

7000

MULTILINE OPTICAL CHANNEL ANALYZER WA-7600/7100 Wavemeter

R&D AND MANUFACTURING



Monitor DWDM system performance with unprecedented accuracy and reliability

- Simultaneous measurement of up to 256 optical channels
- Wavelength measurement to a guaranteed accuracy of ± 0.3 pm
- Individual peak and total optical power measurement
- Automatic calculation of OSNR and channel spacing
- Monitor and graph wavelength and power over time

Recent advances in dense wavelength-division multiplexing (DWDM) technology have resulted in the need for more sophisticated test and measurement instrumentation. The ability to accurately measure optical wavelength is necessary in order to characterize and optimize DWDM components and DWDM transmission systems.

While the wavelength performance of DWDM components can be characterized using conventional means such as WA-1650/1150 and WA-1100 Wavemeter® Optical Wavelength Meters, analysis of DWDM transmission systems requires instrumentation capable of measuring the discrete wavelengths of the many optical carriers present on a single fiber. Such demands are addressed by the WA-7600 and WA-7100 Wavemeter Multi-line Optical Channel Analyzers.

The Wavemeter Advantage

WA-7600 and WA-7100 Optical Channel Analyzers employ proven scanning Michelson interferometer-based Wavemeter technology to determine the absolute wavelength of an optical signal under test by comparing its interference fringe pattern with that of a built-in HeNe laser wavelength standard. Unlike other wavelength meters, all factors that can affect wavelength measurement are accounted for, ensuring the highest possible accuracy. The absolute wavelength specification has a confidence level of 3σ , meaning 99.6 % of measurements fall within specification limits. To ensure accuracy, all Wavemeter systems are traceable to recognized standards.

Simultaneous Wavelength and Power Measurement

Combining proven scanning Michelson interferometer-based technology with advanced digital processing results in the ability to measure and differentiate the absolute wavelengths of up to 256 discrete optical signals. The accuracy of these measurements is ± 0.3 pm. What's more, the WA-7600 can simultaneously measure the individual powers of the optical signals. In addition to the WA-7600, EXFO also offers the WA-7100 Wavemeter Multi-line Optical Channel Analyzer. Identical to the WA-7600, it offers an absolute wavelength uncertainty of ± 1.5 pm, providing a lower cost alternative.

High-resolution Optical Spectral Analysis

Unlike other multi-wavelength meters, the WA-7600/WA-7100 provide the full optical spectrum on a clear, easy-to-read display for the most precise DWDM channel analysis. Spectral resolution is as high as 30 pm, resulting in a narrow, sharp-edged spectral response. Discrimination between closely spaced DWDM channels is easily achieved for current 100 GHz and 50 GHz channel spacing and future 25 GHz channel spacing.

Automatic Calculation Increases Productivity

The WA-7600/WA-7100 automatically process measurement data, providing critical DWDM system performance information. In addition to resolving the individual optical carriers and accurately confirming their wavelengths and powers, the WA-7600/WA-7100 calculate parameters such as channel spacing and OSNR.

Stable Measurement with Rugged Design

Stability of all measurements is ensured with the WA-7600/WA-7100 systems' rugged benchtop or rack-mounted package.

SPECIFICATIONS

MODEL	WA-7600	WA-7100
Wavelength		
Range	1270 nm to 1680 nm (178 THz to 236 THz)	1270 nm to 1680 nm (178 THz to 236 THz)
Uncertainty (3 σ) (pm)	± 0.3	± 1.5
Minimum resolvable separation ² (pm)	30	30
Display resolution (nm)	0.0001	0.001
Units	nm (vacuum), THz	nm (vacuum), THz
Power		
Uncertainty (2 σ)	± 0.5 dB (at ± 30 nm from 1310 nm and 1550 nm)	± 0.5 dB (at ± 30 nm from 1310 nm and 1550 nm)
Linearity (dB)	± 0.3	± 0.3
Display resolution (dB)	0.01	0.01
Units	dBm, mW, μ W	dBm, mW, μ W
Optical Input Signal		
Sensitivity, single line input	-40 dBm (0.1 μ W), 1270 nm to 1600 nm -30 dBm (1.0 μ W), 1600 nm to 1680 nm	-40 dBm (0.1 μ W), 1270 nm to 1600 nm -30 dBm (1.0 μ W), 1600 nm to 1680 nm
Maximum input level (sum of all lines)	+ 10 dBm (10 mW)	+ 10 dBm (10 mW)
Maximum safe level (sum of all lines)	+ 18 dBm (63 mW)	+ 18 dBm (63 mW)
Optical Dynamic Range		
Signal-to noise ratio (lines above -25 dBm) ¹	> 35 dB, channel spacing \geq 100 GHz > 27 dB, channel spacing \geq 50 GHz	> 35 dB, channel spacing \geq 100 GHz > 27 dB, channel spacing \geq 50 GHz
Number of Laser Lines		
Maximum ¹	256	256
Measurement Cycle Time		
Time (rate)	1.25 s (0.8 measurements/s)	1.25 s (0.8 measurements/s)
Inputs/Outputs		
Optical input	9/125 μ m fiber FC/UPC or FC/APC SC/UPC or SC/APC ST/UPC	9/125 μ m fiber FC/UPC or FC/APC SC/UPC or SC/APC ST/UPC
Instrument interface	GPIO (IEEE-488.2), RS-232, floppy disk drive VGA monitor port, parallel printer port	GPIO (IEEE-488.2), RS-232, floppy disk drive VGA monitor port, parallel printer port
Environment		
Nominal warmup time	7 minutes	N/A
Temperature ¹	+10° to +30°C (-10° to +70°C storage)	+10° to +30°C (-10° to +70°C storage)
Pressure ¹ (mm Hg)	500 to 900	500 to 900
Humidity ¹	\leq 90 % R.H. at +40 °C (no condensation)	\leq 90 % R.H. at +40 °C (no condensation)
Dimensions and Weight		
Dimensions (H x W x D)	5.25 in x 17.0 in x 16.50 in (133.4 mm x 431.8 mm x 419.1 mm)	5.25 in x 17.0 in x 16.50 in (133.4 mm x 431.8 mm x 419.1 mm)
Weight	23 lbs (10.5 kg)	23 lbs (10.5 kg)
Power Requirements		
Voltage and frequency	90 to 260 VAC, 50/60 Hz	90 to 260 VAC, 50/60 Hz
Notes		SAFETY
1. Typical		21 CFR 1040.10 and IEC 60825-1:1993+A2:2001.
2. Minimal resolvable separation is 30 pm, 35 pm or 40 pm depending on selected wavelength range.		CLASS 1 LASER PRODUCT



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