optical switches, which enables top reliability over the standard temperature range of -15C to +55C. The M8 is also available upon request with -40C to +85C rating. The M8 is suitable for use as an integral part of a very rugged and reliable sensing system.

Adaptive to more types of sensors: The integrated electronics and embedded software allow the user to quickly adapt the instrument's performance parameters to fit many different sensor configurations. Designed to monitor many types of sensors from narrow bandwidth (100pm) FBGs used in accelerometers and pressure sensors, to wide bandwidth (3.0nm) FBGs used in bio-sensing. Hardware implementation of peak tracking algorithms for FBG sensors included. The laser output power is <1 dBm and performance is maintained even with 20dB optical power loss on each of the M8's eight channels.

Systems and network ready: High speed data acquisition and on-board computer processing make the M8 easy to use and easy to transmit large volumes of data by network connection. The Ethernet port for high speed data transfer is 100Mbit/s. Separate serial UART port available to change the M8 IP address.

Lowest Cost and High Quality: The M8 Interrogator is based on the company's solid state instruments platform and it has been optimized to address applications demanding the lowest cost while maintaining the quality and reliability of a high quality instrument. Also available with fewer or with more channels.



Femto Sensing Sweden, Japan, South Korea, China and Femto Sensing USA are manufacturing and support facilities of Femto Sensing International, LLC

Applications include Security, Civil Engineering, Industrial, Energy, Material Qualification Labs, and Research Centers

Femto Sensing International undertakes a rigorous development process before products release. The company is also firmly committed to continuous improvements after release to ensure performance and reliability to the highest standards, hence, specifications are subject to update without notice.

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PARAMETER	SPECIFICATIONS	NOTES
Wavelengths Range	40nm	1528nm to 1568nm
Number of Channels	8	Synchronous Scan, No switches (Also available as M1, M2, M4, M16, M24, and M32 for 32 ch)
Number of Sensors per Channel (see Note 1)	1 to 30	8ch * 30 = 240 sensors (assuming ~1.2nm spacing of FBG sensors)
Wavelength Accuracy	+/- 10pm	With Internal FP Etalon and TEC control to guarantee long-term performance
Wavelength Repeatability	+/- 2pm	Defined over long-term
Laser Line-Width	20MHz	Self-heterodyne measured line-width at static wavelength
Laser Output Power per Channel (see Note 2)	< 1dBm	Performance is maintained even with 20dB optical power loss
Gain Stages	6	Controlled automatically. Can also be controlled manually and independently for each channel
Dynamic Range	25dB	Applies for all available scan rates
Scan Frequency (FBG Peaks Processing)	1kHz	Displays and provides FBG Sensors Peaks vs. Wavelength (Also available at 100Hz and 2kHz)
Scan Frequency (Full Spectrum)	4Hz	Full Spectrum display at 4Hz AND Full Spectrum data recording at 4Hz, in parallel.
Fiber Lead-In and Sensor Range (Distance)	5km	Lead-in lengths up to 2.5km and FBG1 to FBGn in each array to be within 2.5 km from each other
Input Voltage and Power Consumption	5V and 15W	Auto-detect 100V to 240V AC with 5V supply block included
Operating Temperature	-15 to +55°C	Designed for commercial field use (Also available with -40 to +85°C operating range)
Dimensions (WxDxH)	235x202x88mm	Applies to 8 and 16 channel units only (Dimensions for the 1, 2, and 4 ch units are smaller)
Weight	1.4kg	Applies to 8 and 16 channel units only (Weights for the 1, 2, and 4 ch units are smaller)
Color	Black	Other colors and graphics available for OEM purchases of 10 or more units per PO
Optical Connection to Sensors	LC/APC with Internal Shutters	The Internal Shutters are independent for each channel and open and close automatically when LC/APC connectors are inserted or removed from the interrogator, for protection
Compliance to standards	YES	REACH and ROHS Compliant
Communications Interface	YES	100Mbps Ethernet RJ45 for Data Transfer and Settings, and UART Port for IP Address Setting
Supplied Software	YES	User friendly PICOSENSE Software in .NET environment. API support.

Note 1: FBGs from 100pm to 3.0nm BW@3dB (FWHM) are supported. Best performance results obtained using 250pm FBGs.

Note 2: Dynamic gain per channel (6 levels covering 25dB of gain) delivering >25dB optical power dynamic range (saturation - minimum detectable power levels) at 1kHz rate.

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