FAZT I4-16W INTERROGATOR

Description

The FAZT I4-16W optical sensing instrument combines the core technology of the company's lower-cost workhorse model FAZT I4W interrogator together with four 1x4 high-reliability, high-speed, premium performance solid-state optical switches to create a 16 Channels workhorse interrogator. Enclosed in a field deployable stainless-steel casing, the instrument provides peak detection for up to 30 Fiber Bragg Gratings (FBG) based sensors on each of its 16 channels. The instrument can be operated in full spectrum and sensor peak detection modes and is optimized for both static and dynamic measurements.

Our family of rugged FAZ Technology interrogators is used extensively in marine, railways, roads, energy, civil, geotechnical, industrial, security, medical, and many other commercial applications. It is also the instrument of choice for Research and Development Centers that seek to achieve ultimate precision and repeatability measurements. The industrial grade design scales well in volume production.

Benefits

High resolution, precision and accuracy: The FAZT I4-16W Interrogator returns measurements in 1pm steps across its wavelength range. Using patented FAZ Technology scan-by-scan calibration to its internal Gas Cell, the instrument features 0.5pm absolute precision and absolute accuracy of 3pm.

Top reliability: The FAZT I4-16W Interrogator is based on a semiconductor tunable laser that has no movable parts, no tunable filters, and no opto-mechanical switches, which delivers top reliability over a broad temperature range to form 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 high-sensitivity accelerometers, pressure sensors, hydrophones, and microphones, to wide bandwidth (1.5nm) FBGs used in bio-sensing. Hardware implementation of peak tracking algorithms for FBG sensors including programmable gain per sensor, width/height thresholds, and distance to sensor setting for accuracy at long distance. The laser output power is -1 dBm to -3 dBm and performance is maintained even with 20dB optical power loss on each sensors channel.

Systems and network ready: High speed data acquisition and on-board computer processing make the FAZT I4-16W easy to use and easy to transmit large volumes of data by network connection. Trigger Input support enabling synchronization of multiple optical and electrical sensor systems. The Ethernet port for high speed data transfer is 100Mbit/s, with all interrogator settings programmable over a REST interface. NTP (<10ms timestamps) Time accuracy with optional GPS time (<10µs timestamps).

Low Cost and High Quality: The FAZT I4-16W Interrogator is based on the company's flagship ultimate performance FAZT I4G Interrogator and it has been optimized to address applications demanding a lower cost higher channel unit while maintaining the quality and reliability of a premium grade instrument.

Femto Sensing International is an authorized manufacturer and seller of the FAZ product family, with underlying technology licensed from Optics11

Femto Sensing Sweden, Femto Sensing Singapore, 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	35nm	1529nm to 1564nm
Number of Channels	16	
Number of Sensors per Channel (see Note 1)	1 to 30	16ch * 30 = 480 sensors (assuming ~1 nm spacing of FBG sensors)
Wavelength Sample Size / Resolution	1pm	Raw data. Resolution can be further improved with averaging
Wavelength Absolute Accuracy	< 3pm	With Internal Gas Cell to guarantee long-term performance
Wavelength Precision	< 0.5pm	Defined over an 8 hour test
Laser Line-Width	20 MHz	Self-heterodyne measured line-width at static wavelength
Laser Output Power per Channel (see Note 2)	-1 to -3dBm	Performance is maintained even with 20dB optical power loss
Scan Frequency / FBG Processing	250Hz	For 16 parallel channels. Also retains 4ch operation at 1/2/4/8 KHz modes of I4G
Scan Frequency (Full Spectrum @ 1pm)	1Hz	1Hz for 16 channels with 2pm resolution
Sensor Range / Distance	0 to 10km	Lead-in cable (0 to 7.5km), FBG section (0 to 3.25km)
Input Voltage and Power Consumption	12V and 25W	Auto-detect 100V to 240V AC with 12V supply block included
Operating Temperature	0 to +55°C	-20°C to +55°C operation range also available
Dimensions (WxDxH) and Weight	324x276x116mm and 4.9kg	Color is RAL-9005 Black
Optical Connection to Sensors	LC/APC	
Certifications and Test Reports	YES	EN55022, EN55024, EN6100, ROHS and REACH Compliant, CE Certified.
Communications Interface	YES	100Mbps Ethernet, REST control interface and multiple data output formats/ports
Supplied Software	YES	FEMTOSENSE configuration tool, LABVIEW interface examples, API Support Document

Note 1: FBGs from 100pm to 1.5nm BW@3dB (FWHM) are supported.

Note 2: Dynamic programmable receiver gain per sensor (4 levels covering 12dB of gain) delivering >25dB optical power dynamic range (saturation - minimum detectable power levels) at 250Hz sweep rate.

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